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Takeda

(10) **Patent No.: US 10,540,707 B2**
(45) **Date of Patent: Jan. 21, 2020**

(54) **COMMERCIAL INFORMATION PROVIDING SYSTEM AND COMMERCIAL INFORMATION PROVIDING METHOD**

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(72) Inventor: **Kengo Takeda**, Tokyo (JP)

(73) Assignee: **Universal Entertainment Corporation**, Tokyo (JP)

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(22) Filed: **Sep. 16, 2016**

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(51) **Int. Cl.**
G06Q 30/06 (2012.01)
G06F 16/951 (2019.01)
G06Q 10/02 (2012.01)

(52) **U.S. Cl.**
CPC ***G06Q 30/0641*** (2013.01); ***G06F 16/951*** (2019.01); ***G06Q 30/0631*** (2013.01); *G06Q 10/02* (2013.01)

(58) **Field of Classification Search**
CPC G06Q 30/0641; G06Q 30/0631; G06Q 10/02; G06F 16/951
USPC 705/27.1, 26.7
See application file for complete search history.

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Primary Examiner — Yogesh C Garg
(74) *Attorney, Agent, or Firm* — Simpson & Simpson, PLLC; S. Peter Konzel

(57) **ABSTRACT**

Provided is a commercial information providing system that provides commercial information intended by the administrator in the commercial information suitable for a response to the user. The commercial information providing system includes a control device and an information providing device. The control device is connectable to a database and configured to perform processing of extracting a set of commercial information to be provided from a plurality of sets of commercial information and a response template to be used from a plurality of response templates based on question information input from a user interface and creating response information using the response template. The response information includes a set of commercial information selected from the extracted the set of commercial information based on the priority level. The information providing device is configured to provide the response information created by the control device to the user.

6 Claims, 51 Drawing Sheets

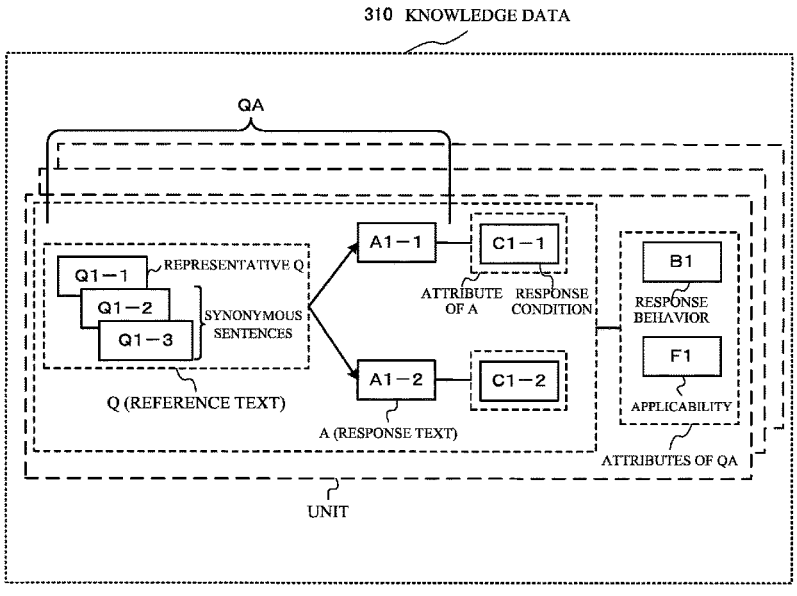


FIG. 1

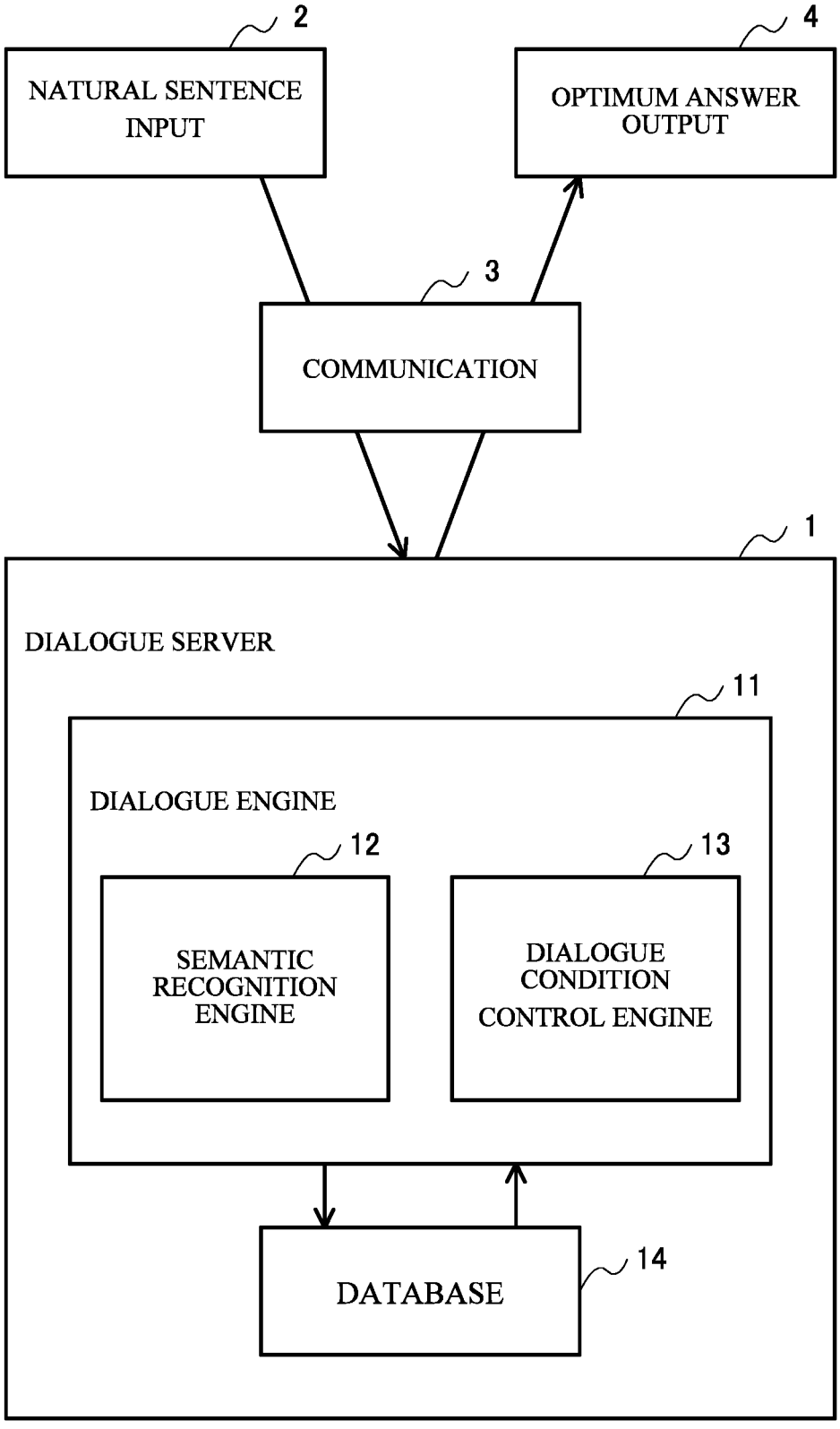

2
NATURAL SENTENCE INPUT
4
OPTIMUM ANSWER OUTPUT
3
COMMUNICATION
1
DIALOGUE SERVER
11
DIALOGUE ENGINE
12
SEMANTIC RECOGNITION ENGINE
13
DIALOGUE CONDITION CONTROL ENGINE
DATABASE
14

FIG. 2

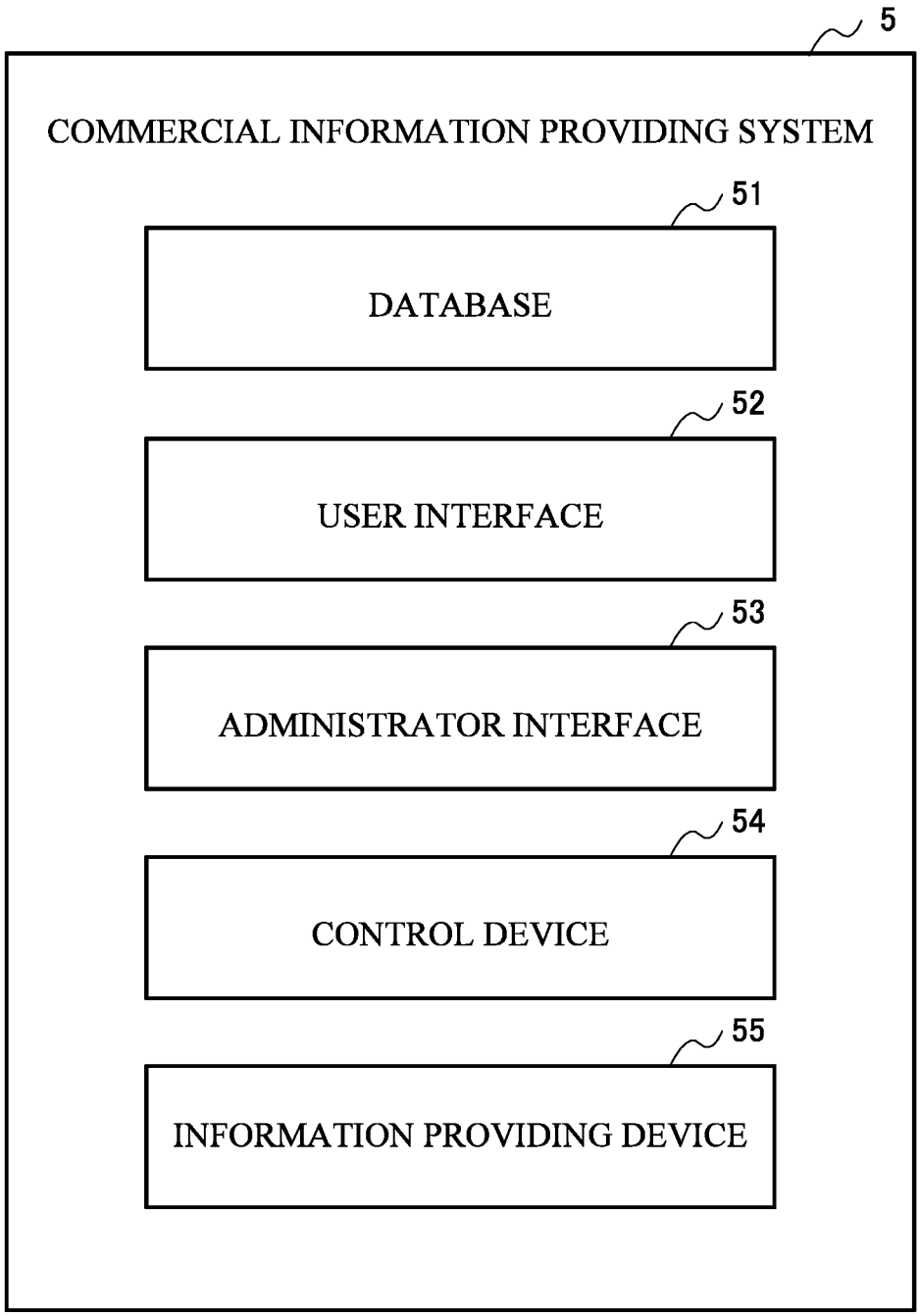

5
COMMERCIAL INFORMATION PROVIDING SYSTEM
51
DATABASE
52
USER INTERFACE
53
ADMINISTRATOR INTERFACE
54
CONTROL DEVICE
55
INFORMATION PROVIDING DEVICE

FIG. 3

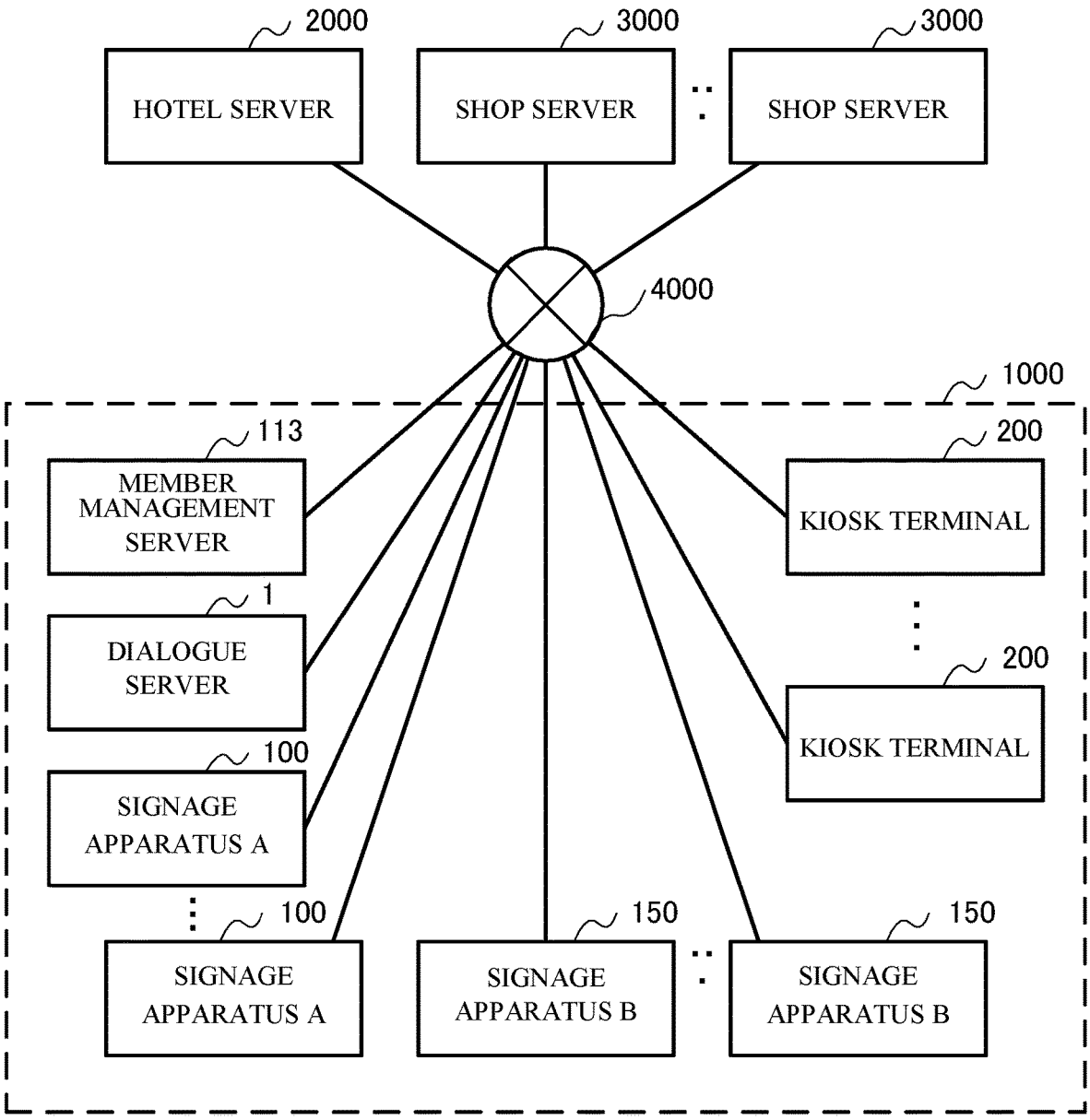

2000
HOTEL SERVER
3000
SHOP SERVER
3000
SHOP SERVER
4000
1000
113
MEMBER MANAGEMENT SERVER
1
DIALOGUE SERVER
100
SIGNAGE APPARATUS A
100
SIGNAGE APPARATUS A
150
SIGNAGE APPARATUS B
150
SIGNAGE APPARATUS B
200
KIOSK TERMINAL
200
KIOSK TERMINAL

FIG. 4

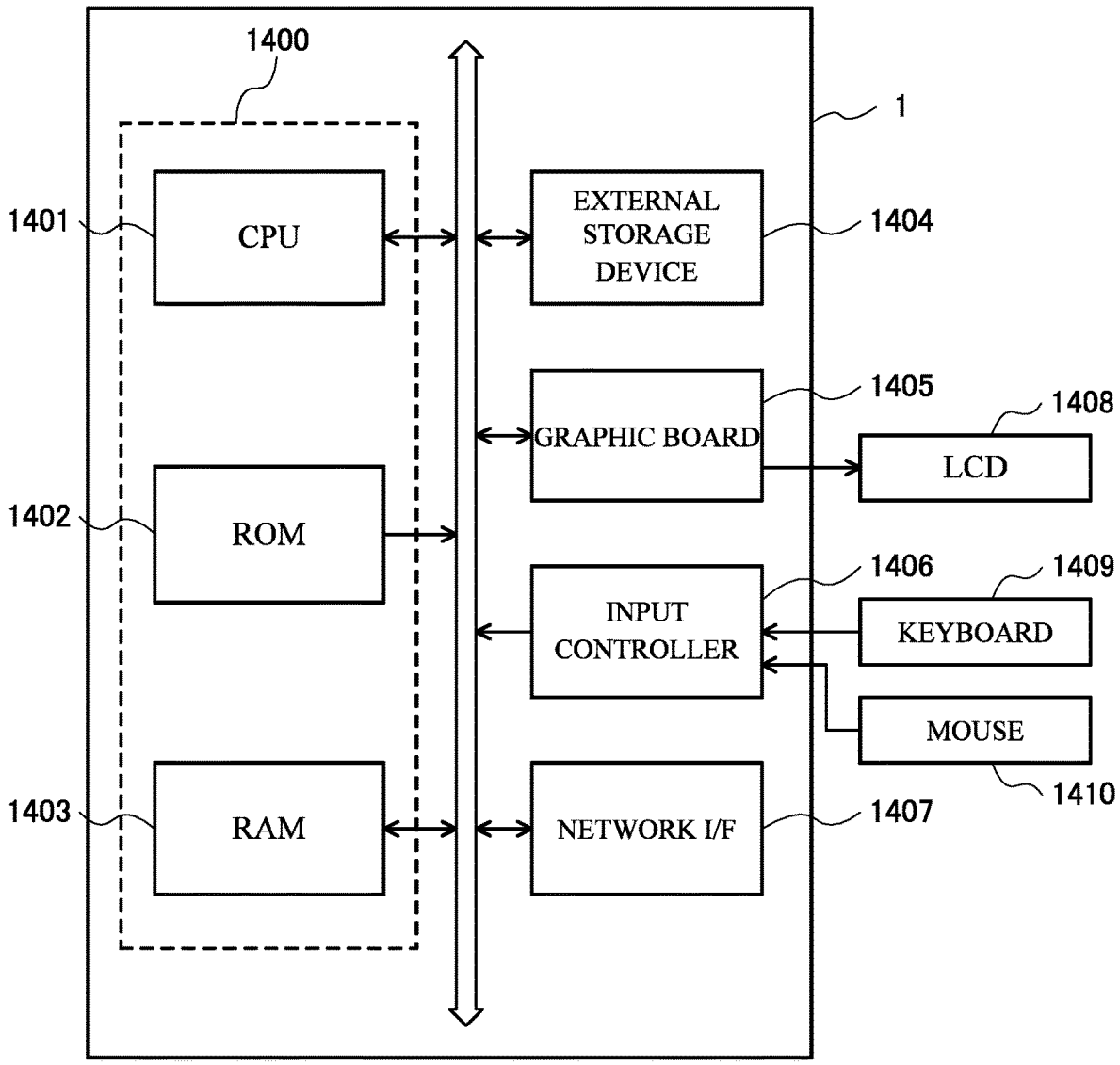

1400
1
1401
CPU
EXTERNAL STORAGE DEVICE
1404
1405
GRAPHIC BOARD
1408
LCD
1402
ROM
1406
1409
INPUT CONTROLLER
KEYBOARD
MOUSE
1410
1403
RAM
NETWORK I/F
1407

FIG. 5

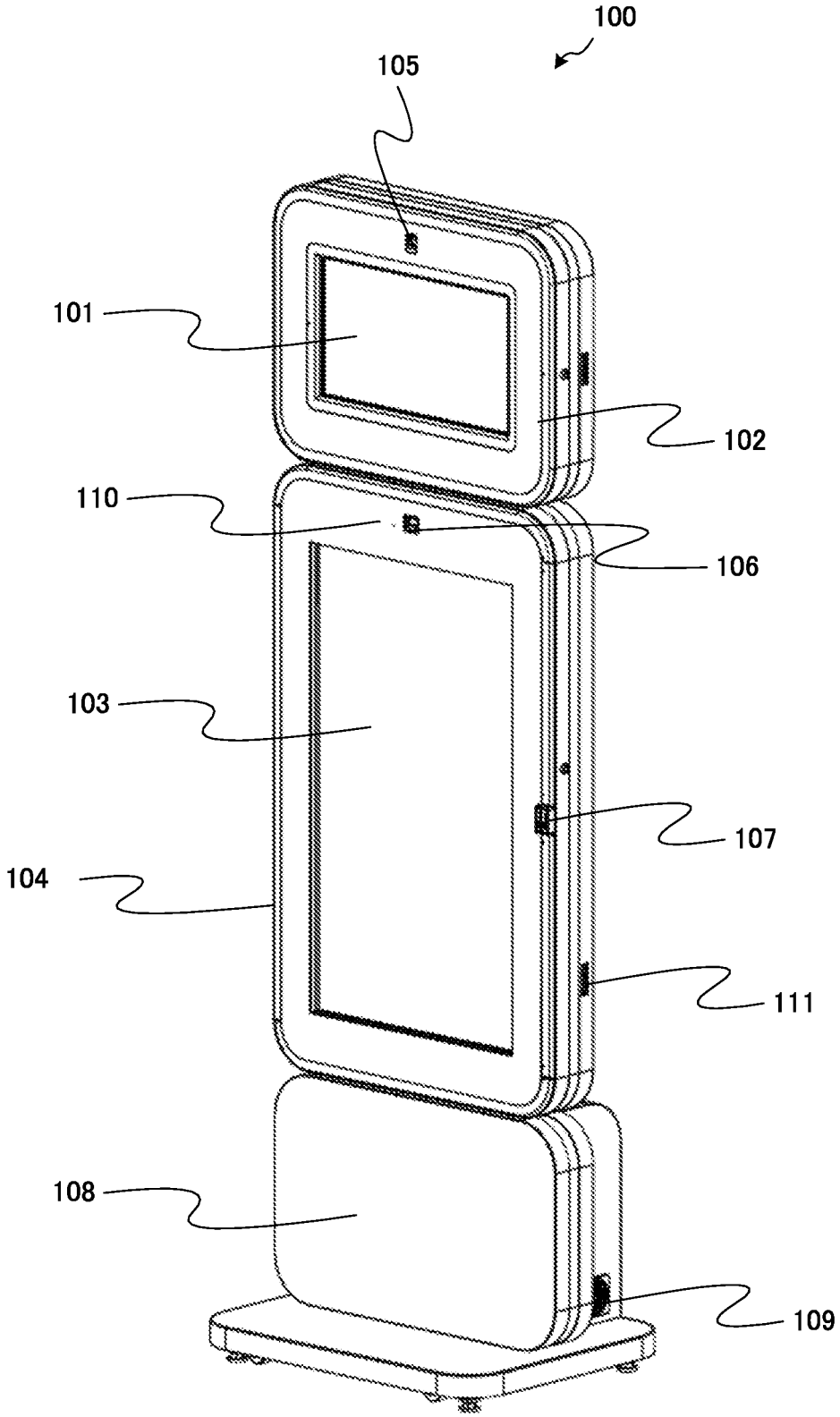


FIG. 6

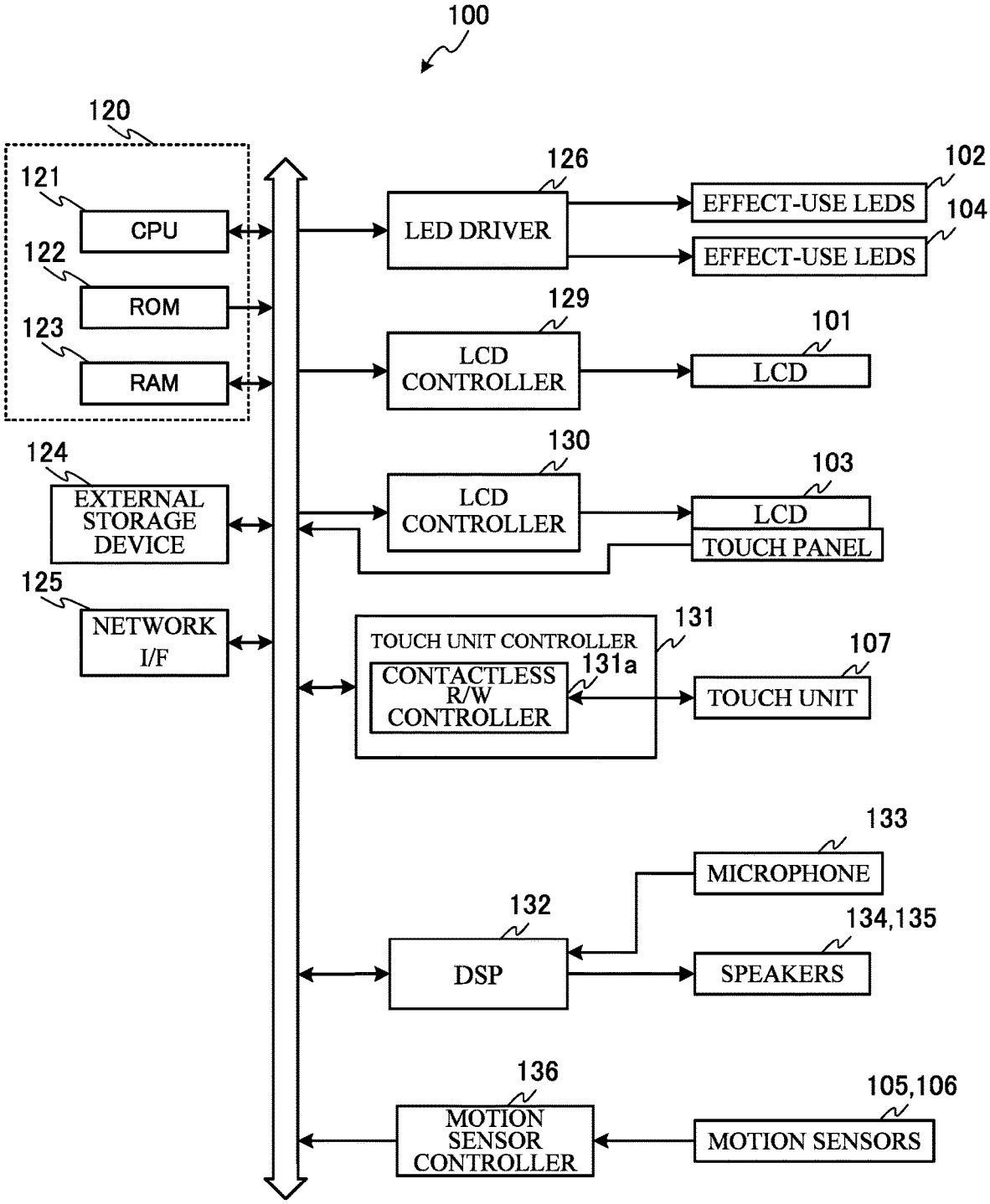

100
120
121
CPU
122
ROM
123
RAM
124
EXTERNAL STORAGE DEVICE
125
NETWORK I/F
126
LED DRIVER
102
EFFECT-USE LEDS
104
EFFECT-USE LEDS
129
LCD CONTROLLER
101
LCD
130
LCD CONTROLLER
103
LCD
TOUCH PANEL
131
TOUCH UNIT CONTROLLER
131a
CONTACTLESS R/W CONTROLLER
107
TOUCH UNIT
133
MICROPHONE
132
DSP
134,135
SPEAKERS
136
MOTION SENSOR CONTROLLER
105,106
MOTION SENSORS

FIG. 7

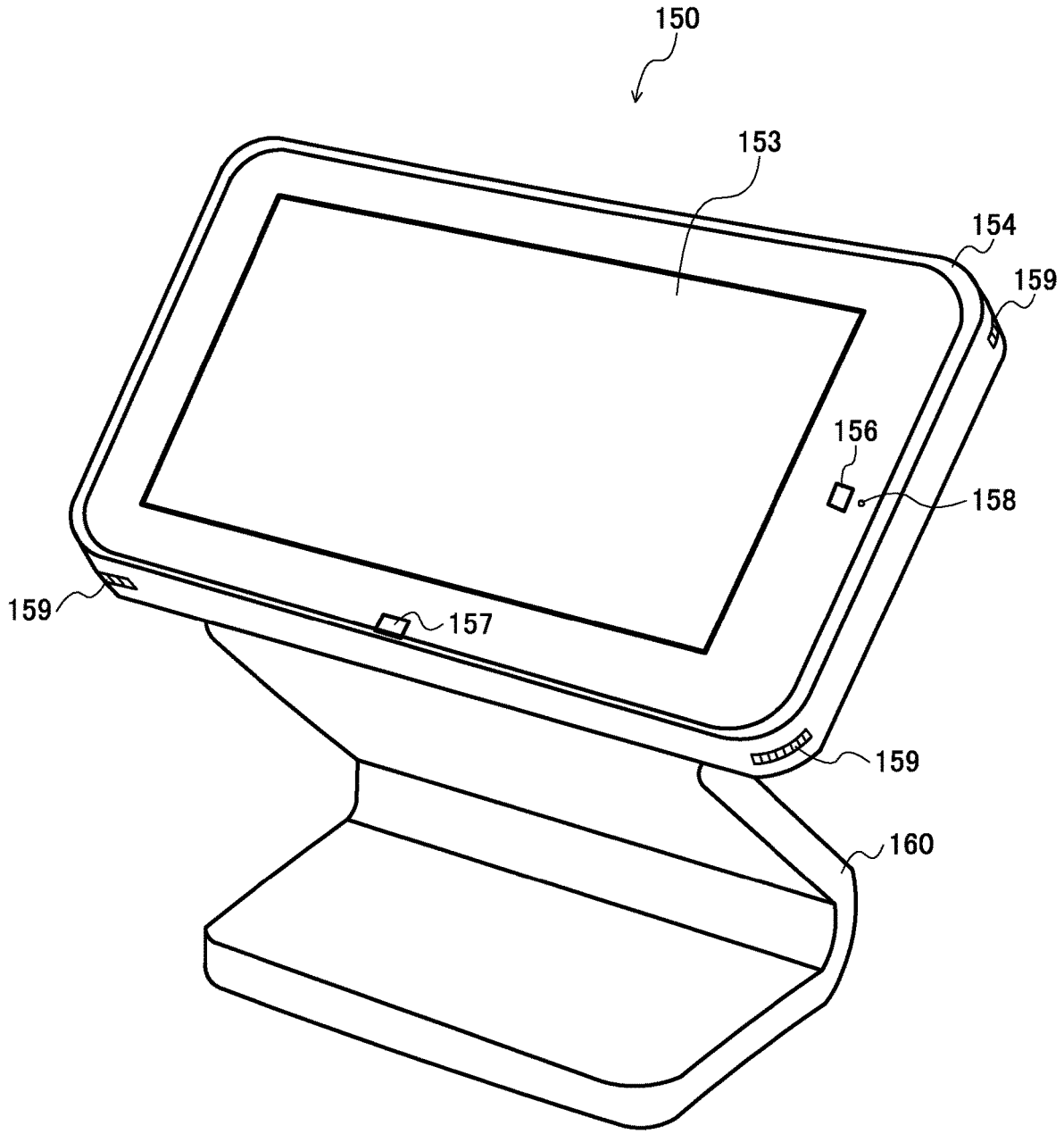


FIG. 8

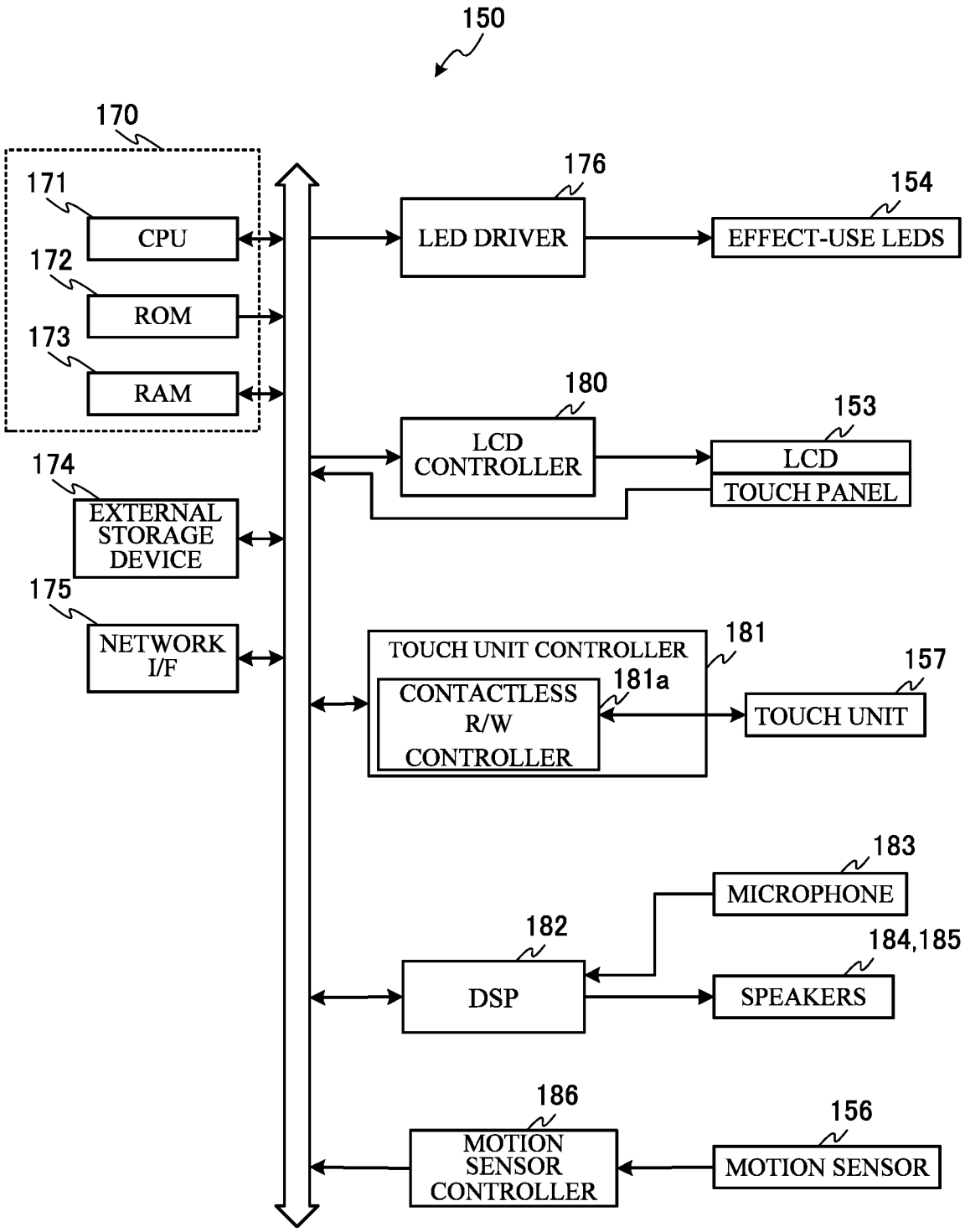

150
170
171
CPU
172
ROM
173
RAM
174
EXTERNAL STORAGE DEVICE
175
NETWORK I/F
176
LED DRIVER
154
EFFECT-USE LEDS
180
LCD CONTROLLER
153
LCD
TOUCH PANEL
TOUCH UNIT CONTROLLER
181
181a
CONTACTLESS R/W CONTROLLER
157
TOUCH UNIT
183
MICROPHONE
182
DSP
184,185
SPEAKERS
186
MOTION SENSOR CONTROLLER
156
MOTION SENSOR

FIG. 9

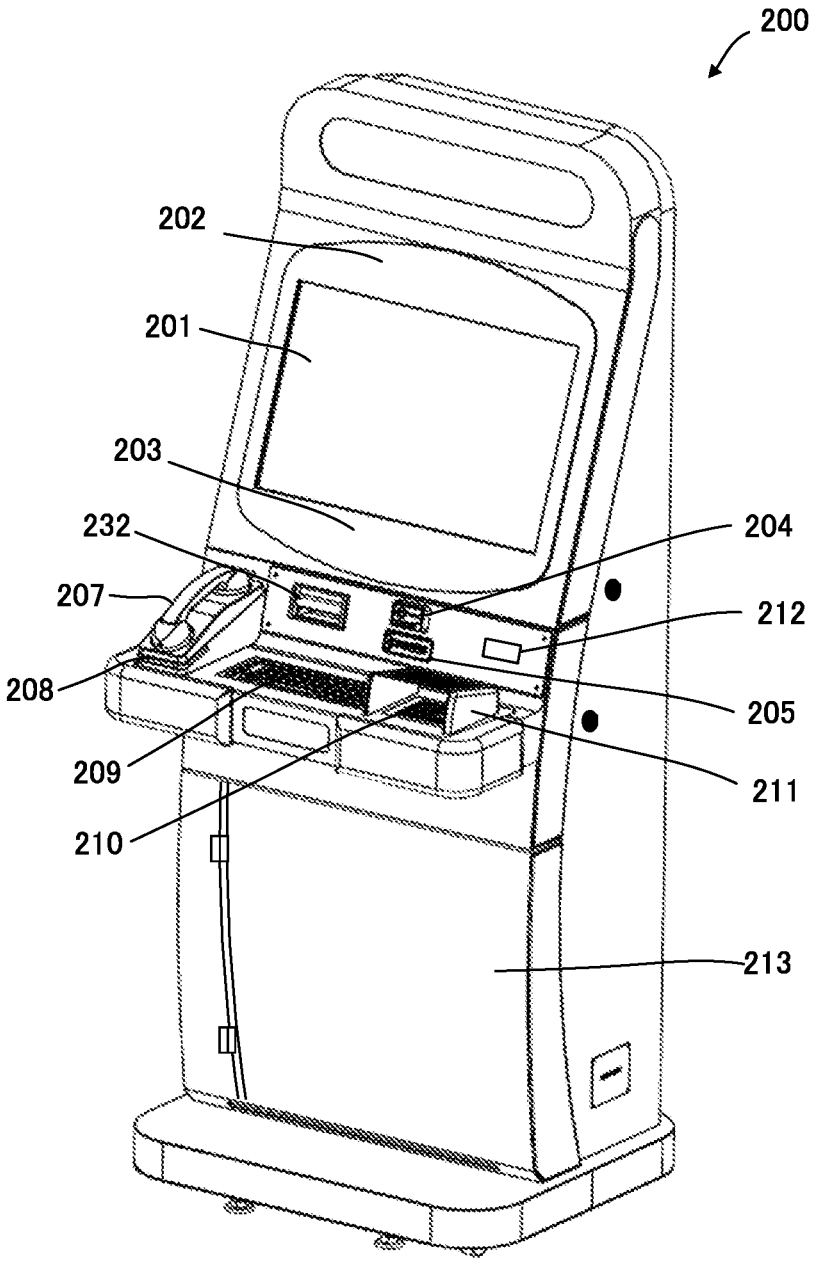


FIG. 10

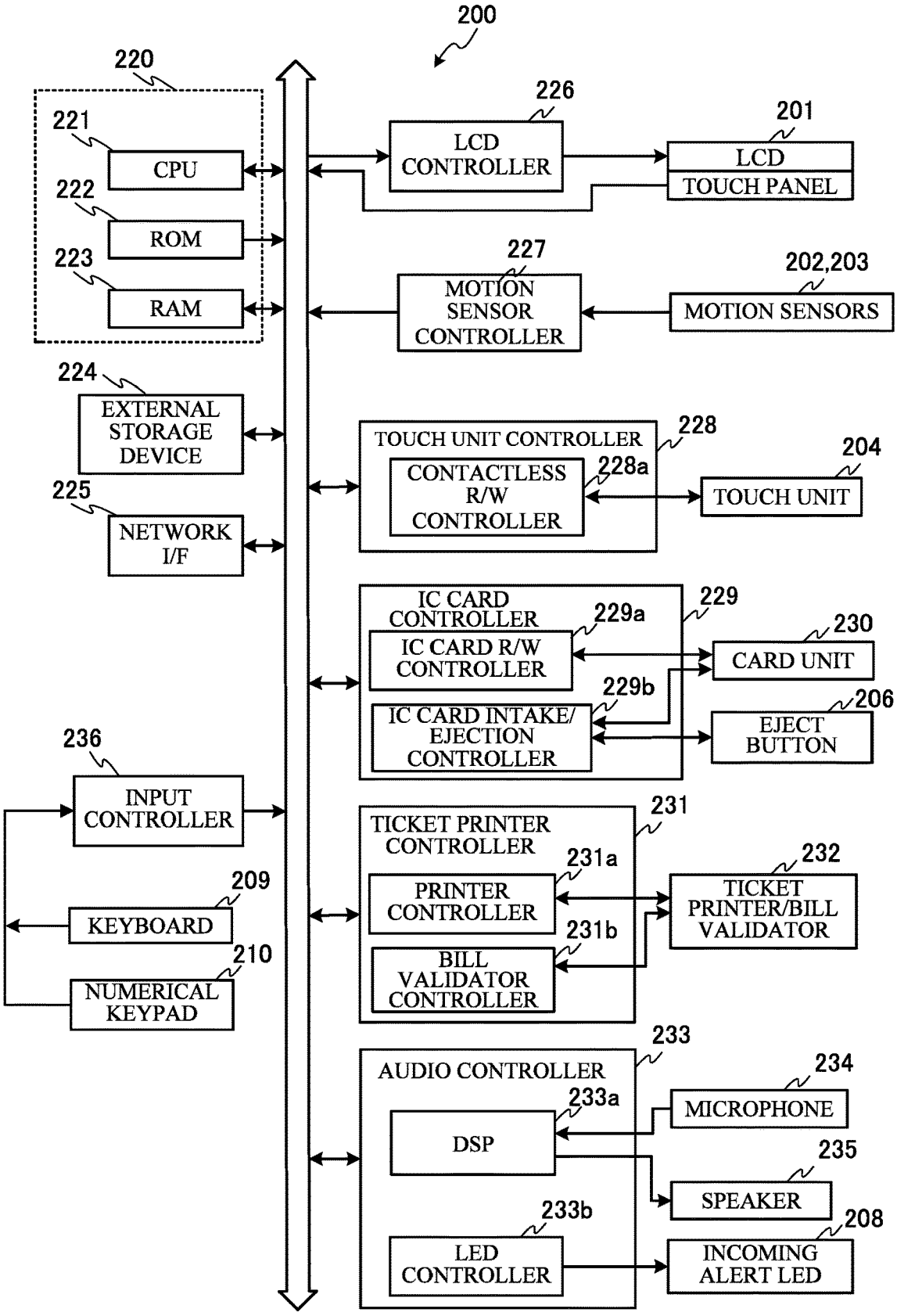

200
220
221
CPU
222
ROM
223
RAM
224
EXTERNAL STORAGE DEVICE
225
NETWORK I/F
226
LCD CONTROLLER
201
LCD
TOUCH PANEL
227
MOTION SENSOR CONTROLLER
202,203
MOTION SENSORS
228
TOUCH UNIT CONTROLLER
228a
CONTACTLESS R/W CONTROLLER
204
TOUCH UNIT
229
IC CARD CONTROLLER
229a
IC CARD R/W CONTROLLER
230
CARD UNIT
229b
IC CARD INTAKE/ EJECTION CONTROLLER
206
EJECT BUTTON
236
INPUT CONTROLLER
231
TICKET PRINTER CONTROLLER
231a
PRINTER CONTROLLER
232
TICKET PRINTER/BILL VALIDATOR
231b
BILL VALIDATOR CONTROLLER
209
KEYBOARD
210
NUMERICAL KEYPAD
233
AUDIO CONTROLLER
233a
DSP
234
MICROPHONE
235
SPEAKER
233b
LED CONTROLLER
208
INCOMING ALERT LED

FIG. 11A

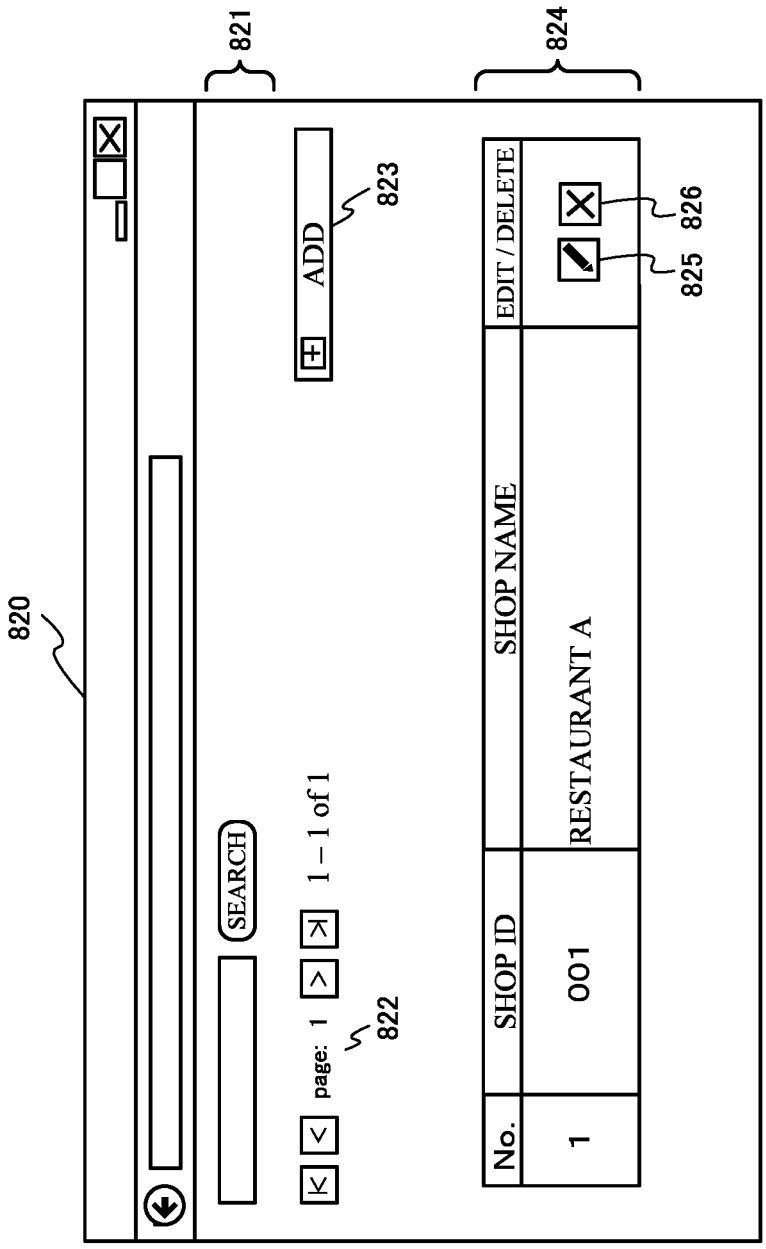

820
821
824
ADD
823
SEARCH
page: 1
1 – 1 of 1
822
No.
SHOP ID
SHOP NAME
EDIT / DELETE
1
001
RESTAURANT A
825
826

FIG. 11B

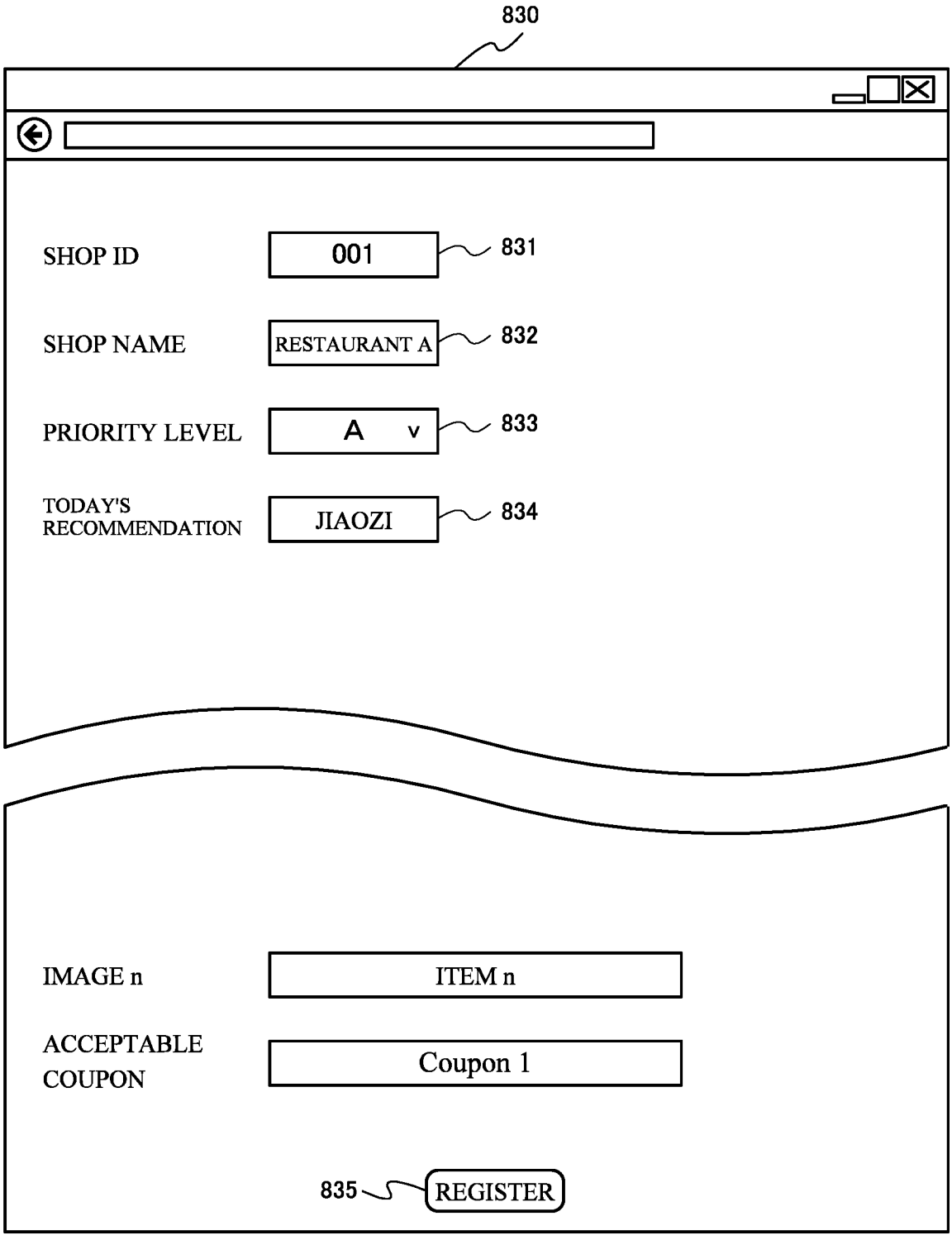

830
SHOP ID
001
831
SHOP NAME
RESTAURANT A
832
PRIORITY LEVEL
A
v
833
TODAY'S RECOMMENDATION
JIAOZI
834
IMAGE n
ITEM n
ACCEPTABLE COUPON
Coupon 1
835
REGISTER

FIG. 12

SHOP ID	SHOP NAME	PRIORITY LEVEL	TODAY'S RECOMMEN-DATION (DISCOUNT ITEM)	LOCATION	MESSAGE FROM SHOP	...	IMAGE 1 BASIC PHOTO	...	FIELD 1 CATEGORY	FIELD 2 NON-FATTY/ FATTY	...	FIELD 10 OPEN HOURS	...	FIELD n PRICE RANGE	ACCEPTABLE COUPON
001	RESTAURANT A	A	JIAOZI	BACKMOST	...	...	picture 1-1	...	CHINESE FOOD	NON-FATTY	...	10:00～0:00	...	500～1,000	coupon 1
002	RESTAURANT B	B	DAN-DAN NOODLES	MIDDLE	...	...	picture 2-1	...	CHINESE FOOD	FATTY	...	9:30～22:30	...	1,000～1,500	coupon 2
003	RESTAURANT C	B	MABO TOFU	FRONT SIDE	...	...	picture 3-1	...	CHINESE FOOD	FATTY	...	7:00～22:00	...	1,000～1,500	coupon 3
004	RESTAURANT D	C	TEMPURA	MIDDLE	...	...	picture 4-1	...	JAPANESE FOOD	NON-FATTY	...	6:30～23:00	...	2,500～3,000	coupon 4
005	RESTAURANT E	C	SOBA NOODLES	FRONT SIDE	...	...	picture 5-1	...	JAPANESE FOOD	NON-FATTY	...	6:30～22:30	...	1,500～2,000	coupon 5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
111	SHOP M	A	T-SHIRT	FRONT SIDE	...	...	picture 111-1	...	CLOTHES	–	...	10:00～20:00	...	2,500～3,000	–
112	SHOP N	B	JEANS	MIDDLE	...	...	picture 112-1	...	CLOTHES	–	...	10:00～21:00	...	5,000～20,000	–
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

FIG. 13A

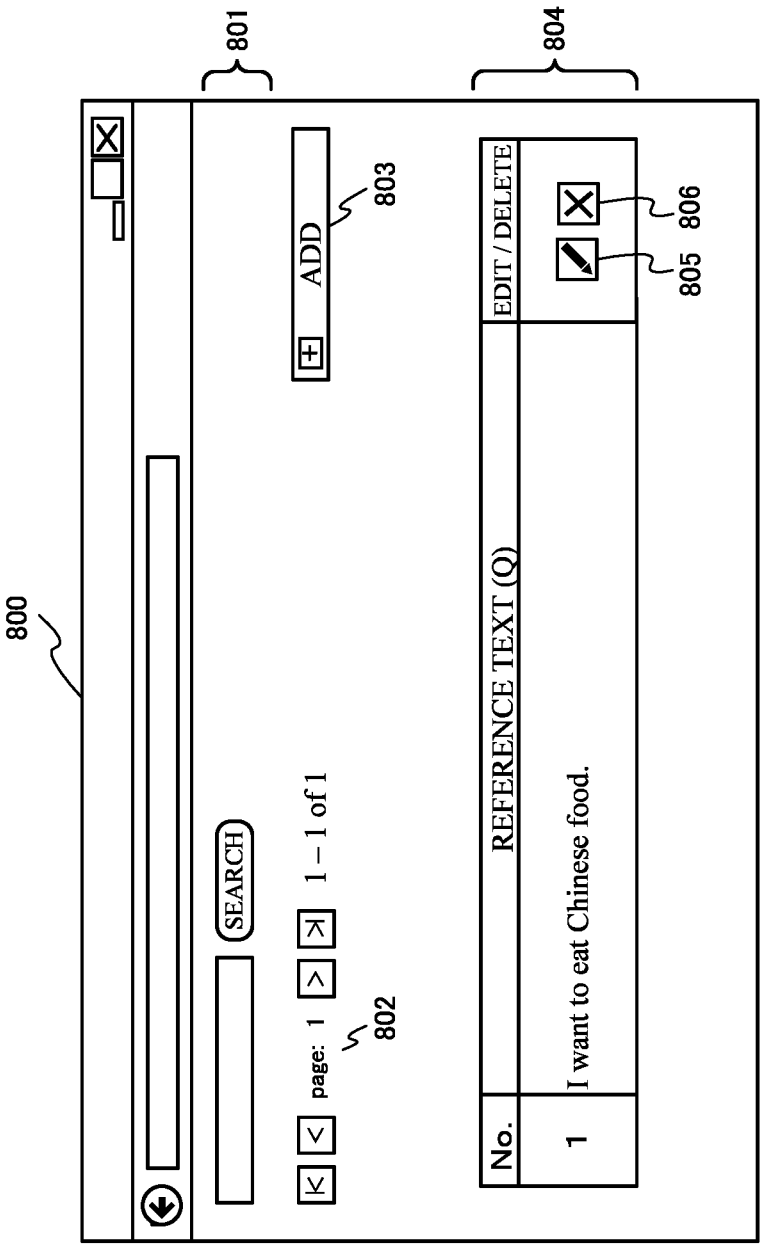

800
801
804
ADD
803
SEARCH
page: 1
1 – 1 of 1
802
EDIT / DELETE
806
805
No.
REFERENCE TEXT (Q)
1
I want to eat Chinese food.

FIG. 13B

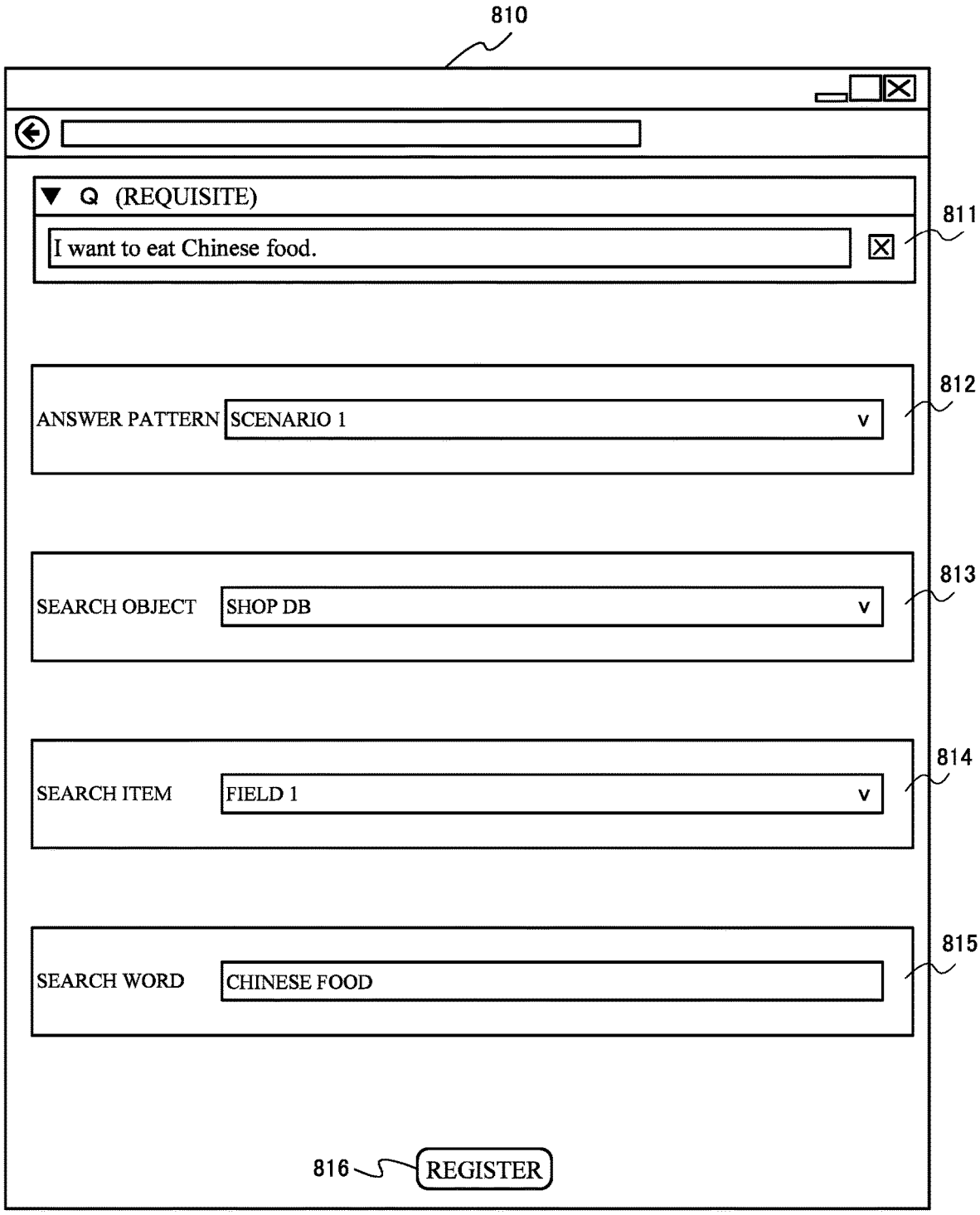

810
Q (REQUISITE)
I want to eat Chinese food.
811
ANSWER PATTERN
SCENARIO 1
812
SEARCH OBJECT
SHOP DB
813
SEARCH ITEM
FIELD 1
814
SEARCH WORD
CHINESE FOOD
815
816
REGISTER

FIG. 14

ID	REFERENCE TEXT (Q)	ANSWER PATTERN	SEARCH OBJECT	SEARCH ITEM	SEARCH WORD
00000001	I want to eat Chinese food.	SCENARIO 1	SHOP DB	FIELD 1	CHINESE FOOD
00000002	Is there any Chinese food restaurant?	SCENARIO 1	SHOP DB	FIELD 1	CHINESE FOOD
00000003	Tell me a good Chinese food restaurant.	SCENARIO 1	SHOP DB	FIELD 1	CHINESE FOOD
⋮	⋮	⋮	⋮	⋮	⋮
00001001	I want to eat Japanese food.	SCENARIO 1	SHOP DB	FIELD 1	JAPANESE FOOD
00001002	I want to eat non-fatty food.	SCENARIO 1	SHOP DB	FIELD 2	NON-FATTY
00001003	I want to eat for about 2,000 yen.	SCENARIO 1	SHOP DB	FIELD n	2000
⋮	⋮	⋮	⋮	⋮	⋮
00100001	I want to buy a dress.	SCENARIO 2	SHOP DB	FIELD 1	DRESS
00100002	I want a dress.	SCENARIO 2	SHOP DB	FIELD 1	DRESS
⋮	⋮	⋮	⋮	⋮	⋮
01000001	What are the open hours?	SPECIFIC ANSWER1	SHOP DB	FIELD 10	-
01000002	How late is the restaurant open?	SPECIFIC ANSWER2	SHOP DB	FIELD 10	-
⋮	⋮	⋮	⋮	⋮	⋮
10000001	What is the recommendation of this restaurant?	SPECIFIC ANSWER10	SHOP DB	FIELD 15	-
10000002	Can I print out the coupon?	SPECIFIC ANSWER11	COMPLEX	PRINT	COUPON
10000003	Tell me the availability.	SPECIFIC ANSWER12	SHOP SERVER	-	-
⋮	⋮	⋮	⋮	⋮	⋮
11100001	Can I stay tonight?	SPECIFIC ANSWER101	HOTEL SERVER	-	-
⋮	⋮	⋮	⋮	⋮	⋮

FIG. 15

TEMPLATE ID	ANSWER PATTERN	CONDITIONS OF SELECTION	ANSWER TEMPLATE 1	ANSWER TEMPLATE 2	ANSWER TEMPLATE 3	...
0001	SPECIFIC ANSWER 1	—	The open hours are <Field 10>.	The restaurant opens <Field 10>, today.	According to our database, the open hours are <Field 10>.	...
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0023	SPECIFIC ANSWER 10	—	The best recommendation is <Field 15>.	The recommendation of this restaurant is <Field 15>.	We recommend <Field 15>.	...
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0058	SPECIFIC ANSWER 21	—	<Shop name> is located at <Location >. <MAP>	...	...	...
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0120	SPECIFIC ANSWER 101	—	Sorry, this terminal cannot print out <Search word>.	...	...	...
⋮	⋮	⋮	⋮	⋮	⋮	⋮
0501	SCENARIO 1	n>3	TemplateS1-1-1	TemplateS1-1-2	TemplateS1-1-3	...
0502	SCENARIO 1	n<3	TemplateS1-2-1	TemplateS1-2-2	TemplateS1-2-3	...
0503	SCENARIO 1	MORE DETAILS ICON	TemplateS1-3-1	...	...	...
⋮	⋮	⋮	⋮	⋮	⋮	⋮

FIG. 16A

(SCENARIO 1) IN CASE OF THREE OR MORE SHOPS

According to our database, there are <Number of hits> restaurants in total.
Here are popular restaurants in recent days. How do you like these restaurants?

<First shop >	<Second shop>	<Third shop>
<First Image_1>	<Second Image_1>	<Third Image_1>
<Icon 1-1: RESERVE>	<Icon 1-2: RESERVE>	<Icon 1-3: RESERVE>
<Icon 2-1: MORE DETAILS>	<Icon 2-2: MORE DETAILS>	<Icon 2-3: MORE DETAILS>

<Icon 3: MORE SHOPS >

FIG. 16B

(SCENARIO 1) IN CASE OF NOT MORE THAN THREE SHOPS

According to our database, there are <Number of hits> restaurants in total.
How do you like these restaurants?

<First shop >	<Second shop>	<Third shop>
<First Image_1>	<Second Image_1>	<Third Image_1>
<Icon 1-1: RESERVE>	<Icon 1-2: RESERVE>	<Icon 1-3: RESERVE>
<Icon 2-1: MORE DETAILS>	<Icon 2-2: MORE DETAILS>	<Icon 2-3: MORE DETAILS>

FIG. 16C

(SCENARIO 1) IN CASE WHERE MORE DETAILS ICON IS PRESSED

Here are more details of <Shop name>

<Image_1>

<MESSAGE FROM SHOP>	
OPEN HOURS	<Field 10>
TEL	<Field 11>
URL	<Field 12>

FIG. 16D

(SCENARIO 1) IN CASE WHERE RESERVE ICON OF UNRECOMMENDED SHOP IS PRESSED (RE-RECOMMENDATION)

Reservation of <Shop Name>? <Shop Name> is popular for <Today's recommendation>.
We have checked the availability, but <Shop name> is full.
Would you like to reserve <Shop name>?

<Icon 1-1: RESERVE>

How about <Recommended shop>? <Recommended shop> is available right now.

<Icon 1-2: RESERVE>

Do you have any questions?

FIG. 16E

(SCENARIO 1) IN CASE WHERE RESERVE ICON IS PRESSED (MAKING RESERVATION)

Enter the visit time and the number of visitors.

Visit time: <Acquisition from shop server> Number of visitors: <List>

If OK, press <submit: HERE>.

FIG. 16F

(SCENARIO 1) IN CASE WHERE HERE ICON IS PRESSED (RESERVATION COMPLETED)

Reservation of <Shop name> has been completed. <Shop name> is at <Location> in the restaurant area.

< MAP >

<print: PRINT>

FIG. 17

AVAILABLE SEATS	SHOP
0	004, 005, ···
1 ~ 5	002, 006, 008, ···
6 ~	001, 003, 007, 010, ···

FIG. 18A

USER ID	INPUT SENTENCE	HIT REFERENCE TEXT ID
001	I want to eat Chinese food.	00000001
002	Is there any Chinese food restaurant?	00000002
003	Tell me about Chinese food restaurant.	00000003

FIG. 18B

USER ID	RESERVED DATE	RESERVED TIME	RESERVED SHOP
001	2015/4/1	10:00 ~	005
002	2015/4/1	21:00 ~	001
003	2015/4/2	12:00 ~	002
⋮	⋮	⋮	⋮

FIG. 18C

SHOP ID	DATE OF RECOMMENDATION	TIME OF RECOMMENDATION
001	2015/4/1	9:15
002	2015/4/1	11:20
003	2015/4/1	12:30

FIG. 19

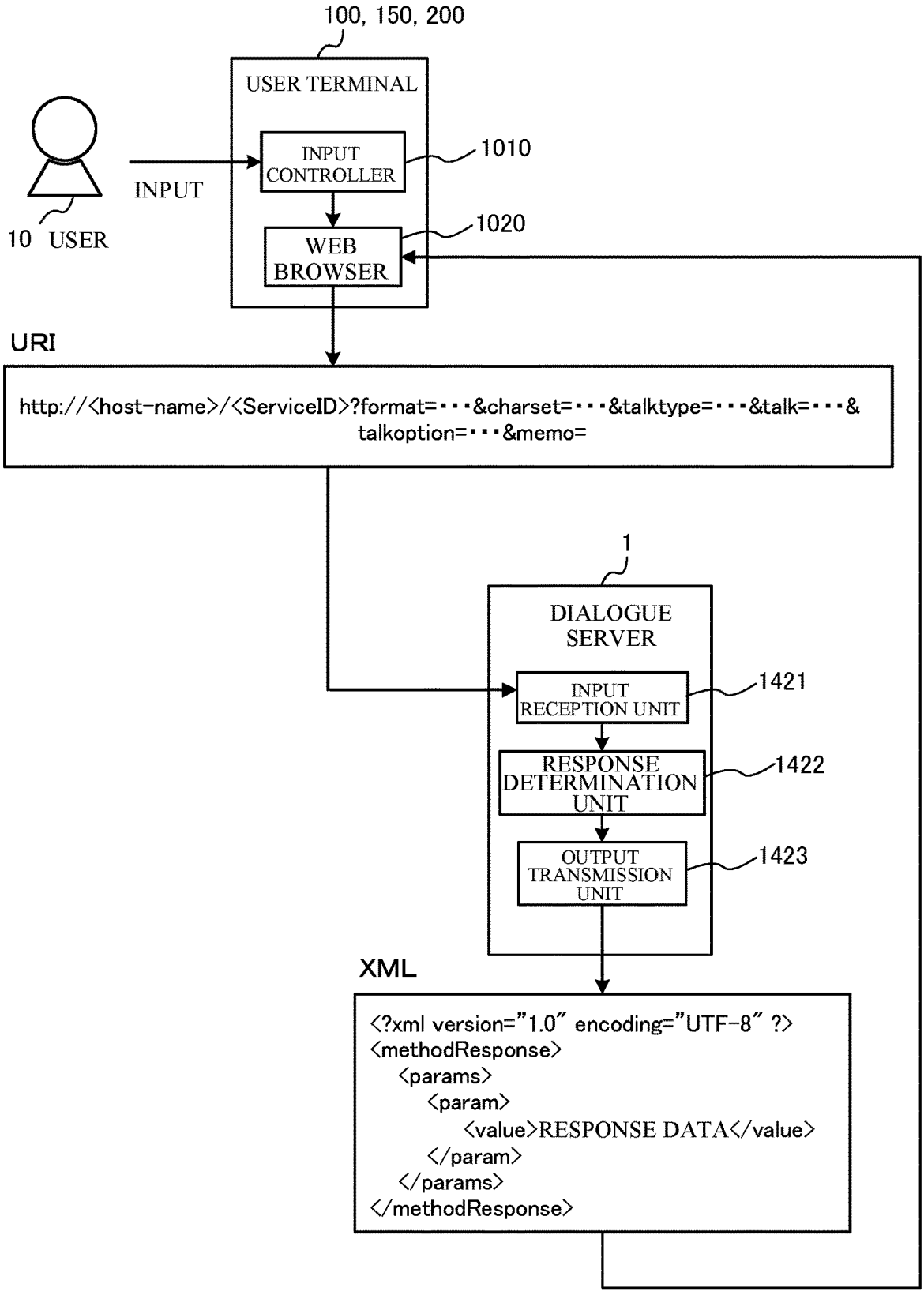

100, 150, 200
USER TERMINAL
INPUT CONTROLLER
1010
INPUT
10 USER
WEB BROWSER
1020
URI
http://<host-name>/<ServiceID>?format=・・・&charset=・・・&talktype=・・・&talk=・・・&talkoption=・・・&memo=
1
DIALOGUE SERVER
INPUT RECEPTION UNIT
1421
RESPONSE DETERMINATION UNIT
1422
OUTPUT TRANSMISSION UNIT
1423
XML
<?xml version="1.0" encoding="UTF-8" ?>
<methodResponse>
<params>
<param>
<value>RESPONSE DATA</value>
</param>
</params>
</methodResponse>

FIG. 20

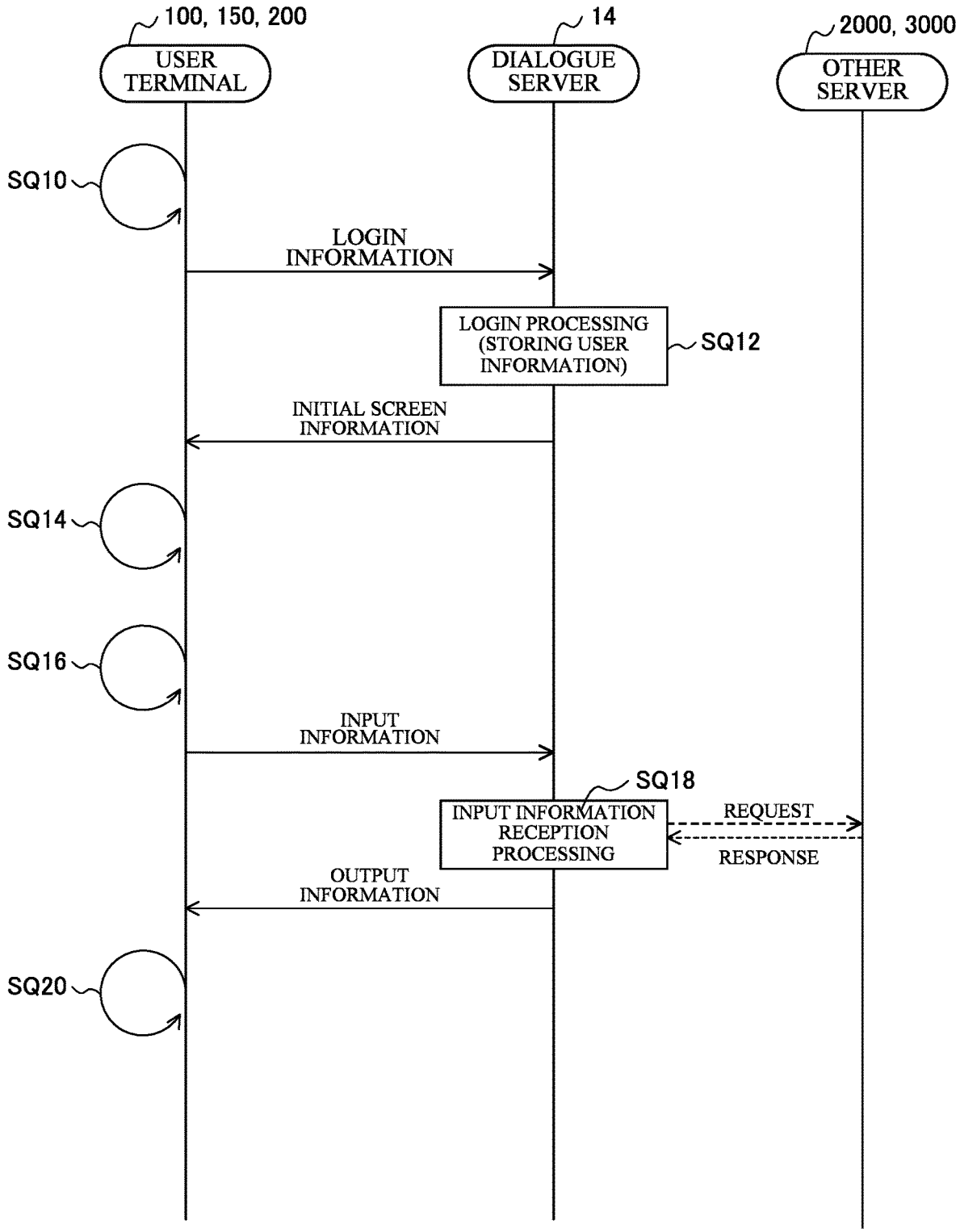

100, 150, 200
USER TERMINAL
14
DIALOGUE SERVER
2000, 3000
OTHER SERVER
SQ10
LOGIN INFORMATION
LOGIN PROCESSING (STORING USER INFORMATION)
SQ12
INITIAL SCREEN INFORMATION
SQ14
SQ16
INPUT INFORMATION
SQ18
INPUT INFORMATION RECEPTION PROCESSING
REQUEST
RESPONSE
OUTPUT INFORMATION
SQ20

FIG. 21

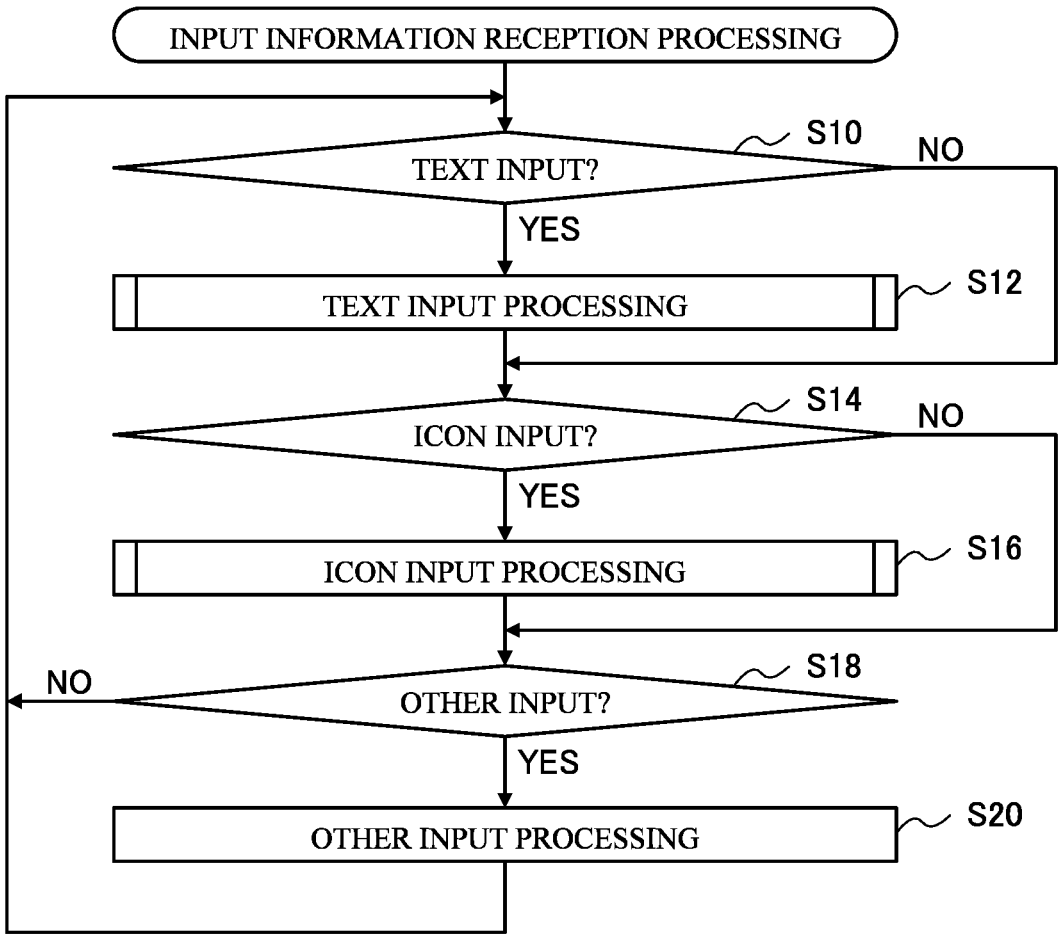

INPUT INFORMATION RECEPTION PROCESSING
S10
TEXT INPUT?
NO
YES
TEXT INPUT PROCESSING
S12
S14
ICON INPUT?
NO
YES
ICON INPUT PROCESSING
S16
S18
NO
OTHER INPUT?
YES
OTHER INPUT PROCESSING
S20

FIG. 22

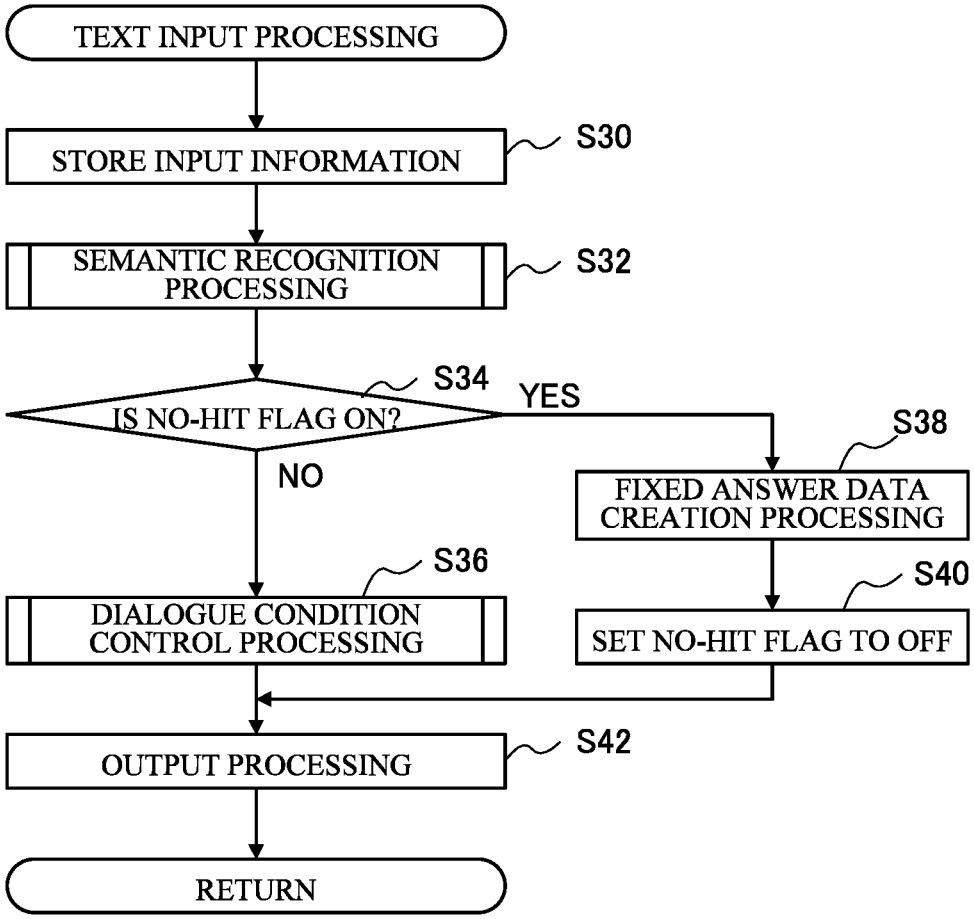

TEXT INPUT PROCESSING
STORE INPUT INFORMATION
S30
SEMANTIC RECOGNITION PROCESSING
S32
S34
IS NO-HIT FLAG ON?
YES
NO
S38
FIXED ANSWER DATA CREATION PROCESSING
S36
DIALOGUE CONDITION CONTROL PROCESSING
S40
SET NO-HIT FLAG TO OFF
OUTPUT PROCESSING
S42
RETURN

FIG. 23

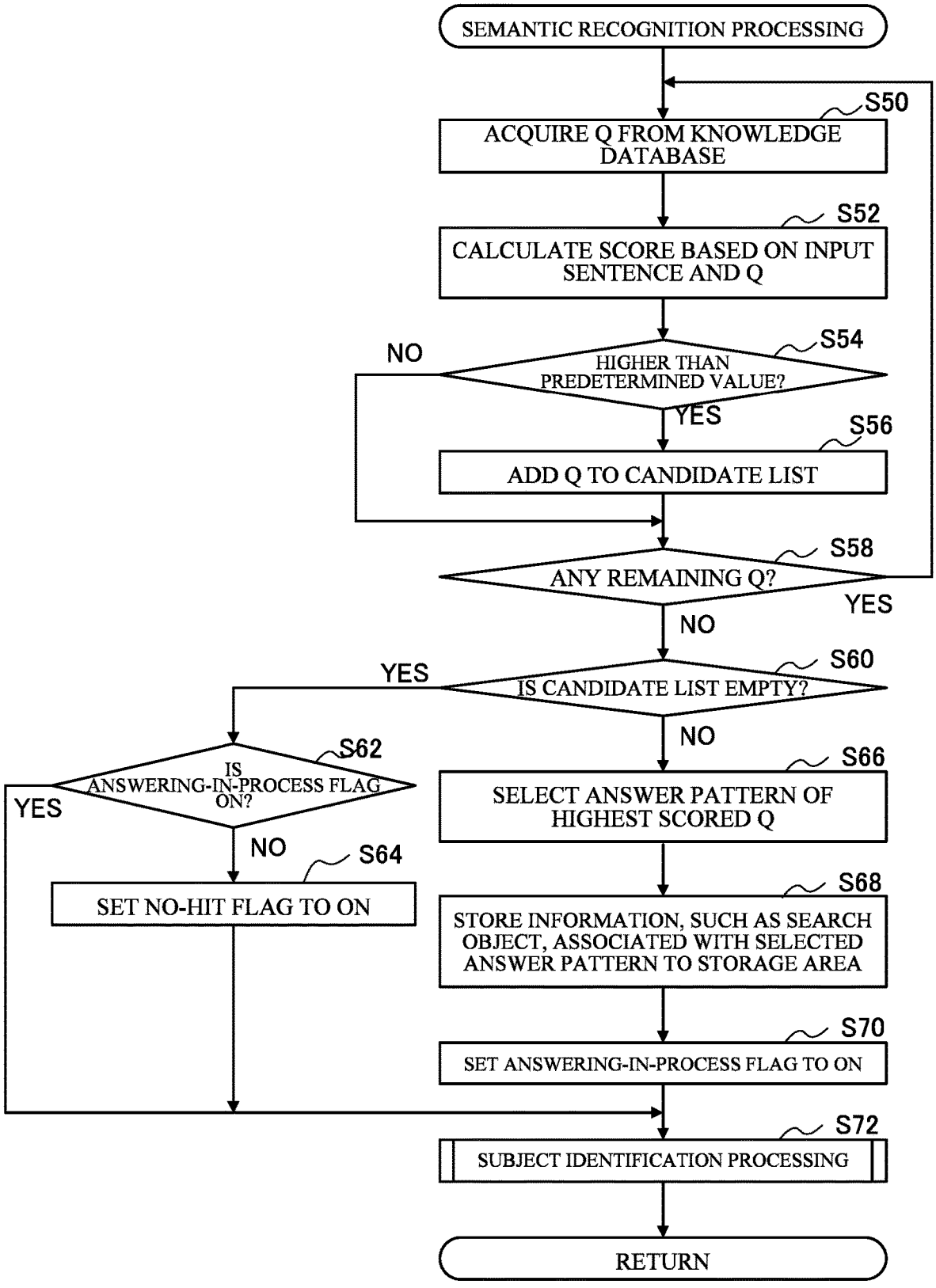

SEMANTIC RECOGNITION PROCESSING
S50
ACQUIRE Q FROM KNOWLEDGE DATABASE
S52
CALCULATE SCORE BASED ON INPUT SENTENCE AND Q
S54
HIGHER THAN PREDETERMINED VALUE?
NO
YES
S56
ADD Q TO CANDIDATE LIST
S58
ANY REMAINING Q?
YES
NO
S60
IS CANDIDATE LIST EMPTY?
YES
NO
S62
IS ANSWERING-IN-PROCESS FLAG ON?
YES
NO
S64
SET NO-HIT FLAG TO ON
S66
SELECT ANSWER PATTERN OF HIGHEST SCORED Q
S68
STORE INFORMATION, SUCH AS SEARCH OBJECT, ASSOCIATED WITH SELECTED ANSWER PATTERN TO STORAGE AREA
S70
SET ANSWERING-IN-PROCESS FLAG TO ON
S72
SUBJECT IDENTIFICATION PROCESSING
RETURN

FIG. 24

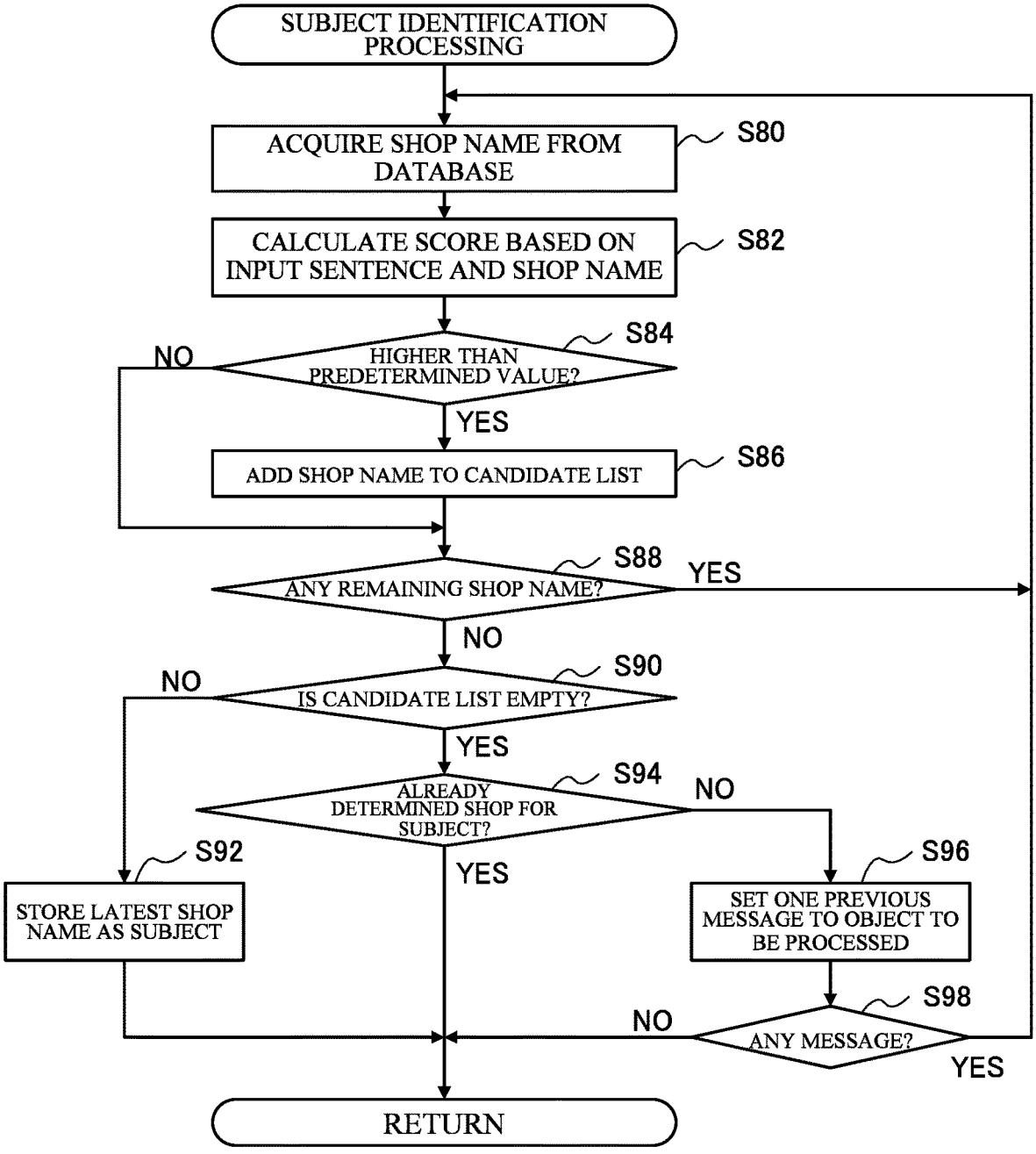

SUBJECT IDENTIFICATION PROCESSING
ACQUIRE SHOP NAME FROM DATABASE
S80
CALCULATE SCORE BASED ON INPUT SENTENCE AND SHOP NAME
S82
HIGHER THAN PREDETERMINED VALUE?
S84
NO
YES
ADD SHOP NAME TO CANDIDATE LIST
S86
ANY REMAINING SHOP NAME?
S88
YES
NO
IS CANDIDATE LIST EMPTY?
S90
NO
YES
ALREADY DETERMINED SHOP FOR SUBJECT?
S94
NO
YES
STORE LATEST SHOP NAME AS SUBJECT
S92
SET ONE PREVIOUS MESSAGE TO OBJECT TO BE PROCESSED
S96
ANY MESSAGE?
S98
NO
YES
RETURN

FIG. 25

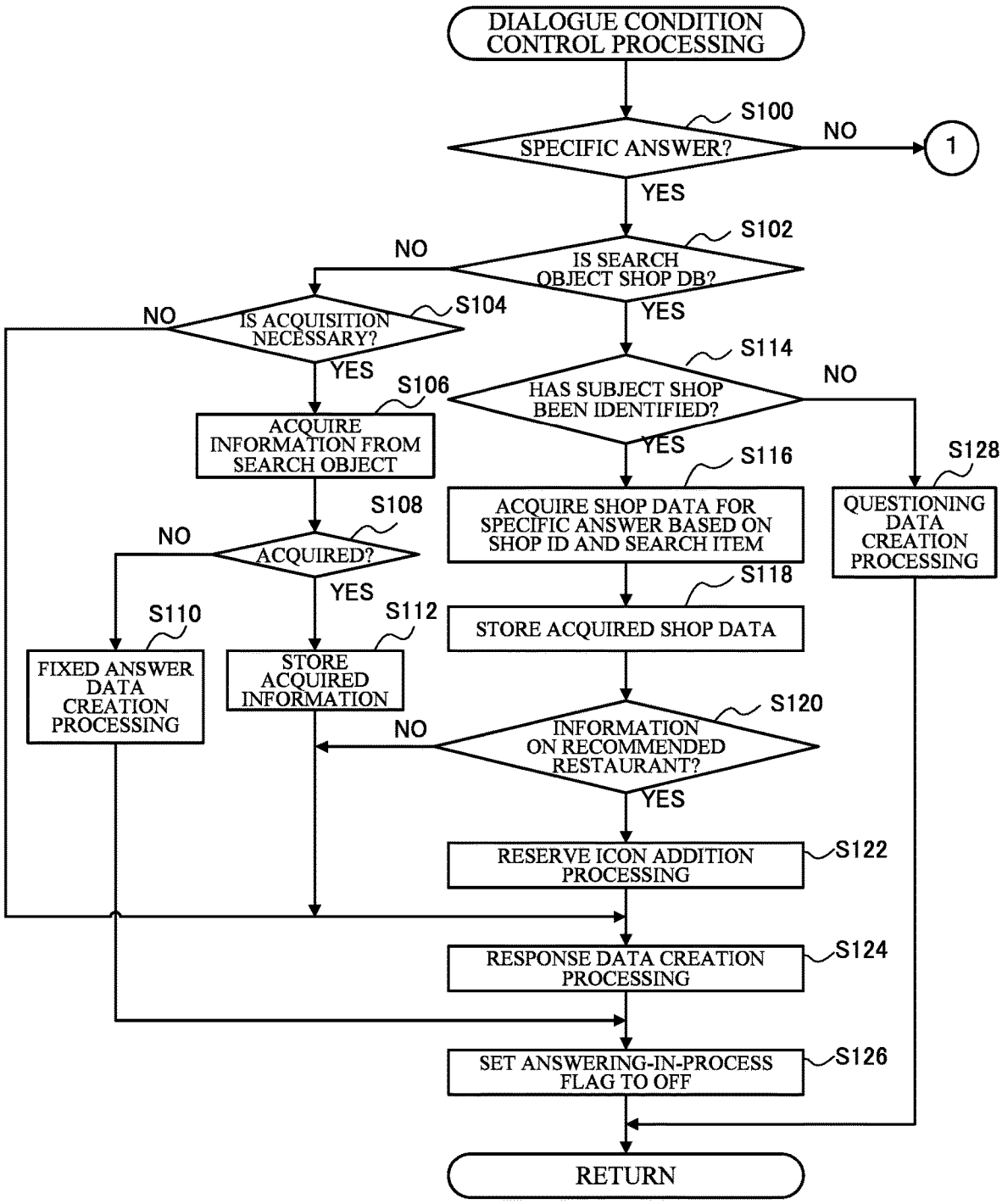

DIALOGUE CONDITION CONTROL PROCESSING
S100
SPECIFIC ANSWER?
NO
1
YES
S102
IS SEARCH OBJECT SHOP DB?
NO
YES
S104
IS ACQUISITION NECESSARY?
NO
YES
S106
ACQUIRE INFORMATION FROM SEARCH OBJECT
S108
ACQUIRED?
NO
YES
S110
FIXED ANSWER DATA CREATION PROCESSING
S112
STORE ACQUIRED INFORMATION
S114
HAS SUBJECT SHOP BEEN IDENTIFIED?
NO
YES
S116
ACQUIRE SHOP DATA FOR SPECIFIC ANSWER BASED ON SHOP ID AND SEARCH ITEM
S118
STORE ACQUIRED SHOP DATA
S120
INFORMATION ON RECOMMENDED RESTAURANT?
NO
YES
S122
RESERVE ICON ADDITION PROCESSING
S124
RESPONSE DATA CREATION PROCESSING
S126
SET ANSWERING-IN-PROCESS FLAG TO OFF
S128
QUESTIONING DATA CREATION PROCESSING
RETURN

FIG. 26

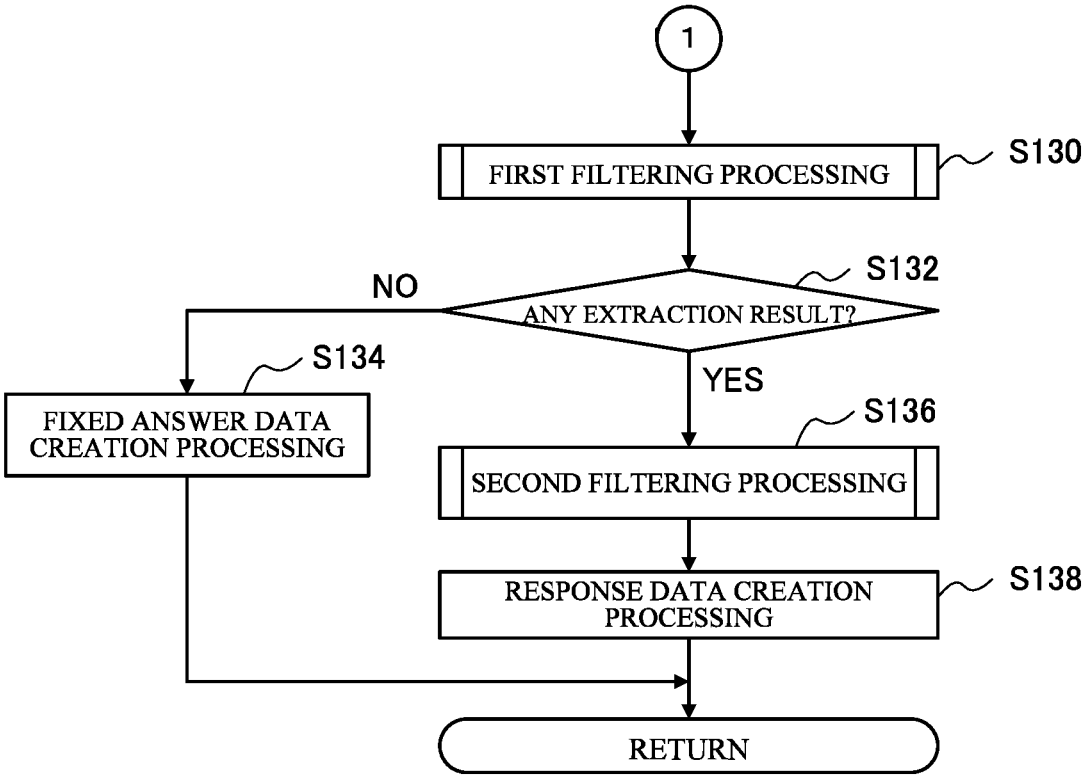

1
FIRST FILTERING PROCESSING
S130
S132
NO
ANY EXTRACTION RESULT?
S134
YES
S136
FIXED ANSWER DATA CREATION PROCESSING
SECOND FILTERING PROCESSING
RESPONSE DATA CREATION PROCESSING
S138
RETURN

FIG. 27

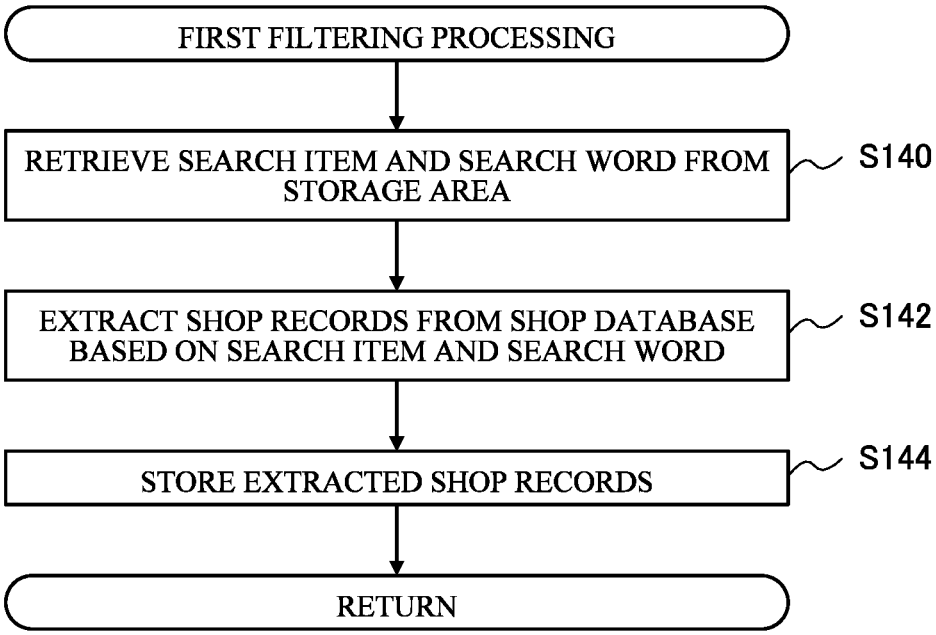

FIRST FILTERING PROCESSING
RETRIEVE SEARCH ITEM AND SEARCH WORD FROM STORAGE AREA
S140
EXTRACT SHOP RECORDS FROM SHOP DATABASE BASED ON SEARCH ITEM AND SEARCH WORD
S142
STORE EXTRACTED SHOP RECORDS
S144
RETURN

FIG. 28

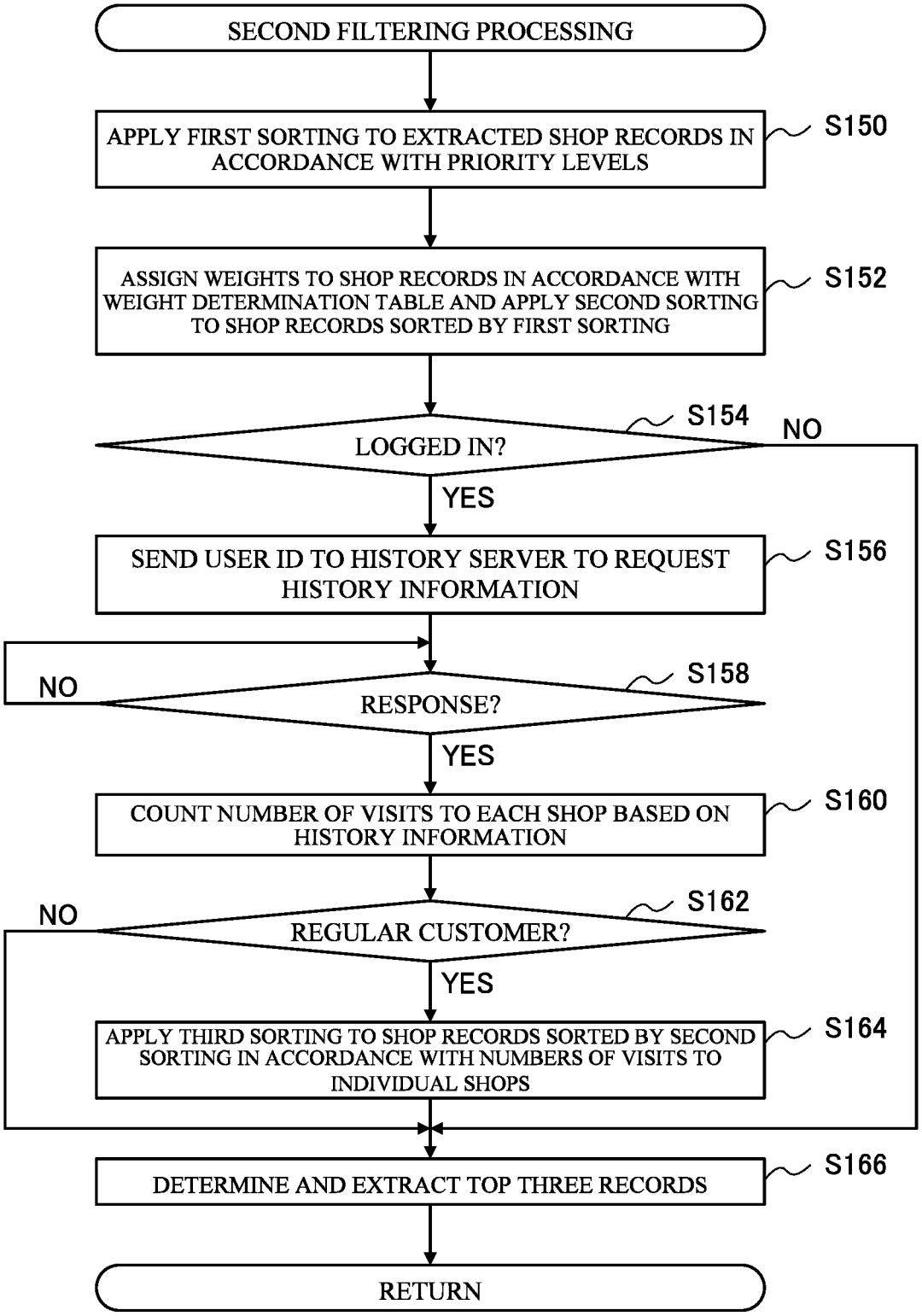

SECOND FILTERING PROCESSING
APPLY FIRST SORTING TO EXTRACTED SHOP RECORDS IN ACCORDANCE WITH PRIORITY LEVELS
S150
ASSIGN WEIGHTS TO SHOP RECORDS IN ACCORDANCE WITH WEIGHT DETERMINATION TABLE AND APPLY SECOND SORTING TO SHOP RECORDS SORTED BY FIRST SORTING
S152
LOGGED IN?
S154
NO
YES
SEND USER ID TO HISTORY SERVER TO REQUEST HISTORY INFORMATION
S156
NO
RESPONSE?
S158
YES
COUNT NUMBER OF VISITS TO EACH SHOP BASED ON HISTORY INFORMATION
S160
NO
REGULAR CUSTOMER?
S162
YES
APPLY THIRD SORTING TO SHOP RECORDS SORTED BY SECOND SORTING IN ACCORDANCE WITH NUMBERS OF VISITS TO INDIVIDUAL SHOPS
S164
DETERMINE AND EXTRACT TOP THREE RECORDS
S166
RETURN

FIG. 29

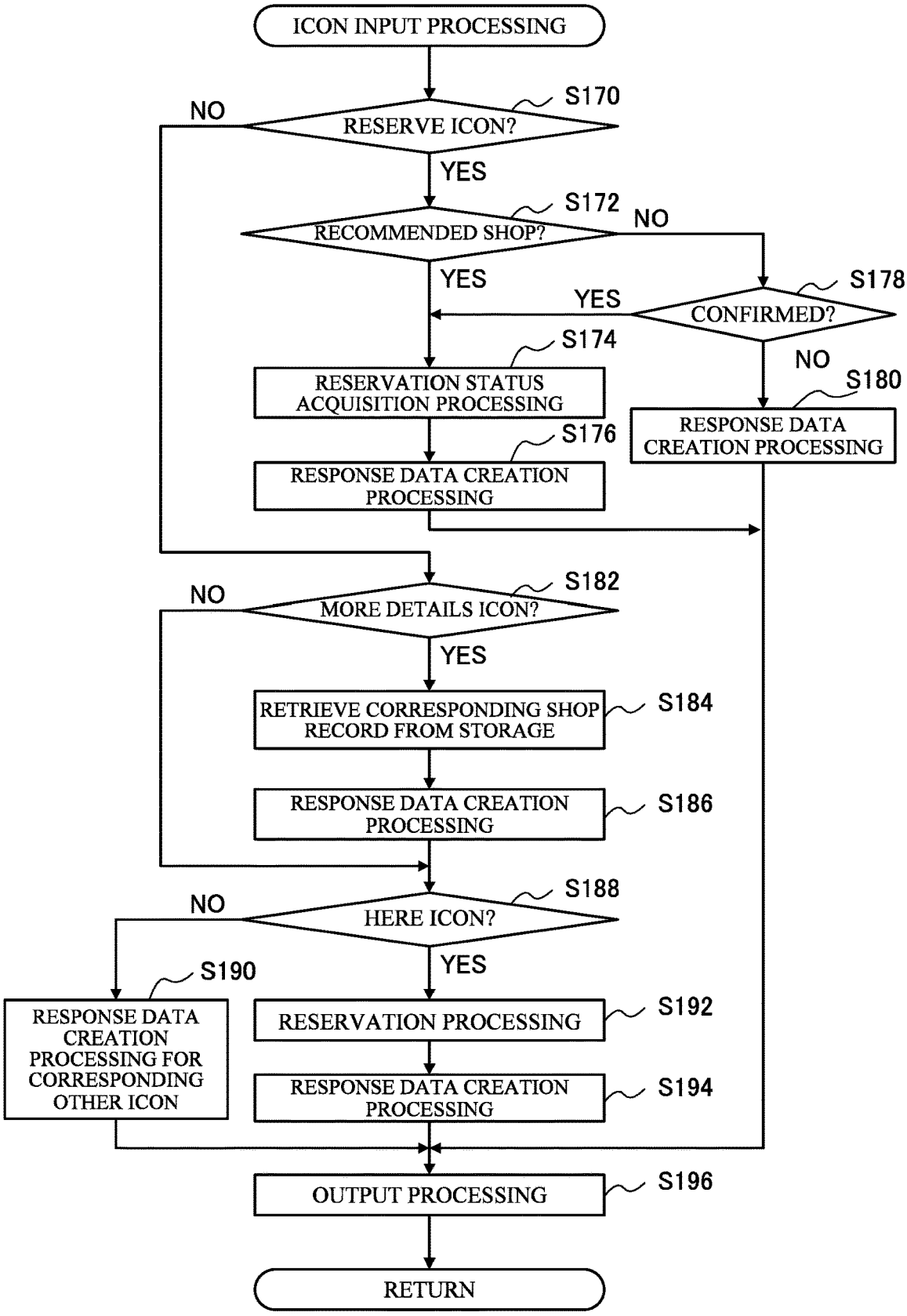

ICON INPUT PROCESSING
S170
RESERVE ICON?
NO
YES
S172
RECOMMENDED SHOP?
NO
YES
S178
CONFIRMED?
YES
NO
S174
RESERVATION STATUS ACQUISITION PROCESSING
S180
RESPONSE DATA CREATION PROCESSING
S176
RESPONSE DATA CREATION PROCESSING
S182
MORE DETAILS ICON?
NO
YES
S184
RETRIEVE CORRESPONDING SHOP RECORD FROM STORAGE
S186
RESPONSE DATA CREATION PROCESSING
S188
HERE ICON?
NO
YES
S190
RESPONSE DATA CREATION PROCESSING FOR CORRESPONDING OTHER ICON
S192
RESERVATION PROCESSING
S194
RESPONSE DATA CREATION PROCESSING
S196
OUTPUT PROCESSING
RETURN

FIG. 30

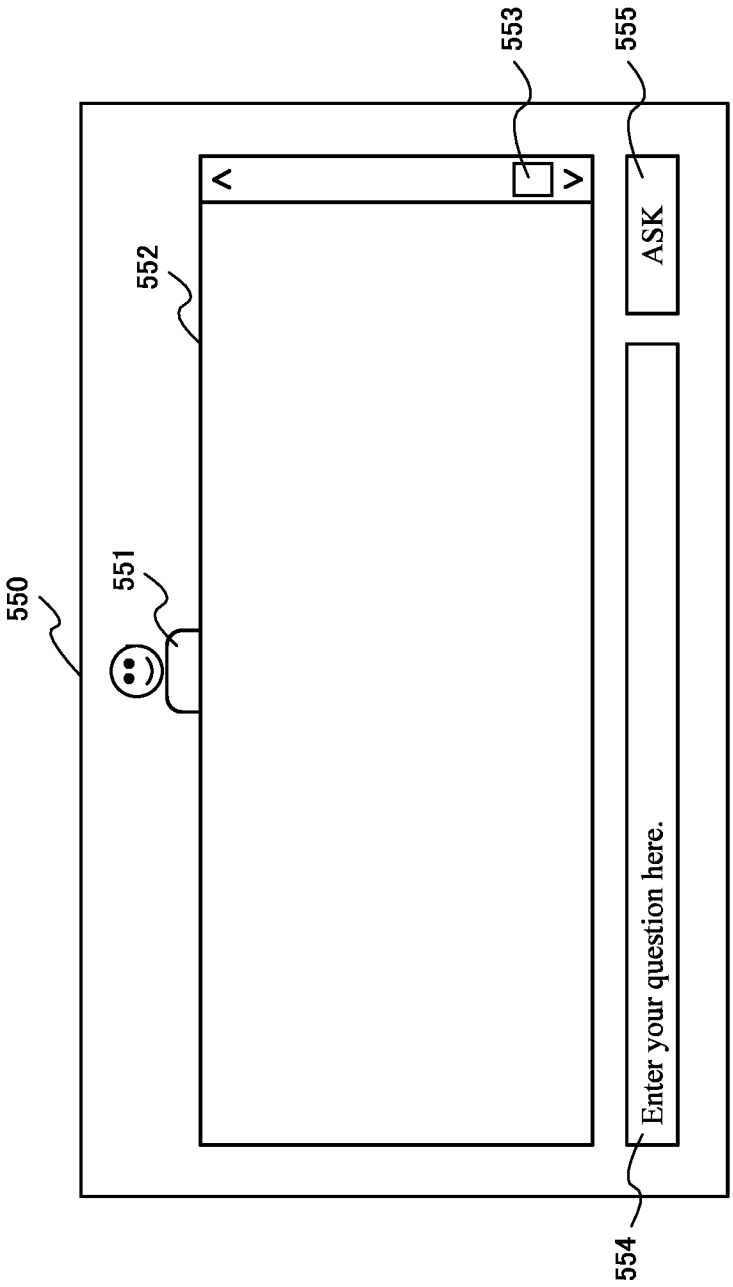


FIG. 31A

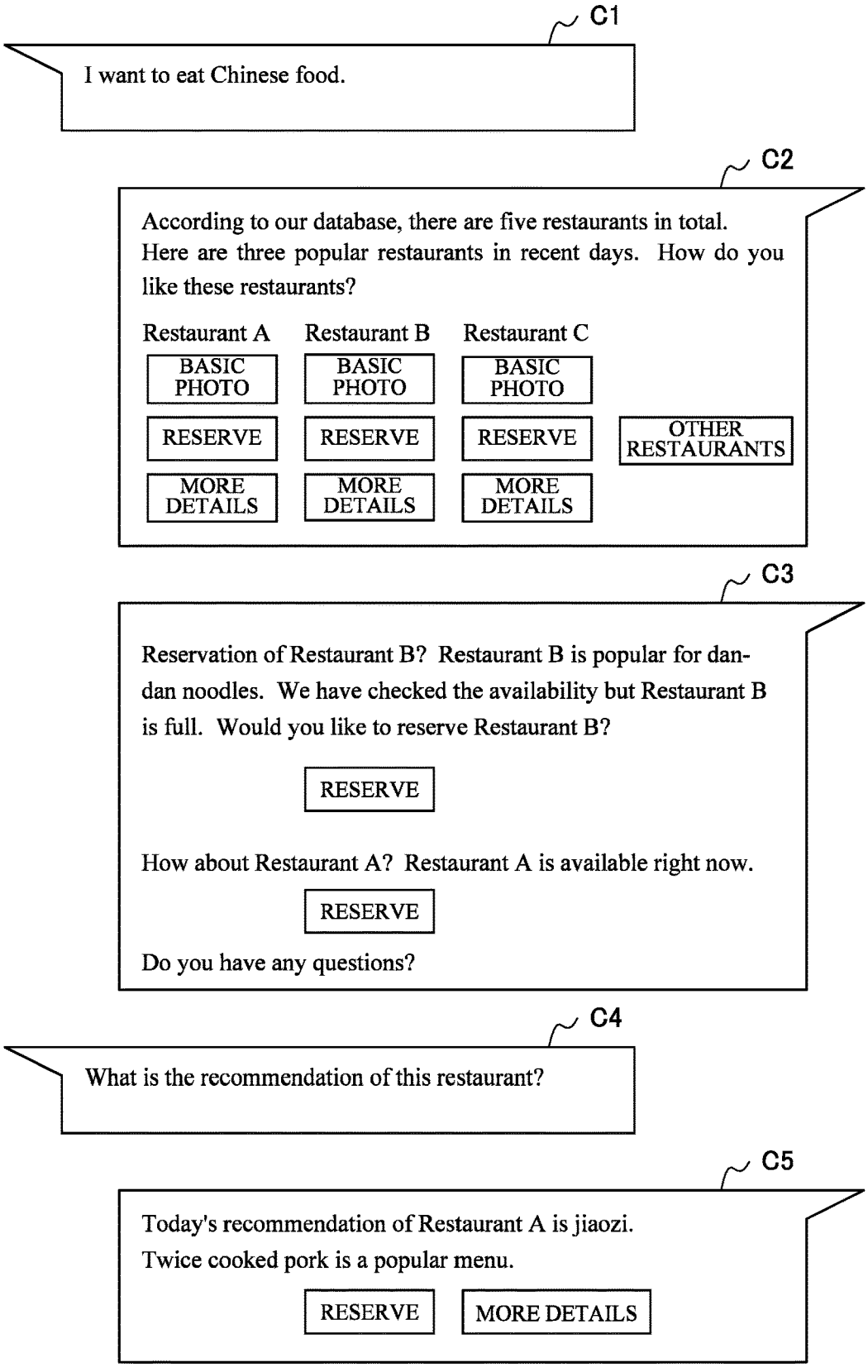

C1
I want to eat Chinese food.
C2
According to our database, there are five restaurants in total.
Here are three popular restaurants in recent days. How do you like these restaurants?
Restaurant A
Restaurant B
Restaurant C
BASIC PHOTO
BASIC PHOTO
BASIC PHOTO
RESERVE
RESERVE
RESERVE
OTHER RESTAURANTS
MORE DETAILS
MORE DETAILS
MORE DETAILS
C3
Reservation of Restaurant B? Restaurant B is popular for dan-dan noodles. We have checked the availability but Restaurant B is full. Would you like to reserve Restaurant B?
RESERVE
How about Restaurant A? Restaurant A is available right now.
RESERVE
Do you have any questions?
C4
What is the recommendation of this restaurant?
C5
Today's recommendation of Restaurant A is jiaozi.
Twice cooked pork is a popular menu.
RESERVE
MORE DETAILS

FIG. 31B

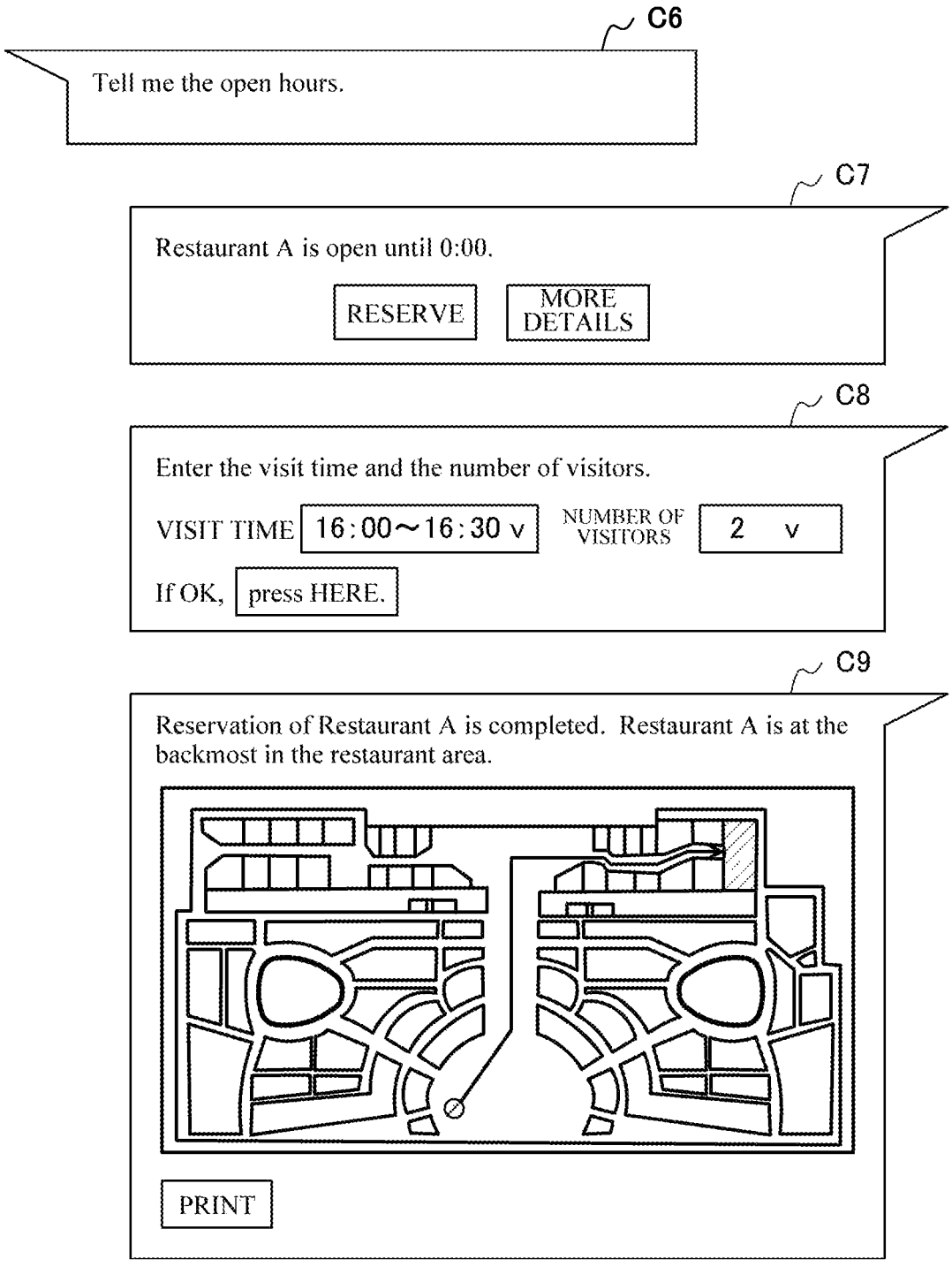

C6
Tell me the open hours.
C7
Restaurant A is open until 0:00.
RESERVE
MORE DETAILS
C8
Enter the visit time and the number of visitors.
VISIT TIME
16:00~16:30 v
NUMBER OF VISITORS
2 v
If OK,
press HERE.
C9
Reservation of Restaurant A is completed. Restaurant A is at the backmost in the restaurant area.
PRINT

FIG. 32

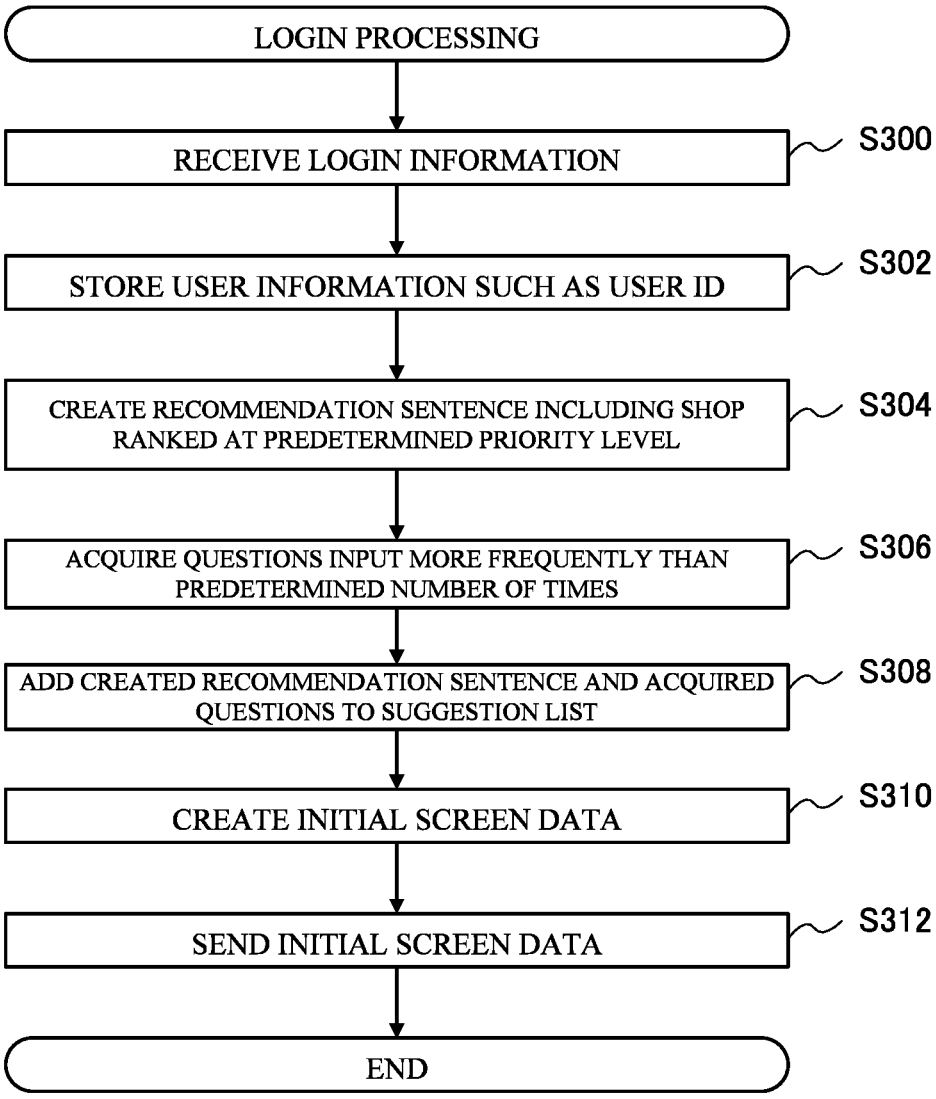

LOGIN PROCESSING
RECEIVE LOGIN INFORMATION
S300
STORE USER INFORMATION SUCH AS USER ID
S302
CREATE RECOMMENDATION SENTENCE INCLUDING SHOP RANKED AT PREDETERMINED PRIORITY LEVEL
S304
ACQUIRE QUESTIONS INPUT MORE FREQUENTLY THAN PREDETERMINED NUMBER OF TIMES
S306
ADD CREATED RECOMMENDATION SENTENCE AND ACQUIRED QUESTIONS TO SUGGESTION LIST
S308
CREATE INITIAL SCREEN DATA
S310
SEND INITIAL SCREEN DATA
S312
END

FIG. 33A

AGE	SHOP TO BE EXCLUDED
0 ~ 19	006

FIG. 33B

SEX	SHOP TO BE EXCLUDED
MALE	011, 012
FEMALE	013, 014

FIG. 33C

FLOOR	SHOP TO BE EXCLUDED
1ST FLOOR	001, 002, 003, ···
2ND FLOOR	011, 012, 013, ···
3RD FLOOR	041, 042, 043, ···
4TH FLOOR	071, 072, 073, ···

FIG. 34A

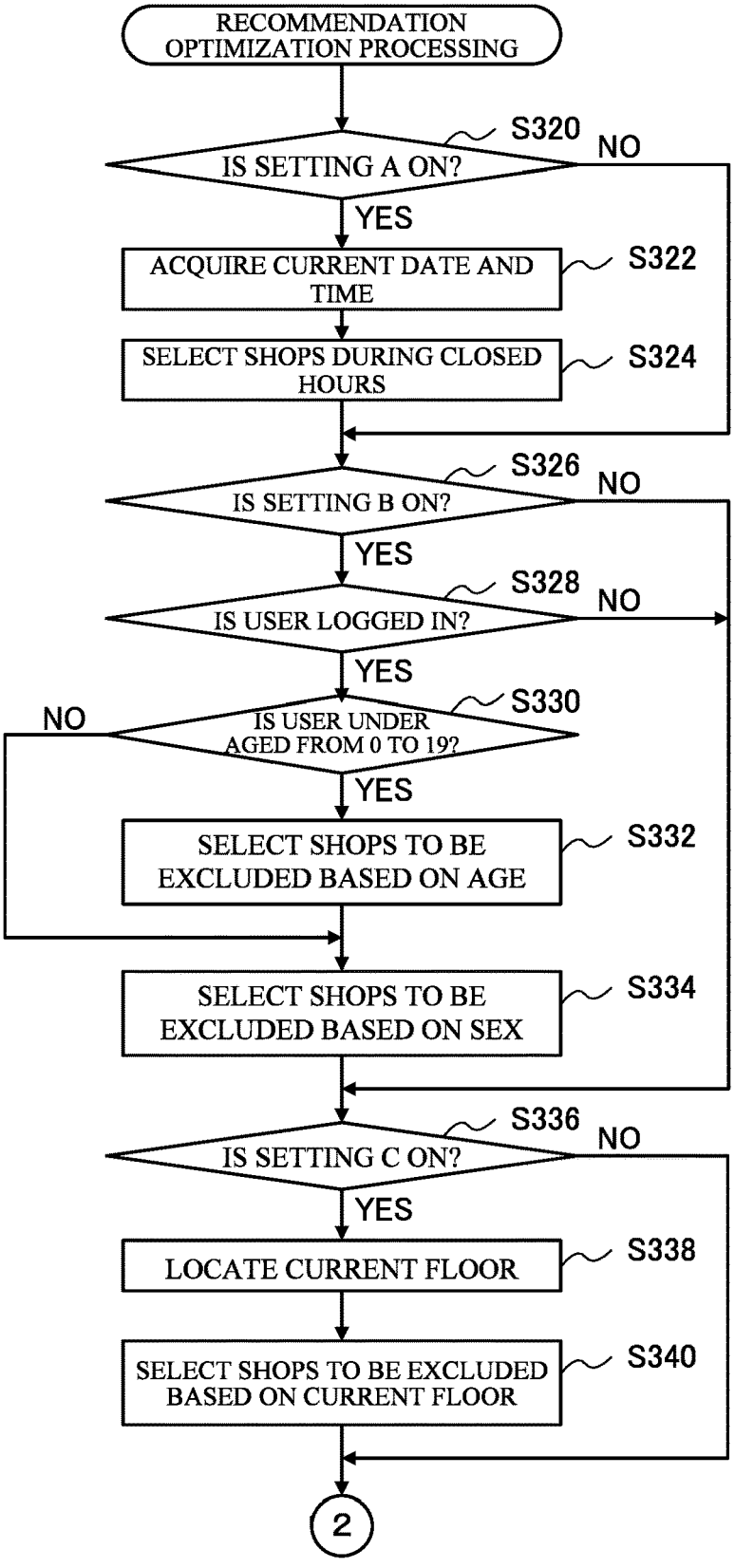

RECOMMENDATION OPTIMIZATION PROCESSING
S320
IS SETTING A ON?
NO
YES
ACQUIRE CURRENT DATE AND TIME
S322
SELECT SHOPS DURING CLOSED HOURS
S324
S326
IS SETTING B ON?
NO
YES
S328
IS USER LOGGED IN?
NO
YES
S330
IS USER UNDER AGED FROM 0 TO 19?
NO
YES
SELECT SHOPS TO BE EXCLUDED BASED ON AGE
S332
SELECT SHOPS TO BE EXCLUDED BASED ON SEX
S334
S336
IS SETTING C ON?
NO
YES
LOCATE CURRENT FLOOR
S338
SELECT SHOPS TO BE EXCLUDED BASED ON CURRENT FLOOR
S340
2

FIG. 34B

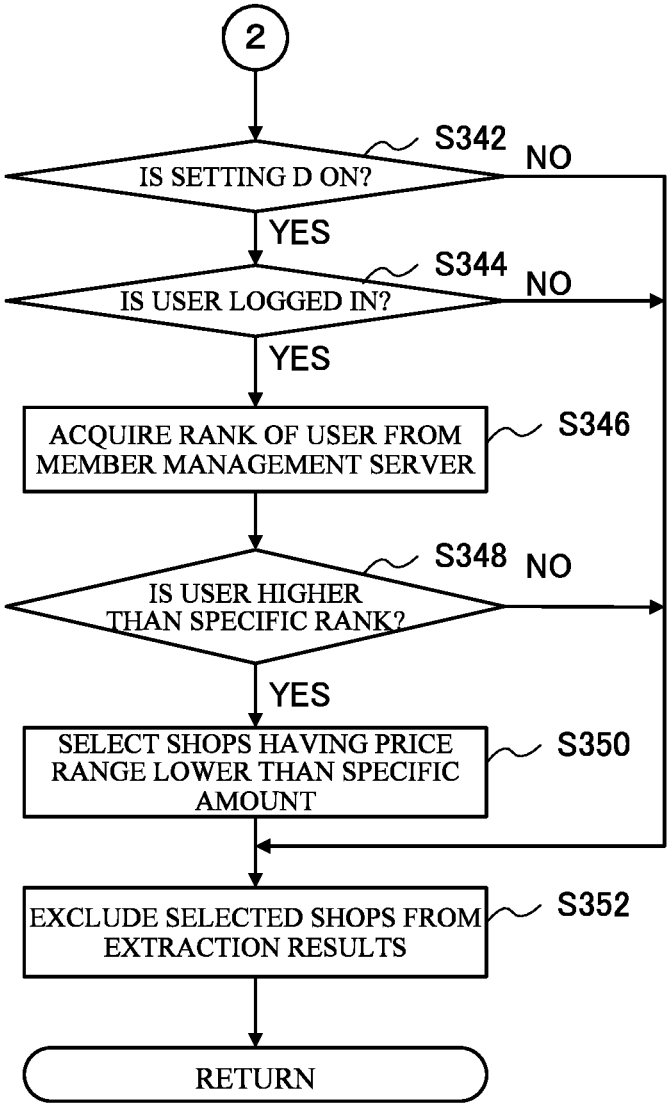

2
S342
IS SETTING D ON?
NO
YES
S344
IS USER LOGGED IN?
NO
YES
ACQUIRE RANK OF USER FROM MEMBER MANAGEMENT SERVER
S346
S348
IS USER HIGHER THAN SPECIFIC RANK?
NO
YES
SELECT SHOPS HAVING PRICE RANGE LOWER THAN SPECIFIC AMOUNT
S350
EXCLUDE SELECTED SHOPS FROM EXTRACTION RESULTS
S352
RETURN

FIG. 35

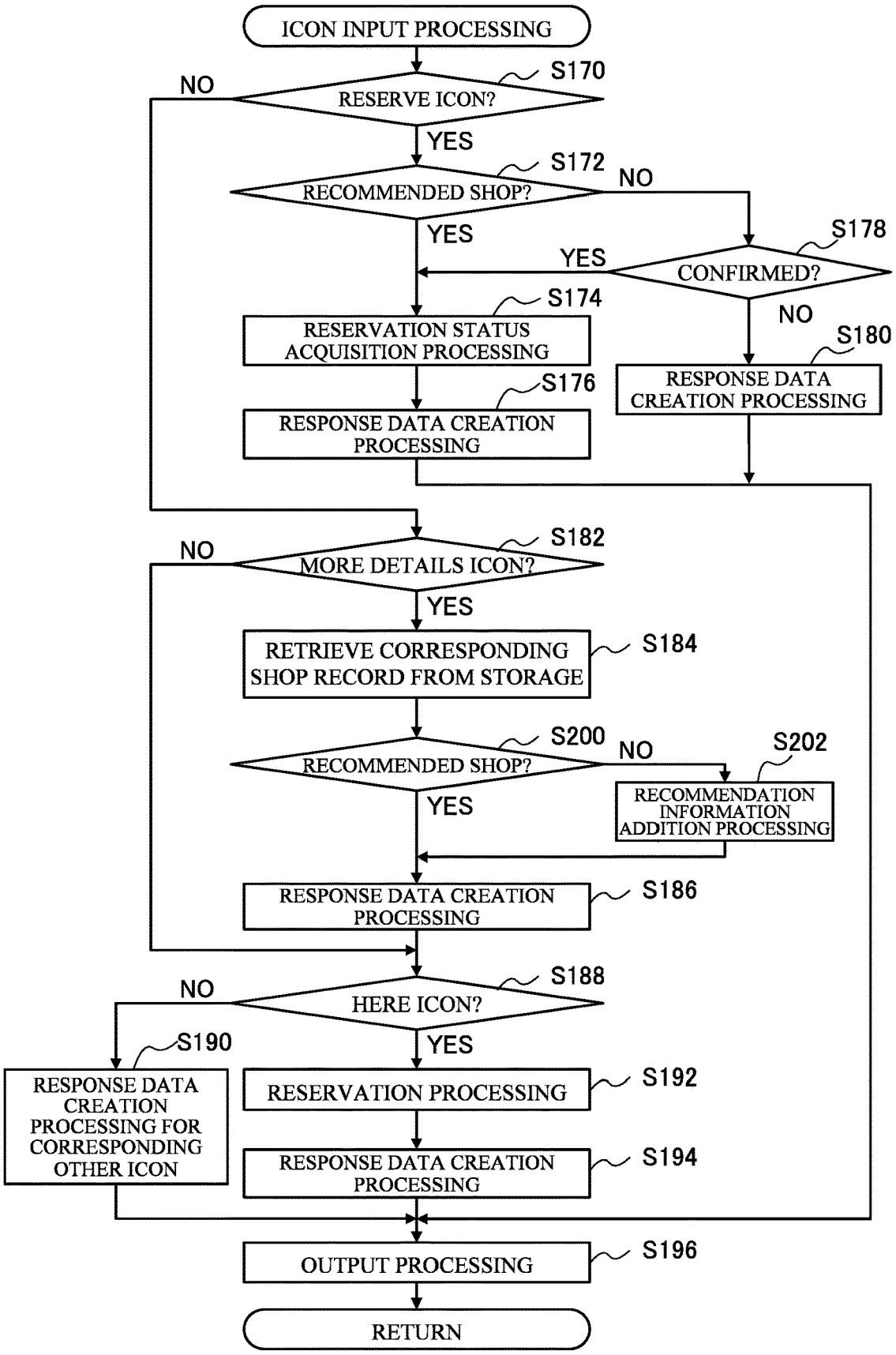

ICON INPUT PROCESSING
S170
RESERVE ICON?
NO
YES
S172
RECOMMENDED SHOP?
NO
YES
S178
CONFIRMED?
YES
NO
S174
RESERVATION STATUS ACQUISITION PROCESSING
S180
RESPONSE DATA CREATION PROCESSING
S176
RESPONSE DATA CREATION PROCESSING
S182
MORE DETAILS ICON?
NO
YES
S184
RETRIEVE CORRESPONDING SHOP RECORD FROM STORAGE
S200
RECOMMENDED SHOP?
NO
S202
RECOMMENDATION INFORMATION ADDITION PROCESSING
YES
S186
RESPONSE DATA CREATION PROCESSING
S188
HERE ICON?
NO
YES
S190
RESPONSE DATA CREATION PROCESSING FOR CORRESPONDING OTHER ICON
S192
RESERVATION PROCESSING
S194
RESPONSE DATA CREATION PROCESSING
S196
OUTPUT PROCESSING
RETURN

FIG. 36

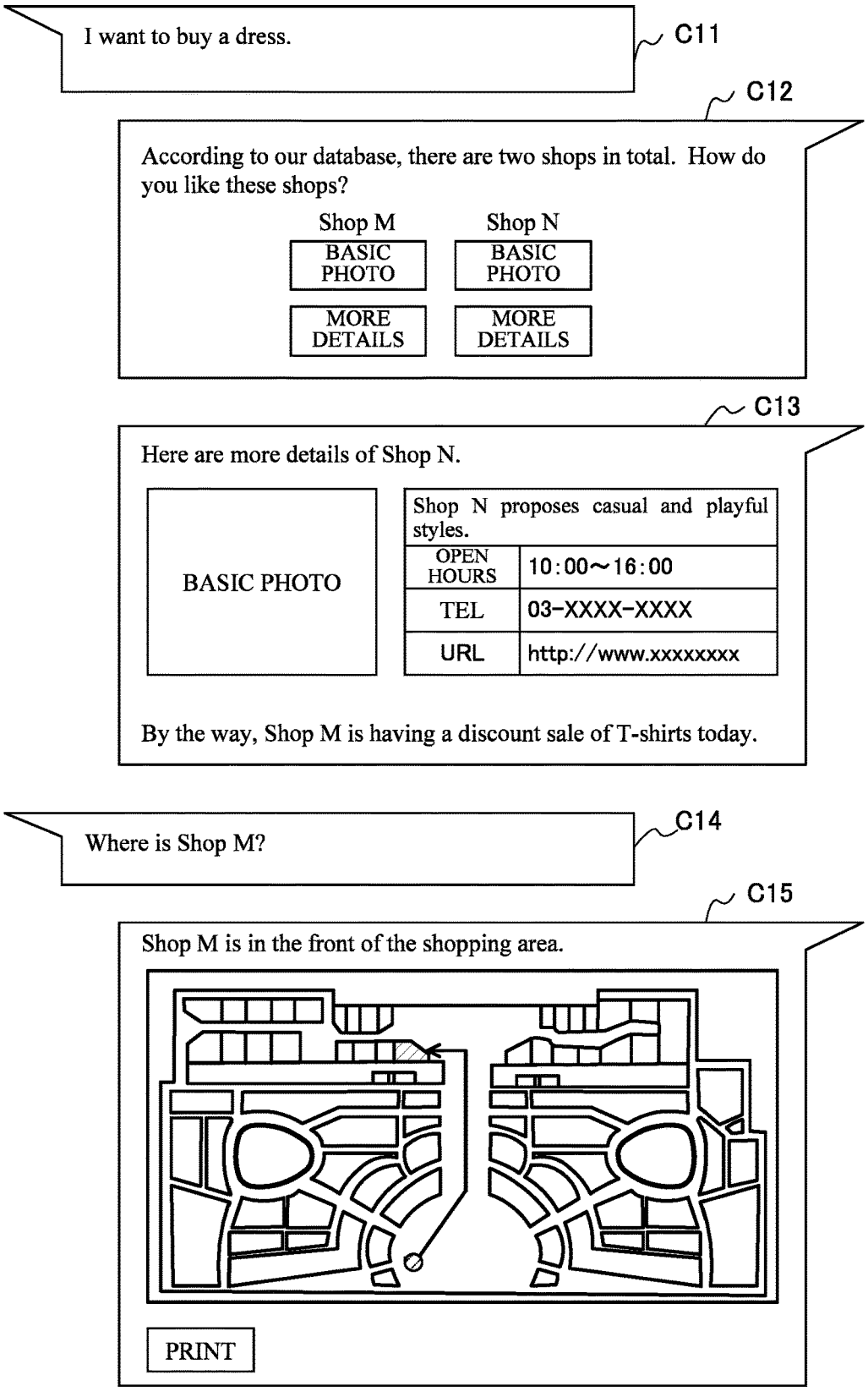

I want to buy a dress.
C11
C12
According to our database, there are two shops in total. How do you like these shops?
Shop M
Shop N
BASIC PHOTO
BASIC PHOTO
MORE DETAILS
MORE DETAILS
C13
Here are more details of Shop N.
BASIC PHOTO
Shop N proposes casual and playful styles.
OPEN HOURS
10:00~16:00
TEL
03-XXXX-XXXX
URL
http://www.xxxxxxxx
By the way, Shop M is having a discount sale of T-shirts today.
Where is Shop M?
C14
C15
Shop M is in the front of the shopping area.
PRINT

FIG. 37

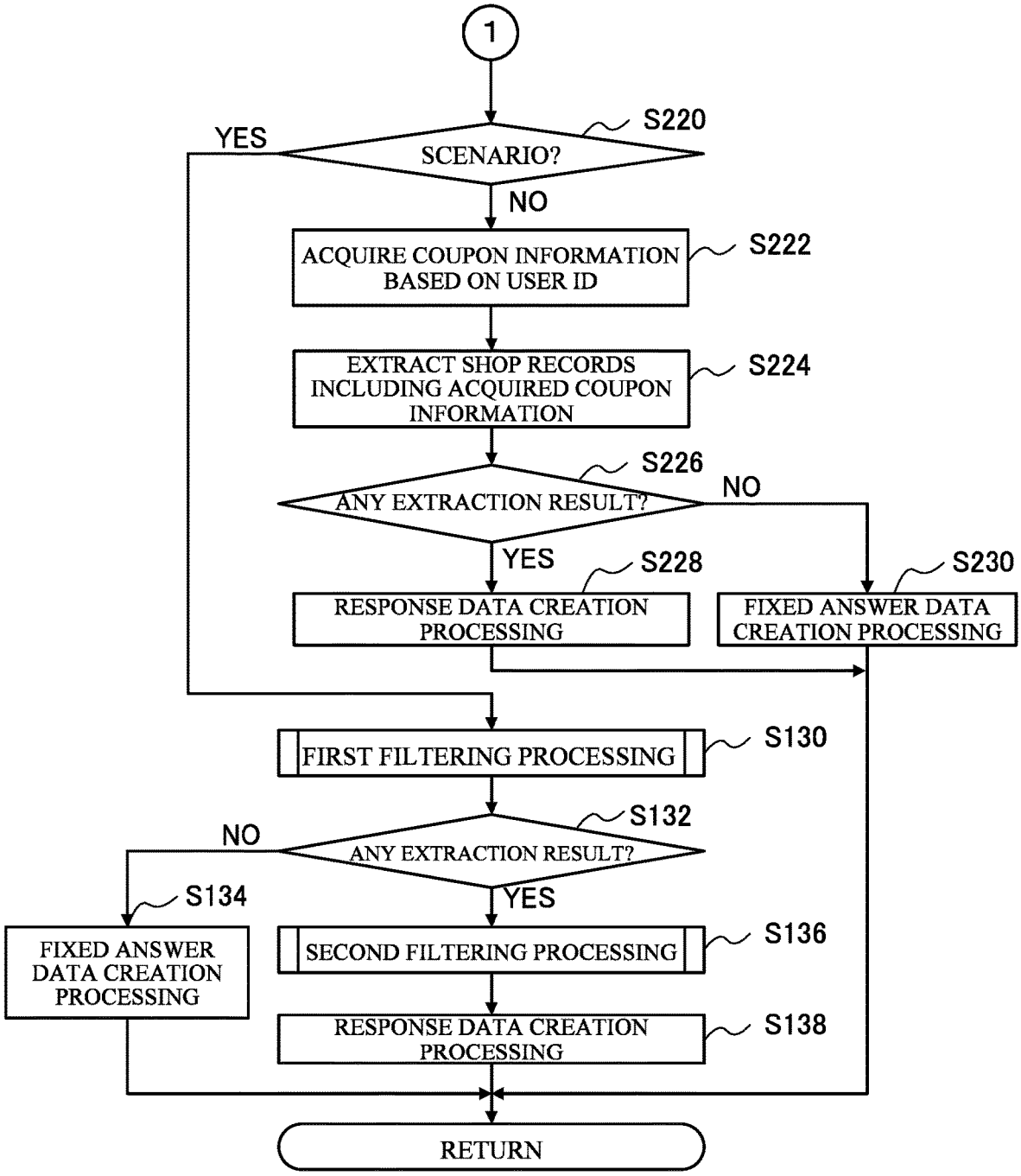

1
S220
YES
SCENARIO?
NO
ACQUIRE COUPON INFORMATION BASED ON USER ID
S222
EXTRACT SHOP RECORDS INCLUDING ACQUIRED COUPON INFORMATION
S224
S226
ANY EXTRACTION RESULT?
NO
YES
S228
RESPONSE DATA CREATION PROCESSING
S230
FIXED ANSWER DATA CREATION PROCESSING
FIRST FILTERING PROCESSING
S130
S132
NO
ANY EXTRACTION RESULT?
YES
S134
FIXED ANSWER DATA CREATION PROCESSING
SECOND FILTERING PROCESSING
S136
RESPONSE DATA CREATION PROCESSING
S138
RETURN

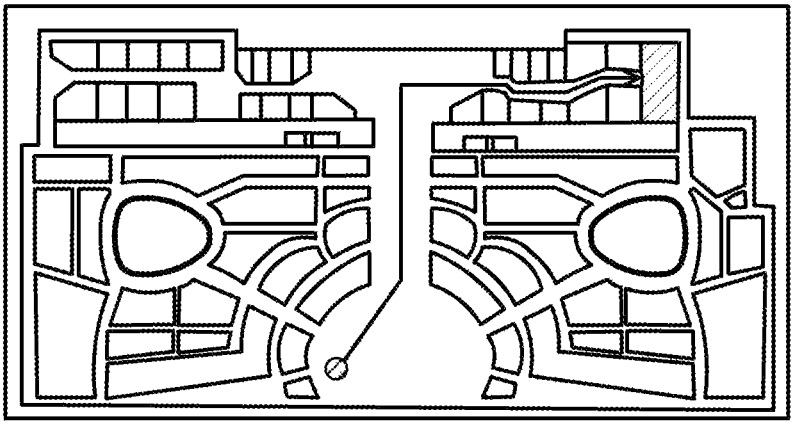
FIG. 38

C21

Tell me shops I can use a coupon.

C22

Mr. X, your coupon can be used in Restaurant A. You can use three coupons there.



C23

Print out the coupons.

C24

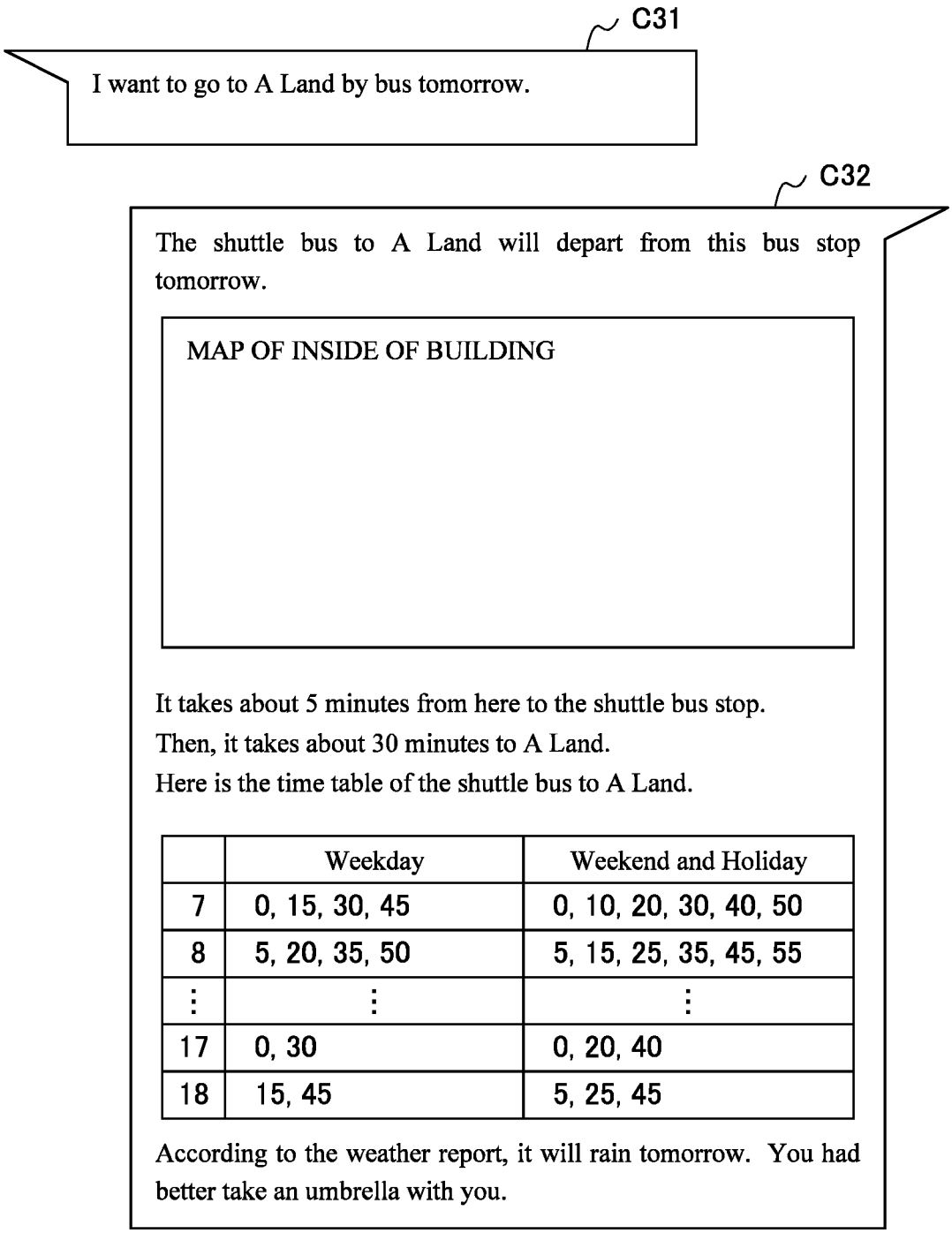
Sorry, this terminal cannot print out coupons. Use a nearby kiosk terminal. Would you like to see the places of kiosk terminals?

FIG. 39

EXTERNAL FACILITY DATABASE

FACILITY ID	NAME OF FACILITY	PRIORITY LEVEL	SHUTTLE BUS STOP	WALKING TIME TO BUS STOP	TIME TABLE	TRAVEL TIME	REQUIRED TIME	FIELD 1	...
								CATEGORY	
001	A LAND	A	MAP 1	5 MINUTES	TIME TABLE A	15 MINUTES	4 - 5 HOURS	THEME PARK	...
002	B LAND	B	MAP 1	5 MINUTES	TIME TABLE B	30 MINUTES	4 - 5 HOURS	THEME PARK	...
...	...	...	...	...	...	...	...	...	...
009	Z MUSEUM	C	MAP 2	10MINUTES	TIME TABLE Z	25 MINUTES	2 - 3 HOURS	MUSEUM	...
...	...	...	...	...	...	...	...	...	...

FIG. 40



	Weekday	Weekend and Holiday
7	0, 15, 30, 45	0, 10, 20, 30, 40, 50
8	5, 20, 35, 50	5, 15, 25, 35, 45, 55
⋮	⋮	⋮
17	0, 30	0, 20, 40
18	15, 45	5, 25, 45

FIG. 41

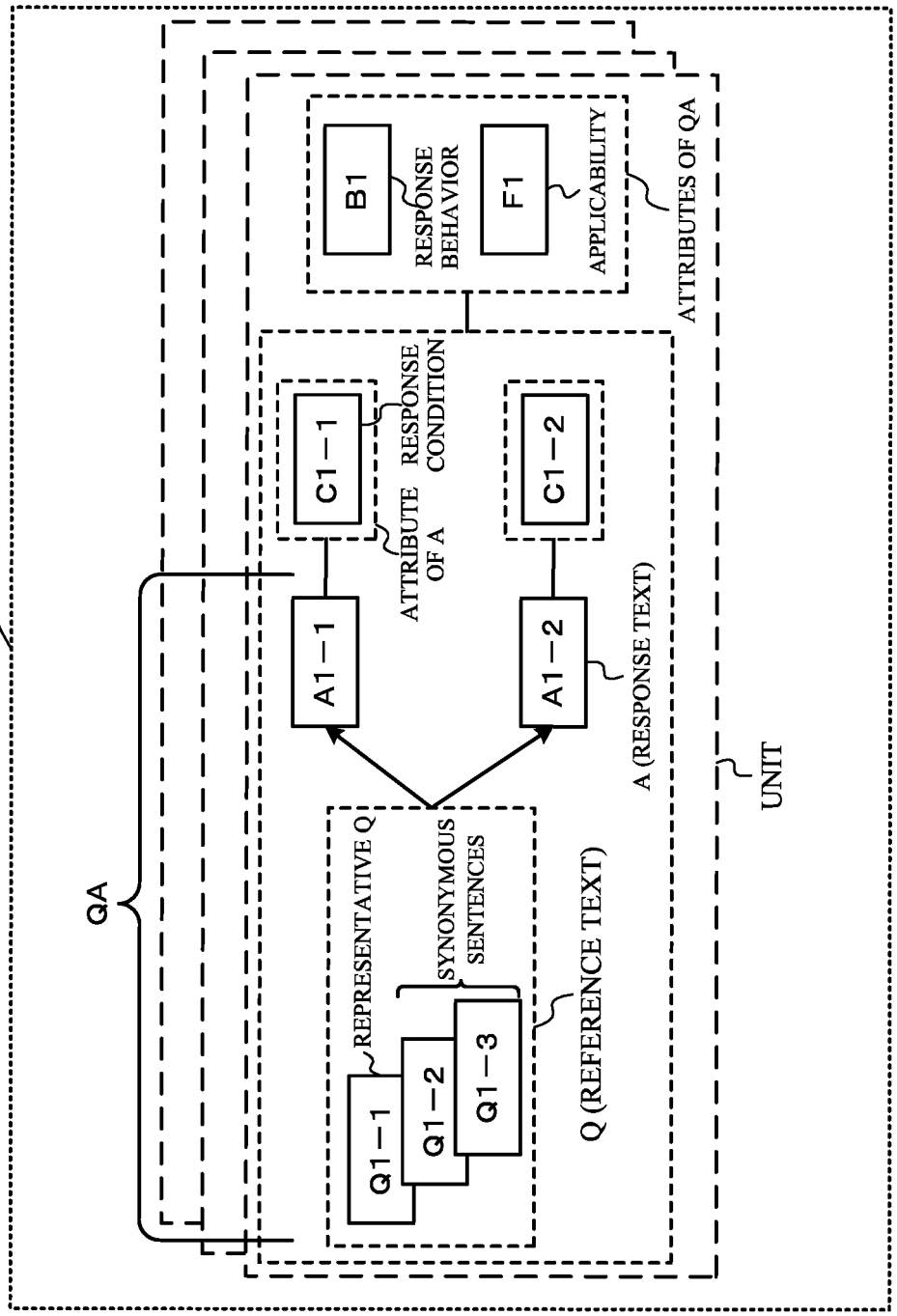

310 KNOWLEDGE DATA
QA
UNIT
A (RESPONSE TEXT)
Q (REFERENCE TEXT)
REPRESENTATIVE Q
SYNONYMOUS SENTENCES
Q1−1
Q1−2
Q1−3
A1−1
A1−2
ATTRIBUTE OF A
RESPONSE CONDITION
C1−1
C1−2
B1
RESPONSE BEHAVIOR
F1
APPLICABILITY
ATTRIBUTES OF QA

FIG. 42

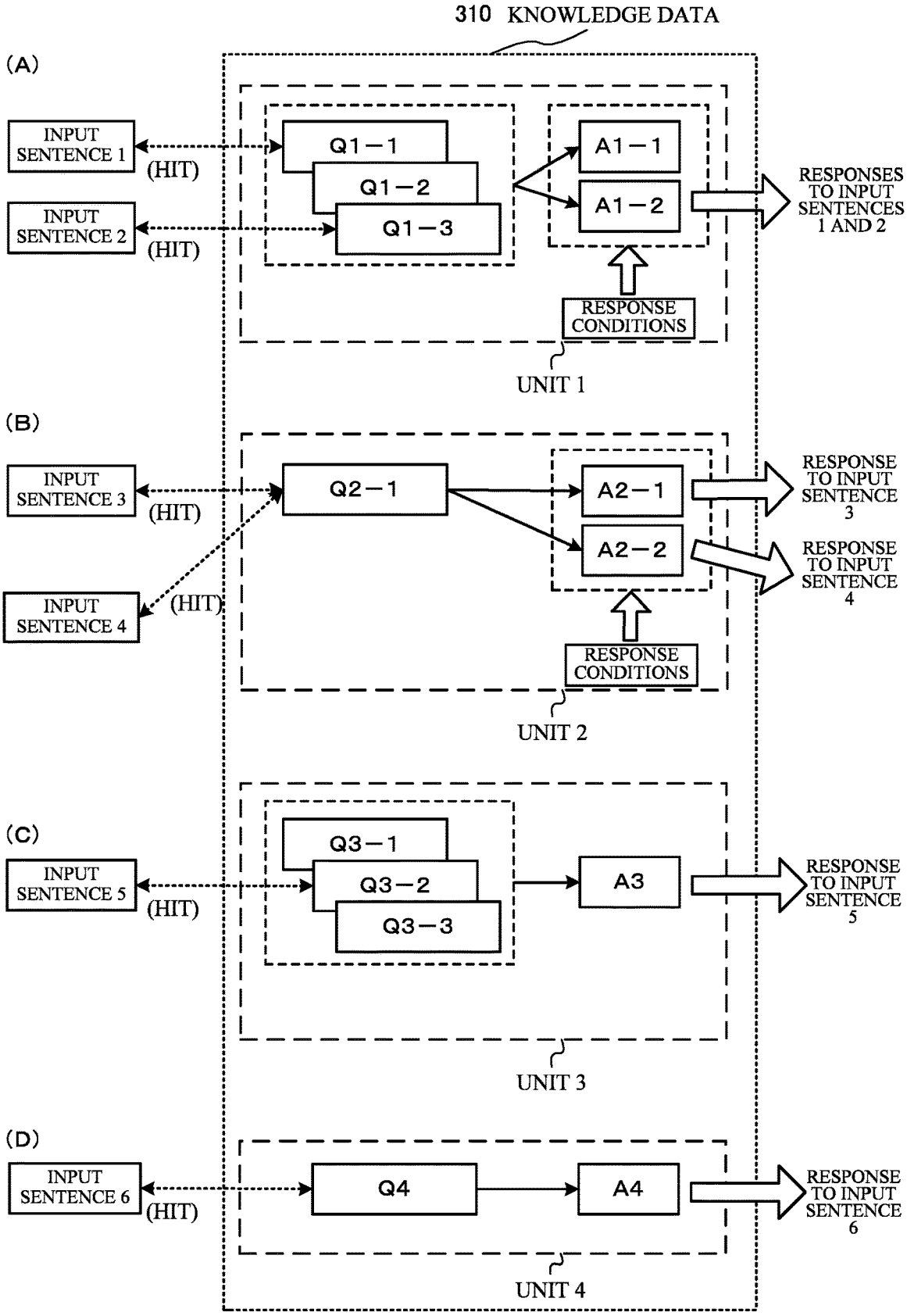

310 KNOWLEDGE DATA
(A)
INPUT SENTENCE 1
(HIT)
INPUT SENTENCE 2
(HIT)
Q1−1
Q1−2
Q1−3
A1−1
A1−2
RESPONSES TO INPUT SENTENCES 1 AND 2
RESPONSE CONDITIONS
UNIT 1
(B)
INPUT SENTENCE 3
(HIT)
INPUT SENTENCE 4
(HIT)
Q2−1
A2−1
A2−2
RESPONSE TO INPUT SENTENCE 3
RESPONSE TO INPUT SENTENCE 4
RESPONSE CONDITIONS
UNIT 2
(C)
INPUT SENTENCE 5
(HIT)
Q3−1
Q3−2
Q3−3
A3
RESPONSE TO INPUT SENTENCE 5
UNIT 3
(D)
INPUT SENTENCE 6
(HIT)
Q4
A4
RESPONSE TO INPUT SENTENCE 6
UNIT 4

FIG. 43

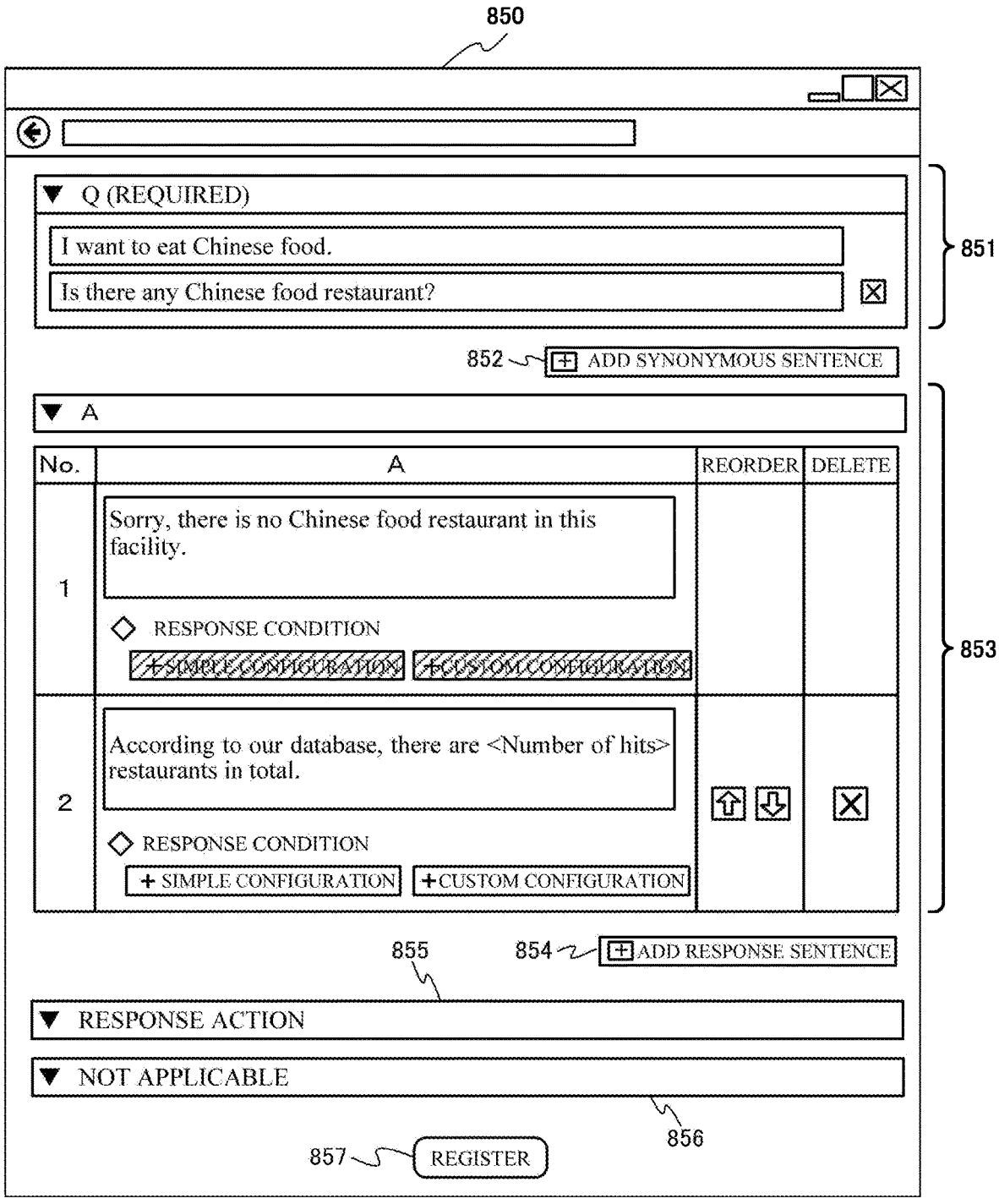

850
Q (REQUIRED)
I want to eat Chinese food.
Is there any Chinese food restaurant?
851
852
ADD SYNONYMOUS SENTENCE
A
No.
A
REORDER
DELETE
1
Sorry, there is no Chinese food restaurant in this facility.
RESPONSE CONDITION
+SIMPLE CONFIGURATION
+CUSTOM CONFIGURATION
2
According to our database, there are <Number of hits> restaurants in total.
RESPONSE CONDITION
+ SIMPLE CONFIGURATION
+CUSTOM CONFIGURATION
853
855
854
ADD RESPONSE SENTENCE
RESPONSE ACTION
NOT APPLICABLE
856
857
REGISTER

FIG. 44

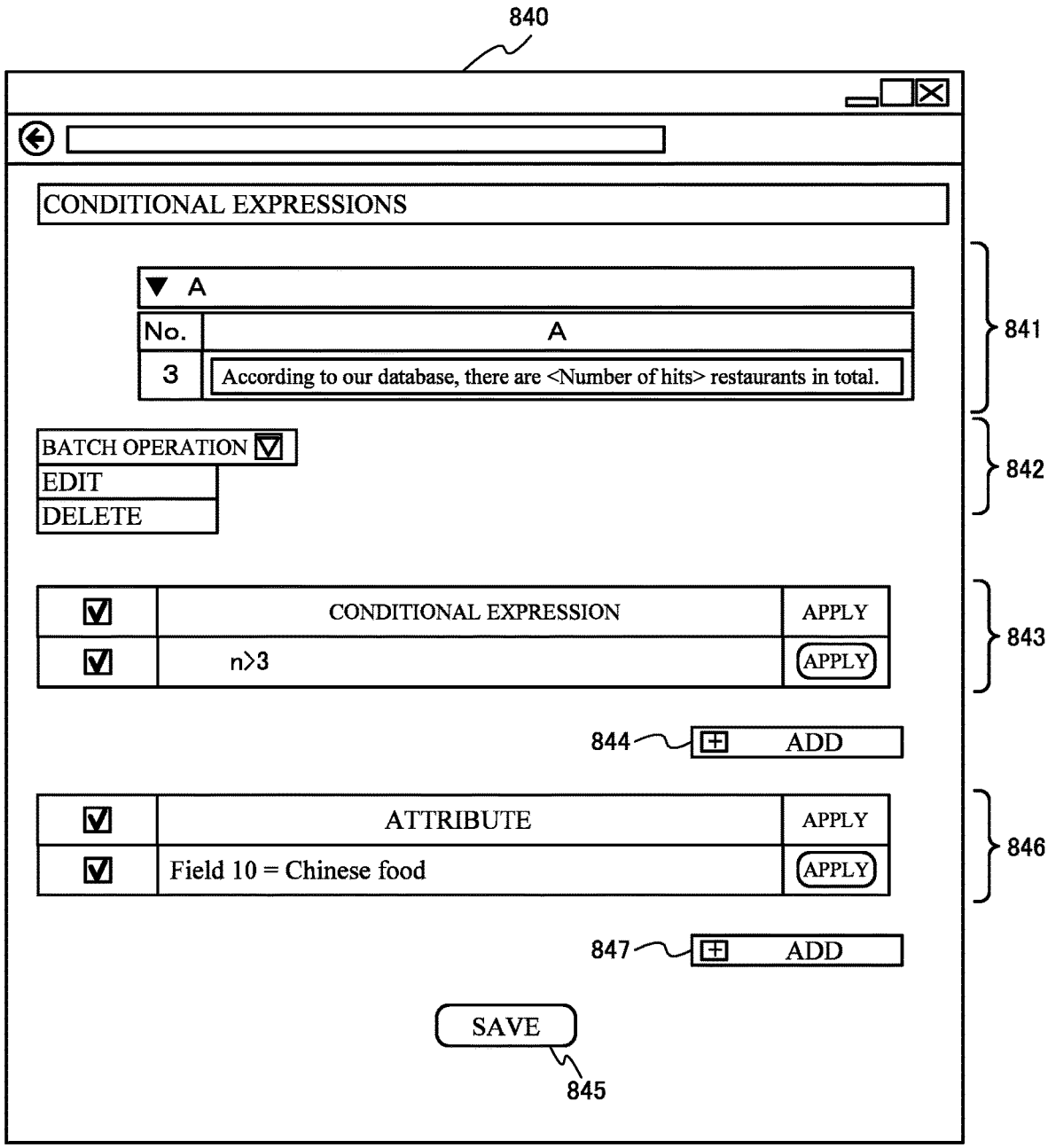

840
CONDITIONAL EXPRESSIONS
▼ A
No.
A
3
According to our database, there are <Number of hits> restaurants in total.
841
BATCH OPERATION
EDIT
DELETE
842
CONDITIONAL EXPRESSION
APPLY
n>3
APPLY
843
844
ADD
ATTRIBUTE
APPLY
Field 10 = Chinese food
APPLY
846
847
ADD
SAVE
845

FIG. 45

WEIGHT DETERMINATION TABLE

DISCOUNT SALE PERIOD	SHOPS
7/1 ~ 7/31	001, 002, 003, ···
9/20 ~ 9/27	001, 005, ···
12/28 ~ 1/5	007, 008, ···

COMMERCIAL INFORMATION PROVIDING SYSTEM AND COMMERCIAL INFORMATION PROVIDING METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of Japanese Patent Application No. 2015-185650 filed Sep. 18, 2015, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

The present invention relates to a commercial information providing system and a commercial information providing method.

BACKGROUND ART

Shopping malls include diverse shops and facilities; accordingly, a shopping mall may be equipped with guidance information providing apparatuses to direct users to their intended shops or facilities.

Such a guidance information providing apparatus refers to the layout information of the facilities based on the purpose of the visit and the personal attribute of a user, determines the place (an example of commercial information) where to direct the user, and provides guidance information on the place (an example of response information) to the user (refer to Japanese Patent Application Publication No. 2014-178170).

E-commerce sites where users buy merchandises also provide guidance information to users. In response to a user operation of putting some item into a cart on a terminal device like a cell phone, the server of the E-commerce site may provide guidance information (an example of recommendation information) on the screen of the terminal device, informing the user of other items purchased by other users together with the item in the cart or other items of the same type as the item in the cart.

Furthermore, there exists a known recommendation sales method for diversified commodities. The method uses recommendation message data about the diversified commodities created by recommenders as guidance information to direct the user to find commodities matching the user's personal preference (refer to Japanese Patent Application Publication No. 2003-157375).

Still further, there exists a known technique that associates and displays information on the user's purchase records in the past, which is not guidance information though, to provide useful information for the user to do shopping (refer to Japanese Patent Application Publication No. 2004-535015).

SUMMARY OF INVENTION

Technical Problem

The foregoing Japanese Patent Application Publication No. 2014-178170 is however to extract guidance information presumed to be more helpful for a user from prepared information in response to a discretionary operation by the user, or based on the purpose of visit specified by the user and the personal attribute, and to provide the extracted guidance information.

In similar, the foregoing Japanese Patent Application Publication No. 2003-157375 and Japanese Patent Application Publication No. 2004-535015 are also to show other merchandises in view of the relationship with the merchandise put into the cart or to provide recommendation information based on the purchase records in the past in response to a discretionary operation by the user; they focus on providing guidance information matching only the user's preference.

The present invention is accomplished in view of the foregoing issues; an object of the present invention is to provide a novel commercial information providing system that provides commercial information by extracting information from a database based on not only the inputs from the user.

For example, the present invention is applicable to facilities gathering people, such as a hotel, an airport, and a station; commercial facilities provided in the vicinity of these facilities, such as a department store and an shopping center inclusive of an outlet mall; amusement facilities such as a casino; and a commercial complex including a plurality of facilities such as restaurants and movie theaters in addition to the foregoing commercial facilities and the amusement facilities.

It should be noted that the objects, challenges, and effects (benefits) of the present invention are to be understood from the appended claims and not to be interpreted improperly based on the following description.

Solution to Problem

According to the first aspect of the present invention, a commercial information providing system includes:

a user interface capable of accepting input of question information representing a question from a user,

a database holding a plurality of sets of commercial information related to commercial facilities and a plurality of response templates of responses to question information input from the user interface,

an administrator interface capable of accepting setting of a priority level to prioritize providing a specific set of commercial information among the plurality of sets of commercial information,

a control device connectable to the database and configured to perform processing of extracting a set of commercial information to be provided from the plurality of sets of commercial information and a response template to be used from the plurality of response templates based on the question information input from the user interface and creating response information using the response template, the response information including a set of commercial information selected from the extracted the set of commercial information based on the priority level, and

an information providing device configured to provide the response information created by the control device to the user.

The foregoing is a novel configuration that extracts commercial information to be provided to the user from a database based on the priority levels assigned by the administrator in addition to the question information from the user.

This configuration facilitates providing commercial information intended by the administrator to the user.

According to this configuration, commercial information is extracted based on question information from the user; specific commercial information is selected from the extracted commercial information based on the priority levels assigned by the administrator; and response information including the selected commercial information is provided to the user. That is to say, commercial information

intended by the administrator in the commercial information suitable for the response to the question information from the user can be provided to the user.

Since this configuration provides the commercial information intended by the administrator to the user in the form of answering the user's question, the user is naturally directed to a desired action.

This commercial information providing system further includes a terminal device installed in the commercial facilities and connected with the control device to be able to communicate with the control device, and the terminal device includes the user interface.

The foregoing configuration enables input of question information through the user interface of a terminal device installed in the commercial facilities. That is to say, if an issue such as something the user wants to know or some trouble arises to the user when the user is in the commercial facilities, the system can accept question information from the user.

This configuration enables the system to answer the question information from a user in the commercial facilities and provide commercial information intended by the administrator to the user; the user can be provided with a solution and further be directed to a desired action.

In this commercial information providing system, the control device is configured to change the priority level in accordance with a weight assigned depending on predetermined information different from the question information input from the user interface.

The foregoing configuration changes the priority level in accordance with a weight assigned depending on predetermined information different from the question information input from the user interface.

The predetermined information may be personal information such as member information, facility information such as information on equipment in the facilities or a floor map, vacancy information indicating the real-time vacancy rate (occupancy rate) on each set of commercial information, external environment information and internal environment information such as event information in which the start time is linked with a clock function, and different kinds of history information.

According to this configuration, the priority level is changed in view of the predetermined information as well as the question information input by the user, so that the user can be provided with commercial information timely and more appropriate for the user's question.

In this commercial information providing system, the response information created by the control device includes action request information for encouraging the user to react to the commercial information included in the response information.

The action request information may include a RESERVE icon to reserve a shop related to a set of commercial information and a RESERVE icon to reserve a hotel room related to a set of commercial information.

Accordingly, the action request information encourages the user's next action; the user can be pertinently directed to a desired action.

In this commercial information providing system,

the user interface is configured to accept input of use request information for requesting to use a set of commercial information included in the response information provided by the information providing device;

the control device is configured to create guidance information for contributing to use of the set of commercial information designated by the use request information in response to input of the use request information from the user interface; and

the information providing device is configured to provide the guidance information created by the control device to the user.

The foregoing configuration provides guidance information for contributing to use of a set of commercial information in response to input of a use request information for requesting to use the set of commercial information.

The guidance information may be a map showing a route from the current position to a destination (e.g., a shop, a room, or a rest room) or information on a shop such as the telephone number, the open hours, the shop holiday, the menu, a coupon, the chefs name, an appeal point, a layout, and a photo.

This configuration enables the user to use the commercial information more conveniently.

According to the second aspect of the present invention, a commercial information providing system of the present invention includes:

a database including a plurality of sets of commercial information stored in advance,

a control device connectable to the database and configured to create recommendation information with a set of commercial information extracted from the plurality of sets of commercial information,

a user interface capable of accepting input of information,

an administrator interface capable of accepting input of information, and

an information providing device configured to provide the recommendation information to a user.

The control device is configured to perform first extraction processing based on user request information input from the user interface to extract specific sets of commercial information from the plurality of sets of commercial information, perform second extraction processing based on filtering information input from the administrator interface in advance to extract a set of commercial information from the specific sets of commercial information extracted by the first extraction processing, and create recommendation information including the set of commercial information extracted by the second extraction processing.

The foregoing is a novel configuration that extracts commercial information to be provided to a user based on filtering information set by the administrator in addition to user request information from the user.

This configuration facilitates providing commercial information intended by the administrator to the user.

According to this configuration, commercial information is extracted by the first extraction processing based on user request information from the user and further, commercial information is extracted by the second extraction processing based on the filtering information set by the administrator. Recommendation information including the extracted commercial information is provided to the user. That is to say, commercial information the administrator intends to provide to the user in the commercial information suitable for the response to the question information from the user is provided to the user.

Since this configuration provides the commercial information intended by the administrator to the user in the form of answering the user's request, the user is naturally directed to a desired action.

In this commercial information providing system, the control device is configured to add a message for suggesting the set of commercial information extracted by the second

extraction processing and requesting the user to take the set of commercial information into consideration.

The foregoing configuration adds a message for suggesting a set of commercial information and requesting the user to take the set of commercial information into consideration.

For a message for suggesting a set of commercial information and requesting to take it into consideration, expressions asking the state, situation, impression, opinion, or intension can be employed. For example, "How about Restaurant A?" or "How about Room A?" is included.

This configuration provides a message suggesting specific commercial information and asking for a reaction. This means the user is directed by the administrator; however, the final decision is left to the user. As a result, the user can have good impression by feeling that the user has selected the information by himself or herself. The user can be directed to the desired action more naturally.

In the third aspect of the present invention, a commercial information providing system of the present invention includes:

a database including a plurality of sets of commercial information stored in advance,

a control device connectable to the database and configured to create recommendation information with a set of commercial information extracted from the plurality of sets of commercial information,

a user interface capable of accepting input of information,

an administrator interface capable of accepting input of information, and

a display device capable of displaying the recommendation information.

The control device is configured to perform first extraction processing based on user request information input from the user interface to extract specific sets of commercial information from the plurality of sets of commercial information, perform second extraction processing based on filtering information for determining order of displaying commercial information input in advance from the administrator interface to extract a set of commercial information from the specific sets of commercial information extracted by the first extraction processing, and create recommendation information including the set of commercial information sorted and extracted by the second extraction processing in accordance with the filtering information for determining the order.

The foregoing is a novel configuration that extracts commercial information to be provided to the user based on the filtering information set by the administrator in addition to the user request information from the user.

This configuration facilitates providing commercial information intended by the administrator to the user.

According to this configuration, commercial information is extracted by the first extraction processing based on user request information from the user and further, commercial information is extracted by the second extraction processing based on the filtering information set by the administrator. Recommendation information including the extracted commercial information is provided to the user. That is to say, commercial information the administrator intends to provide to the user in the commercial information suitable for the response to the question information from the user is provided to the user.

Since this configuration provides the commercial information intended by the administrator to the user in the form of answering the user's request, the user is naturally directed to a desired action.

Furthermore, since this configuration displays the commercial information in accordance with the order specified by the administrator, the user is directed to paying attention to the commercial information intended by the administrator.

According to the fourth aspect of the present invention, a commercial information providing method of the present invention is for a commercial information providing system including a user interface capable of accepting input of question information representing a question from a user, a database holding a plurality of sets of commercial information related to commercial facilities and a plurality of response templates of responses to question information input from the user interface, an administrator interface capable of accepting setting of a priority level to prioritize providing a specific set of commercial information among the plurality of sets of commercial information, a control device, and an information providing device. The commercial information providing method includes:

a control step of: connecting, by the control device, to the database; extracting, by the control device, a set of commercial information to be provided from the plurality of sets of commercial information and a response template to be used from the plurality of response templates based on the question information input from the user interface; and creating, by the control device, response information using the response template, the response information including a set of commercial information selected based on the priority level from the extracted a set of commercial information, and

an information providing step of providing, by the information providing device, the response information created by the control device to the user.

According to the fifth aspect of the present invention, a commercial information providing method of the present invention is for a commercial information providing system including a database including a plurality of sets of commercial information stored in advance, a control device connectable to the database and configured to create recommendation information with a set of commercial information extracted from the plurality of sets of commercial information, a user interface capable of accepting input of information, an administrator interface capable of accepting input of information, and an information providing device configured to provide the recommendation information to a user. The commercial information providing method includes:

a first extraction step of extracting, by the control device, specific sets of commercial information from the plurality of sets of commercial information based on user request information received through the user interface,

a second extraction step of extracting, by the control device, a set of commercial information from the specific sets of commercial information extracted by the first extraction step, based on filtering information input from the administrator interface in advance, and

a creation step of creating, by the control device, recommendation information including the set of commercial information extracted by the second extraction processing.

According to the sixth aspect of the present invention, a commercial information providing method of the present invention is for a commercial information providing system including a database including a plurality of sets of commercial information stored in advance, a control device connectable to the database and configured to create recommendation information with a set of commercial information extracted from the plurality of sets of commercial information, a user interface capable of accepting input of informa-

tion, an administrator interface capable of accepting input of information, and a display device capable of displaying the recommendation information. The commercial information providing method includes:

a first extraction step of extracting, by the control device, specific sets of commercial information from the plurality of sets of commercial information, based on user request information input from the user interface,

a second extraction step of extracting, by the control device, a set of commercial information from the specific sets of commercial information extracted by the first extraction processing, based on filtering information for determining order of displaying the plurality of sets of commercial information input in advance from the administrator interface, and

a creation step of creating, by the control device, recommendation information including the set of commercial information sorted and extracted by the second extraction processing in accordance with the filtering information for determining the order.

Advantageous Effects of Invention

The present invention enables a user to be provided with commercial information intended by the administrator in the commercial information suitable for a response to the user.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a diagram for illustrating an overview of a commercial information providing system;

FIG. **2** is a diagram for illustrating an example of a commercial information providing system;

FIG. **3** is a diagram for illustrating an example of a dialogue system;

FIG. **4** is a diagram for illustrating a circuit configuration of a dialogue server;

FIG. **5** is a diagram for illustrating an overall structure of a signage apparatus A;

FIG. **6** is a diagram for illustrating a circuit configuration of a signage apparatus A;

FIG. **7** is a diagram for illustrating an overall structure of a signage apparatus B;

FIG. **8** is a diagram for illustrating a circuit configuration of a signage apparatus B;

FIG. **9** is a diagram for illustrating an overall structure of a kiosk terminal;

FIG. **10** is a diagram for illustrating a circuit configuration of a kiosk terminal;

FIG. **11**A is a diagram for illustrating an example of a shop data creation screen;

FIG. **11**B is a diagram for illustrating an example of a shop data management screen;

FIG. **12** is a diagram for illustrating an example of shop data;

FIG. **13**A is a diagram for illustrating an example of a knowledge data creation screen;

FIG. **13**B is a diagram for illustrating an example of a knowledge data management screen;

FIG. **14** is a diagram for illustrating an example of knowledge data;

FIG. **15** is a diagram for illustrating examples of answer templates;

FIG. **16**A is a diagram for illustrating an example of an answer template;

FIG. **16**B is a diagram for illustrating an example of an answer template;

FIG. **16**C is a diagram for illustrating an example of an answer template;

FIG. **16**D is a diagram for illustrating an example of an answer template;

FIG. **16**E is a diagram for illustrating an example of an answer template;

FIG. **16**F is a diagram for illustrating an example of an answer template;

FIG. **17** is a diagram for illustrating an example of a weight determination table;

FIG. **18**A is a diagram for illustrating an example of an input history table;

FIG. **18**B is a diagram for illustrating an example of a reservation history table;

FIG. **18**C is a diagram for illustrating an example of a recommendation history table;

FIG. **19** is a diagram for illustrating an example of an API between a user terminal and the dialogue server;

FIG. **20** is a diagram for illustrating an example of a sequence of processing in the dialogue system;

FIG. **21** is an example of a flowchart of input information reception processing;

FIG. **22** is an example of a flowchart of text input processing;

FIG. **23** is an example of a flowchart of semantic recognition processing;

FIG. **24** is an example of a flowchart of subject determination processing;

FIG. **25** is an example of a flowchart of dialogue condition control processing;

FIG. **26** is an example of a flowchart of dialogue condition control processing;

FIG. **27** is an example of a flowchart of first filtering processing;

FIG. **28** is an example of a flowchart of second filtering processing;

FIG. **29** is an example of a flowchart of icon input processing;

FIG. **30** is a diagram for illustrating an example of an input and output screen;

FIG. **31**A is a diagram for illustrating an example of a dialogue;

FIG. **31**B is a diagram for illustrating an example of a dialogue;

FIG. **32** is an example of a flowchart of login processing;

FIG. **33**A is a diagram for illustrating an example of an unrecommended shop exclusion determination table;

FIG. **33**B is a diagram for illustrating an example of an unrecommended shop exclusion determination table;

FIG. **33**C is a diagram for illustrating an example of an unrecommended shop exclusion determination table;

FIG. **34**A is an example of a flowchart of recommendation optimization processing;

FIG. **34**B is an example of a flowchart of recommendation optimization processing;

FIG. **35** is an example of a flowchart of icon input processing;

FIG. **36** is a diagram for illustrating an example of a dialogue;

FIG. **37** is an example of a flowchart of dialogue condition control processing;

FIG. **38** is a diagram for illustrating an example of a dialogue;

FIG. **39** is a diagram for illustrating an example of external facility data;

FIG. **40** is a diagram for illustrating an example of a dialogue;

FIG. **41** is a diagram for illustrating an example of a data structure of knowledge data;

FIG. **42** is a diagram for illustrating examples of relations between an input sentence and a response;

FIG. **43** is a diagram for illustrating an example of a new QA addition screen;

FIG. **44** is a diagram for illustrating an example of a custom configuration screen; and

FIG. **45** is a diagram for illustrating an example of a weight determination table.

DESCRIPTION OF EMBODIMENTS

First Embodiment

The first embodiment of the present invention is described based on the drawings.

[Overview of Commercial Information Providing System]

An overview of a commercial information providing system (a system capable of providing commercial information) of the present embodiment is described using an example of a dialogue server **1** shown in FIG. **1**.

The dialogue server **1** includes a dialogue engine **11** and a database (DB) **14**. The dialogue engine **11** includes a semantic recognition engine **12** and a dialogue condition control engine **13**.

In this commercial information providing system, a communication **3** is made based on a natural sentence input **2** to forward the natural sentence input **2** to the dialogue server **1**. In the dialogue server **1**, the semantic recognition engine **12** semantically interprets the natural sentence input **2** based on the DB **14** to recognize the meaning (intention) of the natural sentence input **2**. The dialogue condition control engine **13** creates an optimum answer output **4** for the natural sentence input **2** based on the DB **14** so as to produce a natural dialogue and sends the optimum answer output **4** through the communication **3**.

This commercial information providing system is applicable to various commercial facilities.

For example, in response to a natural sentence input **2** "My name is . . . I have a reservation." to check in accommodation facilities such as a hotel, the semantic recognition engine **12** interprets the natural sentence input and then the dialogue condition control engine **13** references a variety of information (personal information such as member information, facility information such as information on equipment in the facilities and a floor map, external and internal environment information on booking, event, and date and time, various kinds of history information, the intention of the guest, and the intention of the facilities) and creates and outputs an optimum answer output **4** "Welcome to our hotel. This is your room".

In response to another natural sentence input **2** "Do you have any room available?", the dialogue condition control engine **13** creates an optimum answer output **4** "Welcome to our hotel. How do you like this room?" with reference to a variety of information and outputs the optimum answer output **4**. If a natural sentence input **2** "It is OK." is entered in response to this answer output, the dialogue condition control engine **13** creates and outputs an optimum answer output **4** "Thank you. The room charge is . . . Insert your credit card".

For another example at an facility information desk, in response to a natural sentence input **2** "I want to eat Japanese food.", the dialogue condition control engine **13** creates an optimum answer output **4** "This is a Japanese food restaurant." with reference to a variety of information and outputs the optimum answer output **4**.

For still another example, in response to a natural sentence input **2** "Are there any good sightseeing spots around here?", the dialogue condition control engine **13** creates an optimum answer output **4** "Here is a sightseeing map around here. We recommend the museum." with reference to a variety of information and outputs the optimum answer output **4**.

In response to a natural sentence input **2** "Tell me the bus schedule.", the dialogue condition control engine **13** creates an optimum answer output **4** "Here is the time table of the shuttle bus. The bus will leave in fifteen minutes." with reference to a variety of information and outputs the optimum answer output **4**.

In creating an optimum answer, the dialogue condition control engine **13** can change the restaurant to be answered in view of the status of the user or include a restaurant (recommended shop) to be recommended in view of the circumstances of the hotel.

For example, if identifying the status of the user as middle class, the dialogue condition control engine **13** takes account of the status of the user in creating an optimum answer output **4** "How do you like this room?" to a natural sentence input **2** "Is there any room available?". In this case, the room presented to the user will be a higher-class room affordable by the user.

For another example, if identifying the user as middle class and regular customer, the dialogue condition control engine **13** creates and outputs, in response to a natural sentence input **2** "Is there any room available?", an optimum answer output **4** "Thank you for always using our hotel. We offer you a discount on this superior room. How do you like it?" in view of the status of the user and the history of use of the hotel.

For still another example, if detecting a previous trouble, the dialogue condition control engine **13** creates and outputs, in response to a natural sentence input **2** "Is there any room available?", an optimum answer output **4** "We are sorry but the rooms are fully booked." in view of the history of use of the hotel.

For still another example, if having information on a food (a menu including the food) to be ordered because of the circumstances of the hotel, the dialogue condition control engine **13** may create and output, in response to a natural sentence input **2** "Do you have a recommendation for Japanese food restaurant?", an optimum answer output **4** "Restaurant R has a good reputation." in view of a variety of information. In this case, Restaurant R is a restaurant serving a menu including the particular food.

If the semantic recognition engine **12** cannot understand the meaning of a natural sentence input **2** or if the dialogue condition control engine **13** cannot create an optimum answer output **4**, the dialogue server **1** may change the responder to a staff. For example, in response to a natural sentence input **2** "I want to talk with somebody.", the dialogue condition control engine **13** creates and outputs an optimum answer output **4** "A staff will come soon to help you".

As described above, the commercial information providing system changes a guidance of one-way information into two-way communication. The commercial information providing system can accept a free-style input (ambivalent expressions) and provide a free-style output (a response in view of the circumstances of the user and the administrator) like conversation between people.

Unlike an existing information board, the commercial information providing system eliminates inconveniences such as narrowing down the answers by starting from a menu selection. Furthermore, the commercial information providing system can include the intention of the information provider (a recommendation of the administrator) in an answer that meets the user's question and matches the user's conditions to satisfy the user's request, so that the user can be naturally directed to an action intended by the administrator.

FIG. **2** is a diagram for illustrating an example (a commercial information providing system **5**) of a commercial information providing system.

The commercial information providing system **5** includes a database **51**, a user interface **52**, an administrator interface **53**, a control device **54**, and an information providing device **55**. The database **51**, the administrator interface **53**, and the control device **54** may be included in a single server (an example of an information processing apparatus); any two of these may be included in a single server and the remaining one is included in a different server; or all of these may be included in separate servers. The user interface **52** and the information providing device **55** may be included in a single user terminal (an example of an information processing apparatus) or in separate user terminals.

The database **51** is a storage unit and represents aggregation of data created and managed in a specific format. The database **51** stores various kinds of data related to commercial information.

For example, the database **51** is included in a dialogue server (an example of a commercial information processing apparatus).

The present embodiment is not limited in the structure or scheme (a specific data model) to store or manage the data. For the database **51**, various data models such as a hierarchical model, a network model, and a relational model can be employed as appropriate.

The user interface **52** is an input unit and is an interface capable of accepting an input based on a user operation (an action by the user). A physical button, a physical keyboard, a mouse, an icon displayed on a liquid crystal touch panel, a microphone, and the like function as the user interface **52**.

For example, the user interface **52** is included in a user terminal (an example of an information processing apparatus).

The administrator interface **53** is an input unit and is an interface capable of accepting an input based on an administrator operation (an action by the administrator). A physical button, a physical keyboard, a mouse, an icon displayed on a liquid crystal touch panel, and the like function as the administrator interface **53**.

For example, the administrator interface **53** is included in a dialogue server.

The control device **54** is a control unit and perform a variety of control related to dialogues.

A CPU (Central Processing Unit), an MCU (Micro-Control Unit), a motherboard, and the like function as the control device **54**.

For example, the control device **54** is included in a dialogue server.

The information providing device **55** is an information providing unit and is capable of providing a variety of information such as text, still image, motion picture, audio, and the like.

A cathode-ray tube display, a liquid crystal display, a plasma display, an organic EL display, a video projector, a speaker, and the like function as the information providing device **55**.

For example, the information providing device **55** is included in a user terminal.

Hereinafter, the configuration of the commercial information providing system **5** is described from various aspects.

[Mode 1-1]

A commercial information providing system **5** in Mode 1-1 includes a user interface **52** (cf. a user terminal described later) capable of accepting input of question information (cf. an input sentence and input information described later) representing a question from a user, a database **51** (cf. a shop database, an external facility database, an answer template database described later) holding a plurality of sets of commercial information (e.g., a shop name and a photo of a shop, cf. shop data and external facility data described later) related to commercial facilities and a plurality of response templates (e.g., "Shop X meets your requests. We recommend this shop. How do you like?", "How about Shop X? This shop is currently available and you can make a reservation.", and "How do you like this room?", cf. answer templates described later) of responses to question information input from the user interface **52**, an administrator interface **53** (cf. a new shop data addition screen described later) capable of accepting setting of a priority level (cf. priority levels described later) to prioritize providing a specific set of commercial information among the plurality of sets of commercial information, a control device **54** (cf. a dialogue server described later) connectable to the database **51** and configured to perform processing of extracting at least one set of commercial information to be provided from the plurality of sets of commercial information and a response template to be used from the plurality of response templates based on the question information input from the user interface **52** (cf. semantic recognition processing and first filtering processing described later) and creating response information using the response template, the response information including a set of commercial information selected from the extracted at least one set of commercial information (cf. second filtering processing described later) based on the priority level, and an information providing device **55** (cf. a user terminal described later) configured to provide the response information (cf. response data described later) created by the control device **54** to the user.

The foregoing is a novel configuration that extracts commercial information to be provided to the user from a database based on the priority levels assigned by the administrator in addition to the question information from the user.

This configuration facilitates providing commercial information intended by the administrator to the user.

According to this configuration, commercial information is extracted based on question information from the user; specific commercial information is selected from the extracted commercial information based on the priority levels assigned by the administrator; and response information including the selected commercial information is provided to the user. That is to say, commercial information intended by the administrator in the commercial information suitable for the response to the question information from the user can be provided to the user.

Since this configuration provides the commercial information intended by the administrator to the user in the form of answering the user's question, the user is naturally directed to a desired action.

[Mode 1-2]

The commercial information providing system **5** in Mode 1-2 includes a terminal device (cf. a user terminal described later) installed in the commercial facilities and connected with the control device **54** to be able to communicate with the control device **54** and the terminal includes the user interface **52**.

The foregoing configuration enables input of question information through the user interface **52** of a terminal device installed in the commercial facilities. That is to say, if an issue such as something the user wants to know or some trouble arises to the user when the user is in the commercial facilities, the system can accept question information from the user.

This configuration enables the system to answer the question information from a user in the commercial facilities and provide commercial information intended by the administrator to the user; the user can be provided with a solution and further be directed to a desired action.

[Mode 1-3]

In the commercial information providing system **5** in Mode 1-3, the control device **54** is configured to change the priority level in accordance with a weight assigned depending on predetermined information different from the question information input from the user interface **52** (cf. second filtering processing and recommendation optimization processing described later).

The foregoing configuration changes the priority level in accordance with a weight assigned depending on predetermined information different from the question information input from the user interface **52**.

The predetermined information may be personal information such as member information, facility information such as information on equipment in the facilities or a floor map, vacancy information indicating the real-time vacancy rate (occupancy rate) on each set of commercial information, external environment information and internal environment information such as event information in which the start time is linked with a clock function, and different kinds of history information.

According to this configuration, the priority level is changed in view of the predetermined information as well as the question information input by the user, so that the user can be provided with commercial information timely and more appropriate for the user's question.

[Mode 1-4]

In the commercial information providing system **5** in Mode 1-4, the response information created by the control device **54** includes action request information (cf. a RESERVE icon described later) for encouraging the user to react to the commercial information included in the response information.

The action request information may include a RESERVE icon to reserve a shop related to a set of commercial information and a RESERVE icon to reserve a hotel room related to a set of commercial information.

Accordingly, the action request information encourages the user's next action; the user can be pertinently directed to a desired action.

[Mode 1-5]

In the commercial information providing system **5** in Mode 1-5, the user interface **52** is configured to accept input of use request information (cf. an input following a press of a RESERVE icon and an input with a HERE icon described later) for requesting to use a set of commercial information included in the response information provided by the information providing device **55**; the control device **54** is configured to create guidance information (cf. an example of a dialogue described later) for contributing to use of the set of commercial information designated by the use request information in response to input of the use request information from the user interface **52**; and the information providing device **55** is configured to provide the guidance information created by the control device **54** to the user.

The foregoing configuration provides guidance information for contributing to use of a set of commercial information in response to input of a use request information for requesting to use the set of commercial information.

The guidance information may be a map showing a route from the current position to a destination (e.g., a shop, a room, or a rest room) or information on a shop such as the telephone number, the open hours, the shop holiday, the menu, a coupon, the chefs name, an appeal point, a layout, and a photo.

This configuration enables the user to use the commercial information more conveniently.

[Mode 2-1]

A commercial information providing system **5** in Mode 2-1 includes a database **51** including a plurality of sets of commercial information stored in advance, a control device **54** connectable to the database **51** and configured to create recommendation information (equivalent to the response information, cf. output information described later) with a set of commercial information extracted from the plurality of sets of commercial information, a user interface **52** capable of accepting input of information, an administrator interface **53** capable of accepting input of information, and an information providing device **55** configured to provide the recommendation information to a user. The control device **54** is configured to perform first extraction processing (cf. first filtering processing described later) based on user request information (equivalent to the question information, cf. an input sentence and input information described later) input from the user interface **52** to extract specific sets of commercial information from the plurality of sets of commercial information, perform second extraction processing (cf. second filtering processing described later) based on filtering information (equivalent to priority levels and weights) input from the administrator interface **53** in advance to extract a set of commercial information from the specific sets of commercial information extracted by the first extraction processing, and create recommendation information including the set of commercial information extracted by the second extraction processing.

The foregoing is a novel configuration that extracts commercial information to be provided to a user based on filtering information set by the administrator in addition to user request information from the user.

This configuration facilitates providing commercial information intended by the administrator to the user.

According to this configuration, commercial information is extracted by the first extraction processing based on user request information from the user and further, commercial information is extracted by the second extraction processing based on the filtering information set by the administrator. Recommendation information including the extracted commercial information is provided to the user. That is to say, commercial information the administrator intends to provide to the user in the commercial information suitable for the response to the question information from the user is provided to the user.

Since this configuration provides the commercial information intended by the administrator to the user in the form of answering the user's request, the user is naturally directed to a desired action.

[Mode 2-2]

In the commercial information providing system **5** in Mode 2-2, the control device **54** is configured to add a message for suggesting the set of commercial information extracted by the second extraction processing and requesting the user to take the set of commercial information into consideration.

The foregoing configuration adds a message for suggesting a set of commercial information and requesting the user to take the set of commercial information into consideration.

For a message for suggesting a set of commercial information and requesting to take it into consideration, expressions asking the state, situation, impression, opinion, or intension can be employed. For example, "How about Restaurant A?" or "How about Room A?" is included.

This configuration provides a message suggesting specific commercial information and asking for a reaction. This means the user is directed by the administrator; however, the final decision is left to the user. As a result, the user can have good impression by feeling that the user has selected the information by himself or herself. The user can be directed to the desired action more naturally.

[Mode 3-1]

A commercial information providing system **5** in Mode 3-1 includes a database **51** including a plurality of sets of commercial information stored in advance, a control device **54** connectable to the database **51** and configured to create recommendation information with a set of commercial information extracted from the plurality of sets of commercial information, a user interface **52** capable of accepting input of information, an administrator interface **53** capable of accepting input of information, and a display device (an example of an information providing device **55**) capable of displaying the recommendation information. The control device **54** is configured to perform first extraction processing (cf. first filtering processing described later) based on user request information input from the user interface **52** to extract specific sets of commercial information from the plurality of sets of commercial information, perform second extraction processing (cf. second filtering processing described later) based on filtering information (equivalent to priority levels and weights) for determining order of displaying commercial information input in advance from the administrator interface **53** to extract at least one set of commercial information from the specific sets of commercial information extracted by the first extraction processing, and create recommendation information including the at least one set of commercial information sorted and extracted by the second extraction processing in accordance with the filtering information for determining the order.

The foregoing is a novel configuration that extracts commercial information to be provided to the user based on the filtering information set by the administrator in addition to the user request information from the user.

This configuration facilitates providing commercial information intended by the administrator to the user.

According to this configuration, commercial information is extracted by the first extraction processing based on user request information from the user and further, commercial information is extracted by the second extraction processing based on the filtering information set by the administrator. Recommendation information including the extracted commercial information is provided to the user. That is to say, commercial information the administrator intends to provide to the user in the commercial information suitable for the response to the question information from the user is provided to the user.

Since this configuration provides the commercial information intended by the administrator to the user in the form of answering the user's request, the user is naturally directed to a desired action.

Furthermore, since this configuration displays the commercial information in accordance with the order specified by the administrator, the user is directed to paying attention to the commercial information intended by the administrator.

[Mode 4-1]

A commercial information providing method in Mode 4-1 is for a commercial information providing system **5** including a user interface **52** capable of accepting input of question information representing a question from a user, a database **51** holding a plurality of sets of commercial information related to commercial facilities and a plurality of response templates of responses to question information input from the user interface **52**, an administrator interface **53** capable of accepting setting of a priority level to prioritize providing a specific set of commercial information among the plurality of sets of commercial information, a control device **54**, and an information providing device **55**. The commercial information providing method includes a control step (cf. SQ**18** described later) of connecting, by the control device **54**, to the database **51**; extracting, by the control device **54**, at least one set of commercial information to be provided from the plurality of sets of commercial information and a response template to be used from the plurality of response templates based on the question information input from the user interface **52**; and creating, by the control device **54**, response information using the response template, the response information including a set of commercial information selected based on the priority level from the extracted at least one set of commercial information, and an information providing step (cf. SQ**20** described later) of providing, by the information providing device **55**, the response information created by the control device to the user.

[Mode 5-1]

A commercial information providing method in Mode 5-1 is for a commercial information providing system **5** including a database **51** including a plurality of sets of commercial information stored in advance, a control device **54** connectable to the database **51** and configured to create recommendation information with a set of commercial information extracted from the plurality of sets of commercial information, a user interface **52** capable of accepting input of information, an administrator interface **53** capable of accepting input of information, and an information providing device **55** configured to provide the recommendation information to a user. The commercial information providing method includes a first extraction step (cf. first filtering processing described later) of extracting, by the control device **54**, specific sets of commercial information from the plurality of sets of commercial information based on user request information input from the user interface **52**, a second extraction step (cf. second filtering processing described later) of extracting, by the control device **54**, a set of commercial information from the specific sets of commercial information extracted by the first extraction step based on filtering information input from the administrator interface **53** in advance, and a creation step (cf. response data creation processing described later) of creating, by the

control device **54**, recommendation information including the set of commercial information extracted by the second extraction processing.

[Mode 6-1]

A commercial information providing method in Mode 6-1 is for a commercial information providing system **5** including a database **51** including a plurality of sets of commercial information stored in advance, a control device **54** connectable to the database **51** and configured to create recommendation information with a specific set of commercial information extracted from the plurality of sets of commercial information, a user interface **52** capable of accepting input of information, an administrator interface **53** capable of accepting input of information, and a display device (an example of an information providing device **55**) capable of displaying the recommendation information. The commercial information providing method includes a first extraction step (cf. first filtering processing described later) of extracting, by the control device **54**, specific sets of commercial information from the plurality of sets of commercial information based on user request information input from the user interface **52**, a second extraction step (cf. second filtering processing described later) of extracting, by the control device **54**, at least one set of commercial information from the specific sets of commercial information extracted by the first extraction processing based on filtering information for determining order of displaying the plurality of sets of commercial information input in advance from the administrator interface **53**, and a creation step (cf. response data creation processing described later) of creating, by the control device **54**, recommendation information including the at least one set of commercial information sorted and extracted by the second extraction processing in accordance with the filtering information for determining the order.

[Mode 7-1]

A commercial information processing apparatus in Mode 7-1 includes a communication unit and a control unit. The communication unit is capable of communicating with an information processing apparatus including an input unit capable of inputting question information representing a question from a user and an information providing unit capable of providing information to the user. The control unit is configured to perform the processing of extracting at least one set of commercial information to be provided and a response template to be used from a storage unit holding a plurality of sets of commercial information on commercial facilities and a plurality of response templates to be used to respond to question information input with the input unit based on the question information input with the input unit and creating response information using the response template. The response information includes a set of commercial information selected from the extracted at least one set of commercial information based on a priority level to prioritize providing a specific set of commercial information among the plurality of sets of commercial information.

The commercial information providing system **5** and the commercial information providing method are not limited to the above-described ones. For example, they may be configured as follows.

[First Other Mode]

The database **51** stores text information representing expected questions (cf. reference texts described later) and the control device **54** interprets the question information based on the question information input from the user interface **52** and the text information (cf. semantic recognition processing described later) and creates the response information (cf. response data creation processing).

Since this configuration interprets the meaning of the question information, the response to a question is not a list of commercial information (the names of shops or facilities) answering the question but interactive bidirectional dialogue, which enables the user to direct one of a plurality of shops the administrator wants to introduce (the administrator wants the user to use).

[Second Other Mode]

The response information includes a proposal message of an interrogative sentence or a tag question in text or speech.

Examples of such messages include "Shop X meets your requests. This shop is one of our recommendations. How do you like it?", "Is Shop X acceptable for you? This shop is currently available and you can make a reservation.", and "How about this room?"

According to this configuration, the user is directed by the administrator but the final decision is left to the user. As a result, the user can have good impression by feeling that the user has selected the information by himself or herself.

[Third Other Mode]

The control device **54** is configured to determine whether a use request information for requesting to use a set of commercial information included in the response information is about the commercial information determined based on the priority level upon input of the use request information from the user interface **52** and if not determining that the use request information is about the determined commercial information, create response information including the set of commercial information determined based on the priority level as well as positive information and negative information on the set of commercial information designated by the use request information (cf. icon input processing described later). The information providing device **55** provides the response information created by the control device **54** to the user.

For example, in a case where a user provides a question "I want to eat Japanese food", the control device **54** first provides first response information including information on Restaurants A to D in the facilities that meet the user's request. If the user selects Shop D not recommended by the administrator through the user interface **52**, the control device **54** provides second recommendation information including positive information "Restaurant D. Thank you for your frequent visits to this restaurant", negative information "We have checked the availability but your usual private room is occupied and only counter space is available right now. Is it OK with you?", and commercial information determined based on the priority "Restaurant A has an open private room and you can be seated now. Would you like to visit Restaurant A?

This configuration enables the user to reconsider about using Restaurant D not recommended by the administrator to direct the user to Restaurant A recommended by the administrator.

[Fourth Other Mode]

The commercial information providing system further includes a reader device (cf. a user terminal described later) for retrieving identification information on the user from a storage medium such as an IC card and the database **51** or an external database (cf. a member server and a history server described later) holds personal information and use history information of users. The control device **54** is configured to acquire personal information and use history information on the user, determine whether the user is a regular customer based on the personal information and the use history information, and change the priority level based on the personal information and the use history information

(cf. second filtering processing described later) if determining that the user is a regular customer.

For example, if the user is a regular customer, a question "I want to eat Japanese food" may imply an intention that the user wants to know the place and the name of the restaurant where the user has been previously, although the user has forgotten the name of the restaurant. Furthermore, a regular customer may know what kind of restaurants are in the commercial facilities.

In these cases, if the response information based on the priority level determined by the administrator does not include the restaurant intended by the user or some restaurants known by the user, the user may feel inconvenience. Accordingly, it is preferable to present a plurality of restaurants including restaurants in the use history and a high-priority restaurant intended by the administrator in view of the question information. In addition, it is preferable to control the processing to provide different information between regular customers and newcomer users.

This configuration presents a regular customer with a plurality of restaurants including restaurants in the use history and a high-priority restaurant intended by the administrator in view of the question information, which enables a dialogue suitable for a regular customer.

[Fifth Other Mode]

Assume that, in response to a question "I want to eat non-fatty food." input through the user interface **52**, Udon restaurants A and B, Soba restaurants C and D, and Sushi restaurants F and G are extracted in the first extraction processing as information meeting the conditions.

If newly opened Sushi restaurant G is preset to filtering information (recommendation information) by the manager of the facilities or the administrator through the administrator interface **52**, the control device **54** creates a response "How about Sushi restaurant G? The menu is as follows and seats are available now." and displays the response with a RESERVE icon on the display device or the information providing device **55**.

In response to a touch on the RESERVE icon, the control device **54** creates a reservation page customized for the user based on the user's personal information (the name, sex, age, and hometown including the nationality) and displays the page on the display device. After entering additional information such as the time of visit and the number of visitors to the reservation page through the user interface such as a touch panel, the user touches (inputs) the HERE icon, then, the reservation information is sent to the restaurant as well as the e-mail address registered in the personal information. A PRINT icon is displayed on the display device to print out the reservation page and the map with a printer (cf. a kiosk terminal described later).

FIG. **3** is a diagram for illustrating an example (dialogue system **1000**) of a commercial information providing system **5**. The above-described configuration can be implemented with the dialogue system **1000** described hereinafter but the dialogue system **1000** is merely an example. For example, all the elements disclosed herein are not necessary.

The dialogue system **1000** includes a member management server **13**, a dialogue server **1**, and one or more user terminals (signage apparatuses A **100**, signage apparatuses B **150**, and kiosk terminals **200**).

Although the signage apparatuses A **100**, signage apparatuses B **150**, and kiosk terminals **200** are provided for user terminals, the user terminals are not limited to these. The user terminals may be information processing apparatuses or smartphones, for example.

The dialogue server **1** receives and analyzes an HTTP request sent from the web browser of a user terminal in accordance with a user operation, prepares data for responding to the request, and sends back the data to the web browser of the user terminal as an HTTP response. The data to be sent back as an HTTP response includes data such as HTML data and image data in addition to the substance of the response. The HTML data is to display a web page and the image data is image data or video data to be displayed on the web page.

More specifically, when a user operates an input device such as a touch panel of a user terminal, the user terminal receives a signal generated by the operation as an input (input sentence). The user terminal displays a designated web page and displays the received input sentence in an entry area of the web page. The user terminal sends an HTTP request to the dialogue server **1** via a network **4000** in accordance with the user operation (press of an ASK button). Further, upon receipt of output information (such as HTML data, or an example of commercial information) including response data (an example of response information) from the dialogue server **1**, the user terminal displays a web page based on the data (updates the display of the web browser).

The dialogue server **1** receives a text (an example of question information) entered by the user to the user terminal via the network **4000** using a protocol such as HTTP.

The dialogue server **1** consults its own knowledge database and shop database or communicates with a hotel server **2000** and shop servers **3000** based on the received input information, and determines a response.

The knowledge database includes knowledge data, which is updated in accordance with operations of the administrator. The knowledge data is basically data specified with a combination of a text (reference text) to be entered by the user with high probability and data for processing the text. The shop database includes shop data, which is updated in accordance with operations of the administrator. The shop data is an example of commercial information and data including a variety of information (such as a shop name) on individual shops.

The dialogue server **1** creates response data so as to display the determined response on a web page displayed by the web browser of the user terminal and sends the response data to the user terminal as output information via the network **4000**.

The dialogue server **1** records how the dialogue server **1** has responded to an input of the user to the user terminal into a log and in response to operations of the administrator, analyzes the log and provides a specified report.

[Circuit Configuration of Dialogue Server]

With reference to FIG. **4**, a configuration of a circuit included in the dialogue server **1** is described.

The dialogue server controller **1400** for controlling the dialogue server **1** includes a CPU **1401**, a ROM **1402**, and a RAM **1403**.

The CPU **1401** controls operation of the components of the dialogue server **1** and executes the programs stored in the ROM **1402** and carries out operations.

The ROM **1402** includes a memory device such as a flash memory and stores permanent data to be used by the CPU **1401**. For example, the ROM **1402** can store a program for controlling the dialogue system.

The RAM **1403** stores data required to execute the programs stored in the ROM **1402** on a temporary basis.

The external storage device **1404** is a storage device such as a hard disk drive and stores programs to be executed by

the CPU **1401** and data (such as tables and databases) to be used by the programs executed by the CPU **1401**.

The graphic board **1405** controls the LCD **1408** to display a variety of information.

The input controller **1406** converts inputs from the keyboard **1409** or the mouse **1410** into a signal and sends it to the CPU **1401**.

The network I/F (interface) **1407** implements data communication with the servers such as the member management server **13**, the hotel server **2000**, and the shop servers **3000** and the signage apparatuses A **100**, the signage apparatuses B **150**, the kiosk terminals **200**, and the surveillance cameras (not shown).

For example, the CPU **1401** loads the programs and the table data stored in the ROM **1402** to the RAM **1403** and executes the programs to implement the functions of the dialogue server **1**

[Configuration of Signage Apparatus A]

FIG. **5** illustrates a signage apparatus A **100** to be used in the dialogue system **1000**. The signage apparatus A **100** is an example of a user terminal (information input and output apparatus) and can be connected to the servers (such as the member management server **13** and the dialogue server **1**) in the dialogue system **1000** via a network. For example, the signage apparatus A **100** receives a question (input) from a user and displays (outputs) an answer to the question received from the dialogue server **1**. Furthermore, the signage apparatus A **100** can display advertisements (inclusive of billboards) of shops and a floor guide of the hall.

The signage apparatus A **100** includes an LCD **101** and an LCD **103** having a touch panel function. The LCD **101** may be a 24-inch liquid crystal display device (24 inches correspond to approximately 60.96 cm) and the LCD **103** may be a 46-inch liquid crystal display device (46 inches correspond to approximately 116.84 cm). As described above, these LCDs display a dialogue with the user, advertisement information, and guidance information. The touch panel function of the LCD **103** may be based on infrared technology. Although the LCD **103** in this example is configured to have a touch panel function, instructions may be input through other input devices such as a keyboard and a mouse.

The LCD **101** and the LCD **103** are held by cabinets. Around the rims of the front faces of the cabinets, effect-use LEDs **102** and **104** are provided. The effect-use LEDs **102** and **104** can be tape LED lights.

The signage apparatus A **100** further includes motion sensors **105** and **106** on the cabinet for the LCD **101** and the cabinet for the LCD **103**, respectively. The motion sensors **105** and **106** can be cameras; images taken by the motion sensors **105** and **106** are used to analyze the behaviors of the users of the signage apparatus A **100** and the people walking down the aisles.

The signage apparatus A **100** also includes a touch unit **107**, which includes an RFID module capable of data communication with a contactless IC card, or a cell phone or a smartphone having an NFC function. A member can log in the system by holding a membership card (IC card) associated with the member over the touch unit **107** and display a menu screen for members and information on the member on the LCD **101** or the LCD **103**. The information on the member may be acquired from the member management server **13**. A contactless IC card, a cell phone, and a smartphone are examples of readable media (storage media).

The hall staffs can log in the system by holding an IC card for staff and display a menu screen for staff on the LCD **101** or the LCD **103**.

The signage apparatus A **100** is configured to hide the information displayed on the LCD **103** and automatically log off the user when a predetermined time has elapsed after the user touches the touch unit **107** with an IC card and then leaves the signage apparatus A **100** without log-off operation.

The signage apparatus A **100** includes a microphone **133** in the cabinet for the LCD **103** to collect sounds. The cabinet for the LCD **103** has an opening **110** for a microphone at the position corresponding to the microphone **133**. FIG. **5** shows this opening **110** for a microphone beside the motion sensor **106**.

The signage apparatus A **100** further includes speakers **134** and **135** in the cabinet for the LCD **103** to output sounds. The cabinet for the LCD **103** is provided with speaker ducts at the positions corresponding to the speakers. FIG. **5** shows a speaker duct **111** for one of the speakers.

In addition to the foregoing, the signage apparatus A **100** includes a base unit **108** for supporting the cabinet for the LCD **101** and the cabinet for the LCD **103**, and a control unit **109** containing a controller for controlling components such as the LCDs and LEDs. [Configuration of circuit in signage apparatus A]

Next, with reference to FIG. **6**, a configuration of a circuit included in the signage apparatus A **100** is described.

The signage A controller **120** for controlling the signage apparatus A **100** includes a CPU **121**, a ROM **122**, and a RAM **123**.

The CPU **121** controls operation of the components of the signage apparatus A **100**, and executes the programs stored in the ROM **122** and carries out operations.

The ROM **122** includes a memory device such as a flash memory and stores permanent data to be used by the CPU **121**.

The RAM **123** stores data required to execute the programs stored in the ROM **122** on a temporary basis.

The external storage device **124** is a storage device such as a hard disk drive and stores programs to be executed by the CPU **121** and data to be used by the programs executed by the CPU **121**.

The network I/F (interface) **125** implements data communication with servers such as the member management server **13** and the dialogue server **1**.

The LED driver **126** controls the effect-use LEDs **102** and **104** to light with predetermined timing. Further, the LED driver **126** can light the effect-use LEDs **102** and **104** synchronously with the display of the dialogue with the user, the display of advertisement information, guidance information, or membership information to be displayed in response to an operation by a member.

The LCD controller **129** controls the LCD **101** to display information such as the aforementioned advertisement information.

The LCD controller **129** can also control the LCD **101** to display a variety of information.

The LCD controller **130** controls the LCD **103** to display response data created by the dialogue server **1** and information such as the aforementioned advertisement information. The LCD **103** has a touch panel function, which forwards an operation of the user to the CPU **121**.

The touch unit controller **131** controls data transmission responsive to a touch operation on the touch unit **107** with an IC card or a cell phone. The touch unit controller **131** includes a contactless R/W (reader/writer) controller **131***a*.

The contactless R/W controller **131***a* determines whether the touch unit **107** is operated with an IC card or a cell phone and if the touch unit **107** is operated, acquires information

retrieved by the touch unit **107**. The touch unit **107** has an antenna for data communication with an IC card or a cell phone using NFC.

Upon acquisition of the identification code of a membership card (IC card) from the touch unit **107**, the CPU **121** acquires membership information on the member associated with the identification code from the member management server **13**, and displays the information on the LCD **101** or the LCD **103**. Furthermore, the CPU **121** can display an operation menu for the member on the LCD **103** or display advertisement information suitable for the member on the LCD **101** or the LCD **103**.

Alternatively, the CPU **121** may acquire a user ID stored in the membership card (IC card) from the touch unit **107** and acquire the membership information associated with the user ID from the member management server **13**.

The DSP **132** receives audio data acquired from the microphone **133**, applies predetermined processing to the data, and sends the data to the CPU **121**. In addition, the DSP **132** sends received audio data to the speakers **134** and **135** to output sounds.

The motion sensor controller **136** acquires images of a user or other objects captured by the motion sensors (for example, cameras) **105** and **106**, applies predetermined image processing as necessary, and sends the processed data to the CPU **121**.

The motion sensor controller **136** can acquire captured-image information from the motion sensors **105** and **106** and send the captured-image information to the dialogue server **1** in response to an acquisition request of the dialogue server **1**.

[Configuration of Signage Apparatus B]

FIG. **7** illustrates a signage apparatus B **150** to be used in the dialogue system **1000**. The signage apparatus B **150** is an example of a user terminal (information input and output apparatus) and can be connected to the servers (such as the member management server **13** and the dialogue server **1**) in the dialogue system **1000** via a network. For example, the signage apparatus B **150** receives a question (input) from a user and displays (outputs) an answer to the question received from the dialogue server **1**. Furthermore, the signage apparatus B **150** can display advertisements (inclusive of billboards) of shops and a floor guide of the hall.

The signage apparatus B **150** includes an LCD **153** having a touch panel function. The LCD **153** may be a 46-inch liquid crystal display device (46 inches correspond to approximately 116.84 cm). As described above, the LCD **153** displays a dialogue with the user, advertisement information, and guidance information. The touch panel function of the LCD **153** may be based on infrared technology. Although the LCD **153** in this example is configured to have a touch panel function, instructions may be input through other input devices such as a keyboard and a mouse.

The LCD **153** is held by a cabinet. Around the rim of the front face of the cabinet, an effect-use LED **154** is provided. The effect-use LED **154** can be a tape LED light.

The signage apparatus B **150** further includes a motion sensor **156** on the cabinet for the LCD **153**. The motion sensor **156** can be a camera; images taken by the motion sensor **156** are used to analyze the behaviors of the users of the signage apparatus B **150** and the people walking down the aisles.

The signage apparatus B **150** also includes a touch unit **157**, which includes an RFID module capable of data communication with a contactless IC card, or a cell phone or a smartphone having an NFC function. A member can log in the system by holding a membership card (IC card) associated with the member over the touch unit **157** and display a menu screen for members and information on the member on the LCD **153**. The information on the member may be acquired from the member management server **13**.

The hall staffs can log in the system by holding an IC card for staff and display a menu screen for staff on the LCD **153**.

The signage apparatus B **150** is configured to hide the information displayed on the LCD **153** and automatically log off the user when a predetermined time has elapsed after the user touches the touch unit **157** with an IC card and then leaves the signage apparatus B **150** without log-off operation.

The signage apparatus B **150** includes a microphone **183** in the cabinet for the LCD **153** to collect sounds. The cabinet for the LCD **153** has an opening **158** for a microphone at the position corresponding to the microphone **183**. FIG. **7** shows this opening **158** for a microphone beside the motion sensor **156**.

The signage apparatus B **150** further includes speakers **184** and **185** in the cabinet for the LCD **153** to output sounds. The cabinet for the LCD **153** is provided with speaker ducts **159** at the positions (four corners) corresponding to the speakers.

In addition to the foregoing, the signage apparatus B **150** includes a base unit **160** for supporting the cabinet for the LCD **153**. The base unit **160** contains a controller for controlling components such as the LCD **153** and the LED **154**.

[Configuration of Circuit in Signage Apparatus B]

Next, with reference to FIG. **8**, a configuration of a circuit included in the signage apparatus B **150** is described.

The signage B controller **170** for controlling the signage apparatus B **150** includes a CPU **171**, a ROM **172**, and a RAM **173**.

The CPU **171** controls operation of the components of the signage apparatus B **150**, and executes the programs stored in the ROM **172** and carries out operations.

The ROM **172** includes a memory device such as a flash memory and stores permanent data to be used by the CPU **171**.

The RAM **173** stores data required to execute the programs stored in the ROM **172** on a temporary basis.

The external storage device **174** is a storage device such as a hard disk drive and stores programs to be executed by the CPU **171** and data to be used by the programs executed by the CPU **171**.

The network I/F (interface) **175** implements data communication of the signage apparatus B **150** with servers such as the member management server **13** and the dialogue server **1**.

The LED driver **176** controls the effect-use LED **154** to light with predetermined timing. Further, the LED driver **176** can light the effect-use LED **154** synchronously with the display of the dialogue with the user, the display of advertisement information, guidance information, or membership information to be displayed in response to an operation by a member.

The LCD controller **180** controls the LCD **153** to display response data created by the dialogue server **1** and information such as the aforementioned advertisement information. The LCD **153** has a touch panel function, which forwards an operation of the user to the CPU **171**.

The touch unit controller **181** controls data transmission responsive to a touch operation on the touch unit **157** with an IC card or a cell phone. The touch unit controller **181** includes a contactless R/W (reader/writer) controller **181***a*.

The contactless R/W controller **181***a* determines whether the touch unit **157** is operated with an IC card or a cell phone and if the touch unit **157** is operated, acquires information retrieved by the touch unit **157**. The touch unit **157** has an antenna for data communication with an IC card or a cell phone using NFC.

Upon acquisition of the identification code of a membership card (IC card) from the touch unit **157**, the CPU **171** acquires membership information on the member associated with the identification code from the member management server **13**, and displays the information on the LCD **153**. Furthermore, the CPU **171** can display an operation menu for the member on the LCD **153** or display advertisement information suitable for the member on the LCD **153**.

Alternatively, the CPU **171** may acquire a user ID stored in the membership card (IC card) from the touch unit **157** and acquire the membership information associated with the user ID from the member management server **13**.

The DSP **182** receives audio data acquired from the microphone **183**, applies predetermined processing to the data, and sends the data to the CPU **171**. In addition, the DSP **182** sends received audio data to the speakers **184** and **185** to output sounds.

The motion sensor controller **186** acquires images of a user or other objects captured by the motion sensor (for example, camera) **156**, applies predetermined image processing as necessary, and sends the processed data to the CPU **171**.

The motion sensor controller **186** can acquire captured-image information from the motion sensor **156** and send the captured-image information to the dialogue server **1** in response to an acquisition request of the dialogue server **1**.

[Configuration of Kiosk Terminal]

FIG. **9** illustrates a kiosk terminal **200** to be used in the dialogue system **1000**. The kiosk terminal **200** is an example of user terminal (information input and output apparatus) and can be connected to the servers (such as the member management server **13** and the dialogue server **1**) in the dialogue system **1000** via a network. For example, the kiosk terminal **200** receives a question (input) from a user and displays (outputs) an answer to the question received from the dialogue server **1**. Furthermore, the kiosk terminal **200** prints out (outputs) a floor map included in the answer from the dialogue server **1** in response to a user operation. The kiosk terminal **200** also prints out (outputs) a coupon ticket referred to in the dialogue with the dialogue server **1** in response to a user operation.

The kiosk terminal **200** includes an LCD **201** having a touch panel function. The LCD **201** may be a 24-inch liquid crystal display device (24 inches correspond to approximately 60.96 cm). As described above, this LCD displays a dialogue with the user. Although the LCD **201** in this example is configured to have a touch panel function, instructions may be input through other input devices such as a keyboard and a mouse.

The kiosk terminal **200** further includes motion sensors **202** and **203** above and below the LCD **201**. The motion sensors **202** and **203** can be cameras; images taken by the motion sensors **202** and **203** are used to analyze the behaviors of the users of the kiosk terminal **200** and the people walking down the aisles.

The kiosk terminal **200** also includes a touch unit **204**, which includes an RFID module capable of data communication with a contactless IC card, or a cell phone or a smartphone having an NFC function. A member can log in the system by holding a membership card (IC card) associated with the member over the touch unit **204** and display a menu screen for members and information on the member on the LCD **201**. The information on the member may be acquired from the member management server **13**. In addition to the touch unit **204** or instead of the touch unit **204**, an information recording medium reader for reading information stored in an information recording medium such as a magnetic card may be provided. In this case, a magnetic card can be a membership card, instead of the IC card.

The hall staffs can log in the system by holding an IC card for staff and display a menu screen for staff on the LCD **201**.

The kiosk terminal **200** has an IC card slot **205** to insert or take out an IC card. The IC card slot **205** is provided with an eject button. At the corresponding place to the IC card slot **205** inside the cabinet of the kiosk terminal **200**, a card unit **230** is provided; the IC card slot **205** is structured as a part of the card unit **230**.

When a membership card is inserted from the IC card slot **205**, the kiosk terminal **200** can display a menu screen for members and information on the member on the LCD **201**. The card unit **230** can issue and collect a card such as a limited card or a reward card.

The kiosk terminal **200** has a ticket printer/bill validator **232**. The ticket printer/bill validator **232** can issue and collect a ticket or a coupon; further, have the functions of a bill validator.

The kiosk terminal **200** further has a receiver **207** to be used in VoIP calls. The user of the kiosk terminal **200** can talk with a user of another kiosk terminal **200** or a user of a signage apparatus by using the receiver **207**. The incoming alert LED **208** is controlled to light when a VoIP call is coming.

The kiosk terminal **200** has a keyboard **209** and a numeric keypad **210** for the user to enter data (in membership registration or a dialogue with the system) and LED plates **211** for privacy protection are provided on the both sides of the numeric keypad **210**.

The kiosk terminal **200** further has a QR code scanner **212** for reading a QR Code™, which may be attached to an e-mail sent to a cell phone.

The kiosk terminal **200** includes a cabinet **213** containing the controller of the LCD and LEDs.

[Configuration of Circuit in Kiosk Terminal]

Next, with reference to FIG. **10**, a configuration of a circuit included in the kiosk terminal **200** is described.

The kiosk terminal controller **220** for controlling the kiosk terminal **200** includes a CPU **221**, a ROM **222**, and a RAM **223**.

The CPU **121** controls operation of the components of the kiosk terminal **200**, and executes the programs stored in the ROM **122** and carries out operations.

The ROM **222** includes a memory device such as a flash memory and stores permanent data to be used by the CPU **221**. For example, the ROM **222** can store a VoIP call control program.

The RAM **223** stores data required to execute the programs stored in the ROM **222** on a temporary basis.

The external storage device **224** is a storage device such as a hard disk drive and stores programs to be executed by the CPU **221** and data to be used by the programs executed by the CPU **221**.

The network I/F (interface) **225** implements data communication with the servers such as the member management server **13** and the dialogue server **1**.

The LCD controller **226** controls the LCD **201** to display information such as the aforementioned information on the games. The LCD **201** has a touch panel function, which sends an operation of the user to the CPU **221**.

The LCD controller **226** can also control the LCD **201** to display response data created by the dialogue server **1**.

The motion sensor controller **227** receives images of a user or other objects captured by the motion sensors (for example, cameras) **202** and **203**, applies predetermined image processing as necessary, and forwards the processed data to the CPU **221**.

The motion sensor controller **227** can acquire captured-image information from the motion sensors **202** and **203** and send the captured-image information to the dialogue server **1** in response to an acquisition request of the dialogue server **1**.

The touch unit controller **228** controls data transmission responsive to a touch operation on the touch unit **204** with an IC card or a cell phone. The touch unit controller **228** includes a contactless R/W (reader/writer) controller **228***a*.

The contactless R/W controller **228***a* determines whether the touch unit **204** is operated with an IC card or a cell phone and if the touch unit **204** is operated, acquires information retrieved by the touch unit **204**. The touch unit **204** has an antenna for data communication with an IC card or a cell phone using NFC.

The IC card controller **229** controls intake and ejection of an IC card, and retrieval of data from the IC card. The IC card controller **229** includes a contactless R/W (reader/writer) controller **229***a* and an IC card intake/ejection controller **229***b*.

The contactless R/W controller **229***a* controls the card unit **230** to read information such as the identification code stored in the IC card. The card unit **230** has an antenna for data write to the IC card using NFC.

The IC card intake/ejection controller **229***b* controls intake and ejection of an IC card. In response to insertion of an IC card to the IC card slot **205** by the user, the IC card intake/ejection controller **229***b* controls the IC card to be held in the card unit **230** until the user logs off. Furthermore, in response to press of the eject button, the IC card intake/ejection controller **229***b* controls the IC card to be ejected.

The ticket printer controller **231** controls the ticket printer/bill validator **232** to print a floor map, to issue or collect a ticket or a coupon, and to identify a bill. The ticket printer controller **231** includes a printer controller **231***a* and a bill validator controller **231***b*.

The audio controller **233** inputs and outputs sounds with a microphone **234** and a speaker **235** included in the receiver **207**. The audio controller **233** includes a DSP **233***a* and an LED controller **233***b*. The DSP **233***a* performs predetermined audio signal processing in receiving sounds from the microphone and outputting sounds from the speaker **235**. The LED controller **233***b* controls the incoming alert LED **208** to light based on the incoming signal of a VoIP call.

The input controller **236** converts inputs from the keyboard **209** or the numerical keypad **210** into a signal and sends it to the CPU **221**.

[Creating Shop Database]

FIG. **11**A is a diagram for illustrating an example (shop data creation screen **820**) of a shop data creation screen to be used to create a shop database. The dialogue server **1** controls a display device to display the shop data creation screen **820** and shop data configured through the shop data creation screen **820** is stored to a shop database.

The shop data creation screen **820** is displayed in response to selection of a menu "create shop database" in the service menu of the dialogue system **1000**.

The shop data creation screen **820** includes a search instruction area **821** for specifying a search item stored in the shop database, a search result list jump instruction area **822** for indicating the page position of the displayed search result within the search result list and for specifying the page where to jump in the search result list, an ADD button **823** for adding new shop data, and an indication area **824** for showing a result of searching the shop data.

The shop data creation screen **820** shows shop data (the shop ID and the shop name) on one shop in the indication area **824** as a result of a specified search. If the search result includes shop data on a plurality of shops, the indication area **824** shows the shop data on individual shops in separate rows.

The EDIT button **825** provided in the indication area **824** is to edit the shop data displayed in the corresponding indication area **824**. The DELETE button **826** provided in the indication area **824** is to delete the shop data displayed in the corresponding indication area **824**.

FIG. **11**B is a diagram for illustrating an example (shop data management screen **830**) of shop data management screen to add or update shop data in the shop database. The shop data management screen **830** is a screen displayed in response to press of the ADD button **823** in the shop data creation screen **820**. The shop data management screen **820** is also displayed in response to press of the EDIT button **825** to edit existing shop data.

The shop data management screen **830** includes a shop ID indication area **831**, a shop name entry area **832**, a priority level entry area **833**, a today's recommendation entry area **834**, and a REGISTER button **835**.

The shop ID indication area **831** is a display area to indicate a shop ID. The shop ID is automatically assigned in creating new shop data and cannot be changed.

The shop name entry area **832** is provided below the shop ID indication area **831**. The shop name entry area **832** is an area to input the name of a shop.

The priority level entry area **833** is provided below the shop name entry area **832**. The priority level entry area **833** is an area to input (set) a priority level (an example of filtering information) so as to provide shop data on a specific shop at a high priority in the shop data on a plurality of shops.

Five priority levels of "A", "B", "C", "D", and "E" are defined for priority (an example of the order of displaying shop data on the LCD). The priority level A is the highest and the priority level E is the lowest. Note that the priority levels are not limited to these. For example, the number of priority levels can be either less than or more than five. Shop data not assigned a priority level may be included.

The today's recommendation entry area **834** is provided below the priority level entry area **833**. The today's recommendation entry area **834** is an area for the shop to input an item they want to recommend to the users.

The REGISTER button **835** is provided on the bottom of the shop data management screen **830**. In response to press of the REGISTER button **835**, the information entered in the entry boxes such as the shop name entry area **832** is reflected to the shop database.

FIG. **12** is a diagram for illustrating an example of data (shop data) stored in the shop database. Each record of shop data includes information such as a shop ID, a shop name, a priority level, a today's recommendation, and a location.

As described above, the shop data is added, altered, and deleted through the shop data creation screen **820** and the shop data management screen **830**.

The column of images stores the file names (e.g., "picture 1-1") of image files. The image files are stored in a predetermined storage area such as the external storage device **1404**.

[Creation of Knowledge Database]

FIG. **13**A is a diagram for illustrating an example (knowledge data creation screen **800**) of a knowledge data creation screen to be used to create a knowledge database. The dialogue server **1** controls a display device to display the knowledge data creation screen **800** and knowledge data configured through the knowledge data creation screen **800** is stored to a knowledge database.

The knowledge data creation screen **800** is displayed in response to selection of a menu "create knowledge database" in the service menu of the dialogue system **1000**.

The knowledge data creation screen **800** includes a search instruction area **801** for specifying a reference text (hereinafter referred to as Q as necessary) stored in the knowledge database, a search result jump instruction area **802** for indicating the page position of the displayed search result within the search result list and for specifying the page where to jump in the search result list, an ADD button **803** to add a new Q, and an indication area **804** for showing a result of the searching the Qs.

The knowledge data creation screen **800** shows one Q, "I want to eat Chinese food." in the indication area **804** as a result of a specified search. If a plurality of Qs are hit, the indication area **804** shows the Qs in separate rows.

The EDIT button **805** provided in the indication area **804** is to edit the Q displayed in the corresponding indication area **804**. The DELETE button **806** provided in the indication area **804** is to delete the Q displayed in the corresponding indication area **804**.

FIG. **13**B is a diagram for illustrating an example (knowledge data management screen **810**) of knowledge data management screen to add or update knowledge data in the knowledge database. The knowledge data management screen **810** is a screen displayed in response to press of the ADD button **803** in the knowledge data creation screen **800**. The knowledge data management screen **810** is also displayed in response to press of the EDIT button **805** to edit existing knowledge data.

The knowledge data management screen **810** includes a Q entry area **811**, an answer pattern entry area **812**, a search object entry area **813**, a search item entry area **814**, a search word entry area **815**, and a REGISTER button **816**.

The Q entry area **811** is an entry area to input a Q. The administrator enters a question or any other kind of sentence that is expected to be entered by a user to this Q entry area **811** and adds the Q so that the Q will be a hit determined to be semantically close to the input sentence in the comparison between an input sentence of a user and the Qs. The input from the user is referred to as input sentence for convenience; however, the input does not need to be a sentence and may be various types of texts, including a word or an incomplete sentence.

Synonymous sentences (semantically similar sentences or expressions) can be added to the Qs as many as desired. Such configuration can absorb fluctuations in expression among users. In other words, each of the inputs entered in various expressions by users can hit one of the Qs, so that an answer can be output effectively. The X button provided on the right of the entry area for a Q is to delete the Q.

The answer pattern entry area **812** is provided below the Q entry area **811**. The answer pattern entry area **812** is an area to enter an answer pattern. There are two kinds of answer patterns: specific answers and scenarios.

The specific answers are a kind of answer patterns with which an answer is solely determined for an input (question) from a user (the dialogue will be completed by exchanging a Q and an A); the scenarios are a kind of answer patterns with which a plurality of answers can be provided (subsequent action(s) of the user are expected and the dialogue will not be completed by exchanging a Q and an A).

In other words, a specific answer is an answer pattern which is to provide one answer to a question in the dialogue and is difficult to include a recommendation in the direct answer for the user. A scenario is an answer pattern which is to provide n answers to one question in the dialogue; it is easy to include a recommendation in the direct answers for the user.

The answer pattern input area **812** is configured to provide a selection of answer patterns with a pulldown menu.

The search object entry area **813** is provided below the answer pattern entry area **812**. The search object entry area **813** is an area to enter a search object. The search object is the object to be searched to acquire the information to be used for the answer to the user and could be the shop DB (shop database), other server information (information owned by the other servers), and complex information (combination of information of the shop database, other server information, and other information). The search object may not be required depending on the way to store the data or the data processing method).

The search object entry area **813** is configured to provide a selection of search objects with a pulldown menu.

The search item entry area **814** is provided below the search object entry area **813**. The search item entry area **814** is an area to enter a search item. The search item is to specify the item to be searched in the search object.

The search item entry area **814** is configured to provide a selection of search items with a pulldown menu.

The search word entry area **815** is provided below the search item entry area **814**. The search word entry area **815** is an area to enter a search word. The search word is to specify the word to be searched for in the search item.

The REGISTER button **816** is provided on the bottom of the knowledge data management screen **810**. Upon press of the REGISTER button **816**, the information entered in the entry areas such as the Q entry area **811** is reflected to the knowledge database.

FIG. **14** is a diagram for illustrating an example of data (knowledge data) stored in the knowledge database. Each record of knowledge data includes information of a reference text Q, an answer pattern, a search object, a search item, and a search word.

As described above, the knowledge data is added, altered, and deleted through the knowledge data creation screen **800** and the knowledge data management screen **810**.

FIG. **15** is a diagram for illustrating an example of data (answer templates) stored in the answer template database.

An answer template is an example of a response template and is configured to be able to create response data for providing a response to a question (input) from a user.

The answer template is composed of fixed part(s) including a fixed text and merge field(s) to be replaced by a search result. The merge fields are denoted in angle brackets ("<" and ">") for convenience of explanation.

Each record of the answer template database stores information of a template ID, an answer pattern, conditions to be selected, and information on answer templates.

For a specific answer, the substances of the answer templates are stored; for a scenario, the file names of the answer templates are stored. The answer templates are stored in a predetermined storage area in the external storage device **1404**, for example. The answer template database may be configured to have a data structure in which the substances of the answer templates are stored for scenarios.

Taking an example of the first column (first item) for "Specific Answer 1", the answer template consists of a fixed text "The open hours are" and a merge field "<Field 10>". The merge field <Field 10> means that the information of Field 10 in the shop data (e.g., 10:00-0:00) is acquired and merged.

Furthermore, a plurality of answer templates may be prepared as shown in the second and the third columns for Specific Answer 1; these templates may be selected by rotation or by lottery to avoid providing uniform answers. This configuration enables more natural dialogues.

FIGS. **16**A to **16**F are examples of answer templates for a scenario answer (answer templates for Scenario 1). Although answer templates are prepared for other scenarios, they are omitted in the drawings.

FIG. **16**A is a view of an example of an answer template to be used when the number of hits extracted as a result of searching the shop data in accordance with the inputs of a user is more than a predetermined number (in this example, three).

For example, <Number of hits> is replaced by the number of extracted results.

The field <First shop> is replaced by the information of the shop name in the first shop data (on the first shop to be listed) obtained by sorting the extracted results. The field <First Image_1> is replaced by the Image_1 (a basic photo such as a representative photo showing the appearance of the shop) of the first shop to be listed.

The field <Second shop> is replaced by the information of the shop name in the second shop data (on the second shop to be listed) obtained by sorting the extracted results. The field <Second Image_1> is replaced by the Image_1 (a basic photo) of the second shop to be listed.

The field <Third shop> is replaced by the information of the shop name in the third shop data (on the third shop to be listed) obtained by sorting the extracted results. The field <Third Image_1> is replaced by the Image_1 (a basic photo) of the third shop to be listed.

The field <Icon_1-1: Reserve> is replaced by an icon linked to the page for making reservation for the first shop to be listed. The field <Icon_2-1: More details> is replaced by an icon linked to the page including the details of the first shop to be listed.

The field <Icon_1-2: Reserve> is replaced by an icon linked to the page for making reservation for the second shop to be listed. The field <Icon_2-2: More details> is replaced by an icon linked to the page including the details of the second shop to be listed.

The field <Icon_1-3: Reserve> is replaced by an icon linked to the page for making reservation for the third shop to be listed. The field <Icon_2-3: More details> is replaced by an icon linked to the page including the details of the third shop to be listed.

The field <Icon_3: More shops> is replaced by an icon linked to the page including information on three more shops following the shops on the current screen.

It should be noted that the user interface is not limited to icons but may be buttons, hypertexts, or other forms. Any user interface that accepts selection of an object and an instruction for processing through the operating screen can be employed as appropriate.

A message recommending shops and asking for a reaction (that is to say, a proposal message in an interrogative sentence or a tag question) is added: for example, "Here are popular restaurants in recent days. How do you like these restaurants?" In the case of using such a message, although the user is directed by the administrator, the final decision is left to the user. As a result, the user can have good impression by feeling that the user has selected the restaurant by himself or herself. This style of dialogue can direct the user more naturally.

FIG. **16**B is a view of an example of an answer template to be used when the number of hits extracted as a result of searching the shop data in accordance with the inputs of a user is not more than a predetermined number (in this example, three).

Depending on the extraction results, the fields of <Second shop name>, <Second Image_1>, <Icon 1-2: Reserve>, <Icon 2-2: More details>, and <Third shop name>, <Third Image_1>, <Icon 1-3: Reserve>, <Icon 2-3: More details> are not used (displayed).

FIG. **16**D is a view of an example of an answer template to be used when the RESERVE icon of a shop which is not recommended is pressed.

The field <Shop name> is replaced by the information of the shop name of the unrecommended shop. The field <Today's recommendation> is replaced by the information on the today's recommendation of the not-recommended shop.

The field <Recommended shop name> is replaced by the information of the shop name of the recommended shop (the shop assigned a priority level A). The recommended shop is not limited to the shop assigned a priority level A. For example, the first shop in the list may apply.

FIG. **16**C is a view of an example of an answer template to be used when the MORE DETAILS icon is pressed. FIG. **16**E is a view of an example of an answer template to be used when the RESERVE icon is pressed. FIG. **16**F is a view of an example of an answer template to be used when the HERE icon is pressed. Regarding the field <print: PRINT>, whether the apparatus being used (in this example, a kiosk terminal **200**) is capable of printing is determined and if the apparatus is capable of printing, the field <print: PRINT> is replaced by a PRINT icon.

It should be noted that the user interface is not limited to icons but may be buttons or hypertexts. Any user interface that accepts selection of an object and an instruction for processing through the operating screen can be employed as appropriate.

FIG. **17** is a diagram for illustrating an example of a weight determination table. In the weight determination table, shops are specified correspondingly to available seats. The shops are updated with appropriate timing (for example, periodically or in real time). In the present embodiment, the dialogue server **1** makes an inquiry about the availability to the shop server in each shop with predetermined intervals (for example, five minutes) and updates the weight determination table based on the results.

Basically, as the number of available seats is greater, the weight (priority) becomes higher. In this example, three weights are provided and when six or more seats are available, the shop is weighted the highest.

[History Information]

FIGS. **18**A to **18**C are diagrams for illustrating examples of history tables for storing histories of different kinds of information.

FIG. **18**A is a diagram for illustrating an example of an input history table. The input history table stores pairs of an input sentence and a hit reference text ID. The input history table is updated in response to an operation of input (execution of semantic recognition processing).

FIG. **18**B is a diagram for illustrating an example of a reservation history table. The reservation history table stores reserved date and time and a reserved shop together with a

user ID. The reservation history table is updated in response to making a reservation (press of the HERE icon).

FIG. **18**C is a diagram for illustrating an example of a recommendation history table. The recommendation history table stores information on the date and the time of recommendation together with a shop ID. The recommendation history table is updated based on making a recommendation.

The history information enables analysis about what question is asked frequently or how many times of providing a recommendation have led to how many reservations, so that the knowledge database can be created efficiently.

The history information can be utilized as marketing information.

FIG. **19** is a diagram for illustrating an example of an API (Application Programming Interface) between a user terminal and the dialogue server **1**.

In a user terminal, an input from a user **10** is provided to a web browser **1020** via an input controller **1010**. The web browser **1020** creates a URI (Uniform Resource Identifier) including the input of the user **10** and sends out the URI using HTTP.

The URI is described, as shown in FIG. **19**, starting from "http://" and being followed by <host-name>, which is a host name or an IP address of the dialogue server **1** including a dialogue engine. The subsequent <ServiceID> is an ID for identifying the service provided by the dialogue system **1000**; for example, the <ServiceID> is an ID for identifying the data to be used.

Subsequent to the <ServiceID>, request parameters connected by "?" are described. Individual request parameters are separated by "&". In the example of FIG. **19**, "format=" is followed by designation of the format of the return value. In the case of designation of "json", a response in JSON format can be received; in the case of designation of "xml", a response in XML format can be received.

Subsequent to "charset=", an encoding format of the return value, such as UTF-8, EUC-JP, or Shift-JIS, is specified. Subsequent to "talktype=", the type of the input sentence to be sent to the dialogue system **1000** is specified. For example, a normal input is specified as 0 and the start of a dialogue is specified as 3. Subsequent to "talk=", the input sentence itself entered by the user **10** is described.

Subsequent to "talkoption=", predetermined information to be used by the dialogue server **1** is specified. To append some memo to the input sentence, a text can be specified subsequent to "memo=". The employment of such a text enables necessary information to be stored in the log data, for example.

A session is usually held using cookie information in the user terminal. However, in the case of a device configured not to use cookie or a cell phone that does not manage sessions with cookie, the URI can be structured to include session information.

The data included in the URI is sent in the form of an HTTP request to the dialogue server **1** in accordance with the <host-name> specified in the URI and the input reception unit **1421** of the dialogue server **1** receives the data. Subsequently, the response determination unit **1422** determines a response based on the data. The determined response is generated in the form of XML data (if "format=xml" is described for the return value). The output transmission unit **1423** sends the generated XML data to the user terminal.

In the XML data shown in FIG. **19**, the response data is defined with a tag <value>.

This XML data is sent by the output transmission unit **1423** of the dialogue server **1** to the web browser **1020** of the user terminal in the form of an HTTP response and the web browser **1020** displays the response data.

To display information in a predetermined display area, the information to be displayed in the display area is defined with a specific tag and sent to the web browser **1020**. The web browser **1020** interprets the tag and controls the display device to display the information in the display area. For example, to change a character in a predetermined display area, the image data to be used as the character should be defined with a specific tag.

FIG. **19** illustrates a configuration that the user terminal includes the host name of the dialogue server **1**, a service provided by the dialogue system **1000**, and request parameters in a URI to send a request to the dialogue server **1**; however, this configuration is merely an example. The same processing can be performed using various ways, such as by using Java Script™.

For example, the user enters a text to an entry area of a specific web page displayed by the web browser **1020** run on the user terminal through a user interface (for example, by using a keyboard or a touch panel). The text entered by the user typically takes the form of a sentence (input sentence) including, for example, a question about a shop in the facility and is expressed in a natural language.

The text entered by the user is provided to the dialogue server **1** via the network by the web browser **1020** of the user terminal. The network can be a network inclusive of the Internet.

The input reception unit **1421** of the dialogue server **1** receives the text from the user terminal.

The response determination unit **1422** determines a text and images (typically, a response) to be the response to this text. More specifically, the response determination unit **1422** is capable of data communication with the knowledge database including knowledge data and determines a response suitable for the response to the input received from the user terminal using the knowledge database.

The output transmission unit **1423** sends the response to the user terminal via the network. More specifically, the output transmission unit **1423** sends the response to the user terminal so that the web browser run on the user terminal will display the response on the response display area.

As described above, when the user enters a text to the entry area of a web page, a response answering the text is displayed in the response display area of the web page. For example, when a user enters a question about a shop to the entry area of the web page, an answer to the question is displayed in the response display area of the web page.

In the present embodiment, the user places a question to the dialogue server **1** by entering a text to an entry area of a website through the user interface (e.g., a keyboard); however, the dialogue system **1000** accepts a text entered in any way or via any route.

For example, the user may issue a question in speech; the speech can be converted into a text by speech recognition processing and the obtained text can be provided to the control device **54**. For another example, a printed question can be converted into a text by OCR (Optical Character Recognition) and the obtained text can be provided to the control device **54**.

It should be noted that the dialogue server **1** in the present embodiment has a function of a web server that communicates data with the web browsers run on the signage apparatuses A **100**, the signage apparatuses B **150**, and kiosk terminals **200** using some protocol such as HTTP to display a predetermined web page on the web browsers.

Although the dialogue server **1** is described as a single computer, the dialogue server **1** can be implemented by distributing the functions to a plurality of computers. As to the databases, the stored data can also be divided in accordance with various policies and distributed to a plurality of sites or computers.

FIG. **20** is a diagram for illustrating an example of a sequence of processing in the dialogue system **1000**.

In response to login entry on the user terminal (SQ**10**), the login information is sent to the dialogue server **1**. More specifically, the user terminal retrieves user information (e.g., a user ID) stored in an IC card with a touch unit and creates login information. The terminal ID of the user terminal is sent together with the login information.

The login entry is not a requisite; the login entry may not be performed when the user does not have an IC card.

At SQ**12**, the dialogue server **1** conducts login processing. In the login processing, the dialogue server **1** stores the login information (e.g., the user ID) to a predetermined storage area, creates initial screen information for the user, and sends the initial screen information to the user terminal.

In the login processing, the dialogue server **1** further sends the user ID to the member management server **13**, acquire a variety of information (age, sex, and the like) associated with the user ID, and stores the information to a predetermined storage area. A part or all of the variety of information associated with the user ID may be included in the IC card.

The dialogue server **1** further determines in the login processing whether the user terminal that has sent the login information has a printing function (printer device). More specifically, the dialogue server **1** acquires information on presence of a printing function associated with the terminal ID with reference to a terminal management database (not shown). If determining that the user terminal has a printing function, the dialogue server **1** sets a print flag to ON and if not determining, sets the print flag to OFF.

At SQ**14**, the user terminal receives initial screen information and displays an initial screen information to receive an input from the user. For example, the CPU **121** of a signage apparatus A outputs an instruction to display the initial screen on the LCD **103** to the LCD controller **130** (e.g., a graphic board). The LCD controller **130** creates image information for the initial screen and outputs the information to the LCD **103**. The LCD **103** displays an initial screen based on the received image information. Before displaying the initial screen, the LCD **103** displays a screen for an anonymous user; this screen also accepts an input from the user.

At SQ**16**, upon receipt of an input (question) from the user, the user terminal sends input information including the information on the input (question) to the dialogue server **1**.

At SQ**18**, the dialogue server **1** conducts input information reception processing. In the input information reception processing, the dialogue server **1** communicates with other servers based on the input information as necessary, determines a response to the input, creates output information including the response, and sends the output information to the user terminal.

At SQ**20**, the user terminal receives the output information and displays the output information.

[Description of Program to be Executed by Dialogue Server]

Next, processing (a program) performed by the dialogue server **1** is described with reference to FIGS. **21** to **29**.

FIG. **21** is an example of a flowchart of input information reception processing.

At S**10**, the CPU **1401** determines whether the received input information has been placed by entry to a text box (text input). The CPU **1401** proceeds to S**12** if determining that the received input information has been placed by text input and proceeds to S**14** if not determining that the received input information has been placed by text input.

At S**12**, the CPU **1401** performs text input processing. The CPU **1401** interprets the input from the user, performs processing associated with the interpretation, and sends the processing result to the user terminal as output information. Upon completion of this processing, the CPU **1401** proceeds to S**14**. This processing will be described later in detail.

At S**14**, the CPU **1401** determines whether the received input information has been placed by press of an icon (icon input). The CPU **1401** proceeds to S**16** if determining that the received input information has been placed by icon input and proceeds to S**18** if not determining that the received input information has been placed by icon input.

At S**16**, the CPU **1401** performs icon input processing. The CPU **1401** performs processing associated with the icon, and sends the processing result to the user terminal as output information. Upon completion of this processing, the CPU **1401** proceeds to S**18**. This processing will be described later in detail.

At S**18**, the CPU **1401** determines whether the received input information has been placed by other input (an instruction to display information for members, an instruction to display information, or an instruction to change settings of a user terminal). Examples of the information for members include membership information, coupons and rewards, and raffle tickets. Examples of the information to be displayed include a phone book, information on the facilities, an operating manual for the user terminal, and privilege of membership. Examples of settings of a user terminal include the sound volume and the language.

The CPU **1401** proceeds to S**20** if determining that the received input information has been placed by other input and returns to S**10** if not determining that the received input information has been placed by other input.

At S**20**, the CPU **1401** performs other input processing. For example, the CPU **1401** performs processing associated with the other input, and sends the processing result to the user terminal as output information. Upon completion of this processing, the CPU **1401** returns to S**10**.

FIG. **22** is an example of a flowchart of the text input processing.

At S**30**, the CPU **1401** stores the input information (e.g., an input sentence) to a predetermined storage area of the RAM **1403** and proceeds to S**32**.

At S**32**, the CPU **1401** performs semantic recognition processing. In the semantic recognition processing, the CPU **1401** interprets the input sentence, determines an answer pattern, and identifies a subject (topic) of the dialogue. If determining that answering based on an answer pattern is unavailable, the CPU **1401** sets a no-hit flag to ON. Upon completion of this processing, the CPU **1401** proceeds to S**34**. This processing will be described later in detail.

At S**34**, the CPU **1401** determines whether the no-hit flag is ON. The CPU **1401** proceeds to S**38** if determining that the no-hit flag is ON and proceeds to S**36** if not determining that the no-hit flag is ON. The no-hit flag is a flag for identifying whether to provide a fixed answer in the case of determination that answering based on an answer pattern is unavailable.

At S**36**, the CPU **1401** performs dialogue condition control processing. In the dialogue condition control processing, the CPU **1401** acquires a variety of information and creates response data based on the answer pattern. Upon completion

of this processing, the CPU **1401** proceeds to S**42**. This processing will be described later in detail.

At S**38**, the CPU **1401** performs fixed answer data creation processing. For example, the CPU **1401** stores data including a fixed answer to ask for re-entry (e.g., "Sorry, your question cannot be answered. Would you place your question in a different expression?") to the storage area for the response.

A plurality of fixed answers may be provided. Such configuration enables the dialogue to use various expressions.

At S**40**, the CPU **1401** sets the no-hit flag to OFF and proceeds to S**42**.

At S**42**, the CPU **1401** performs output processing. More specifically, the CPU **1401** retrieves the data (including a response, HTML data, and image data) stored in the storage area for the response and sends the retrieved information to the user terminal that has requested the response as output information.

FIG. **23** is an example of a flowchart of the semantic recognition processing.

At S**50**, the CPU **1401** acquires a reference text Q that has not been compared with the received input information (input sentence) from the knowledge database.

This example of processing compares all the reference texts stored in the knowledge database with the received input information (input sentence); however, preparatory processing to narrow down the reference texts through preliminary processing or referring to the categories, indices, or other type of indicators associated with the reference texts can be employed.

At S**52**, the CPU **1401** calculates a score representing the semantic closeness between the input information (input sentence) and the acquired reference text Q.

The semantic closeness means the degree of similarity between texts or sentences; the semantic distance between two sentences is represented by a score using various known methods including morphological analysis and vector space method. The present embodiment can employ various methods to determine the semantic closeness.

At S**54**, the CPU **1401** determines whether the calculated score is higher than a predetermined value. The CPU **1401** proceeds to S**56** if determining that the calculated score is higher than the predetermined value and proceeds to S**58** if not determining that the calculated score is higher than the predetermined value.

At S**56**, the CPU **1401** stores the reference text Q together with the score to a predetermined storage area in the RAM **1403** (adds the reference text Q to a candidate list) and proceeds to S**58**.

At S**58**, the CPU **1401** determines whether any reference text Q (remaining Q) that has not been compared exists. The CPU **1401** proceeds to S**50** if determining that at least one remaining Q exists and proceeds to S**60** if determining that no remaining Q exists.

At S**60**, the CPU **1401** determines whether the candidate list is empty. The CPU **1401** proceeds to S**62** if determining that the candidate list is empty and proceeds to S**66** if not determining that the candidate list is empty.

At S**62**, the CPU **1401** determines whether the answering-in-process flag is ON. The CPU **1401** proceeds to S**72** if determining that the answering-in-process flag is ON and proceeds to S**64** if not determining that the answering-in-process flag is ON. The answering-in-process flag is a flag for identifying whether answering the input from a user is continued (whether the answering is in process).

At S**64**, the CPU **1401** sets the no-hit flag to ON and proceeds to S**72**.

At S**66**, the CPU **1401** selects the answer pattern associated with the highest-scored Q in the candidate list and proceeds to S**68**.

At S**68**, the CPU **1401** stores the search object, the search item, and the search word for the identified answer pattern to a predetermined storage area of the RAM **1403** and proceeds to S**70**.

At S**70**, the CPU **1401** sets the answering-in-process flag to ON and proceeds to S**72**.

At S**72**, the CPU **1401** performs subject identification processing. In the subject identification processing, the CPU **1401** identifies the subject (topic) of the dialogue based on the latest input sentence and previous input sentence(s). This processing will be described later in detail. Upon completion of this processing, the CPU **1401** exits the semantic recognition processing.

FIG. **24** is an example of a flowchart of the subject identification processing.

At S**80**, the CPU **1401** acquires a shop name that has not been compared from the shop database and proceeds to S**82**.

At S**82**, the CPU **1401** calculates a score representing the distance between the input sentence and the acquired shop name based on the input sentence and the shop name. The method of calculating the score may be the same as or different from the method used at S**52**. Upon completion of this processing, the CPU **1401** proceeds to S**84**.

At S**84**, the CPU **1401** determines whether the calculated score is higher than a predetermined value. The CPU **1401** proceeds to S**86** if determining that the calculated score is higher than the predetermined value and proceeds to S**88** if not determining that the calculated score is higher than the predetermined value.

At S**86**, the CPU **1401** stores the shop name together with the score to a predetermined storage area in the RAM **1403** (adds the shop name to a candidate list) and proceeds to S**88**.

At S**88**, the CPU **1401** determines whether any shop name (remaining shop name) that has not been compared exists. The CPU **1401** returns to S**80** if determining that some remaining shop name exists and proceeds to S**90** if determining that no remaining shop name exists.

At S**90**, the CPU **1401** determines whether the candidate list is empty. The CPU **1401** proceeds to S**94** if determining that the candidate list is empty and proceeds to S**92** if not determining that the candidate list is empty.

At S**92**, the CPU **1401** stores the latest shop name to a predetermined storage area of the RAM **1403** as the subject shop. The latest shop name means the shop name that came up (was input) most lately in the input sentences of the user in the case where the list includes a plurality of candidates. Upon completion of this processing, the CPU **1401** exits the subject identification processing.

At S**94**, the CPU **1401** determines whether the subject shop has already been identified (whether the information on the subject shop has already been stored). If determining that the subject shop has been identified, the CPU **1401** exits the subject identification processing and if not determining the subject shop has been identified, the CPU **1401** proceeds to S**96**.

At S**96**, the CPU **1401** sets the shop name in the last message (either input information or output information) to the object to be processed. That is to say, the CPU **1401** reads back the dialogue from the input information currently being processed to identify the shop name that came up most lately. Upon completion of this processing, the CPU **1401** proceeds to S**98**.

At S98, the CPU 1401 determines whether such a message exists. If determining that such a message exists, the CPU 1401 proceeds to S80, and if not determining that such a message exists, the CPU 1401 exits the subject identification processing.

It should be noted that, in response to input of a reference term like "this shop", the subject identification processing may request confirmation of the reference term to the user to avoid breaking up the dialogue.

FIGS. 25 and 26 are an example of a flowchart of the dialogue condition control processing.

At S100, the CPU 1401 determines whether the determined answer pattern is a specific answer. If determining that the determined pattern is a specific answer, the CPU 1401 proceeds to S102; if not determining that the determined pattern is a specific answer, the CPU proceeds to S130 in FIG. 26.

At S102, the CPU 1401 determines whether the search object is the shop DB (shop database). If determining that the search object is the shop database, the CPU 1401 proceeds to S114; if not determining that the search object is the shop database, the CPU 1401 proceeds to S104.

At S104, the CPU 1401 determines whether acquiring information from another server is necessary. For example, if the search object is information in another server (a hotel database held by the hotel server 2000), the CPU 1401 determines that acquiring information from another server is necessary. If determining that acquiring information from another server is necessary, the CPU 1401 proceeds to S106; if not determining that acquiring information from another server is necessary, the CPU 1401 proceeds to S124.

At S106, the CPU 1401 acquires information from the search object. The CPU 1401 requests the corresponding server for information and acquires a response. For example, the CPU 1401 checks the hotel server 2000 for a vacancy and acquires information on the vacancy as of the moment (a list of information on room size, room charge, check-in time, check-out time, and whether breakfast is included or not). Upon completion of this processing, the CPU 1401 proceeds to S108.

At S108, the CPU 1401 determines whether necessary information is successfully acquired. If determining that necessary information is successfully acquired, the CPU 1401 proceeds to S112; if not determining that necessary information is successfully acquired, the CPU 1401 proceeds to S110.

At S110, the CPU 1401 performs fixed answer data creation processing. For example, the CPU 1401 stores data including a fixed answer to ask for re-entry (e.g., "Sorry, communication with the server is failed. Try again later. Do you have any other question?") to the storage area for the response.

A plurality of fixed answers may be provided. Such configuration enables the dialogue to use various expressions.

At S112, the CPU 1401 stores the acquired information to the storage area for the response in the RAM 1403 and proceeds to S124.

At S114, the CPU 1401 determines whether the subject shop has been identified. If determining that the subject shop has been identified, the CPU 1401 proceeds to S116; if not determining that the subject shop has been identified, the CPU 1401 proceeds to S128.

At S116, the CPU 1401 acquires shop data for a specific answer based on the shop ID of the subject shop and the search item, and proceeds to S118. For example, in the case where the subject shop is identified as the shop having the shop ID 001 and the answer pattern is determined to be 010000001 (specific answer 1), the search item is Field 10; accordingly, the CPU 1401 acquires information of Field 10 for the shop ID 001, "10:00-0:00".

At S118, the CPU 1401 stores the acquired shop data to the predetermined storage area of the RAM 1403 and proceeds to S120.

At S120, the CPU 1401 determines whether the subject shop is a recommended restaurant (whether the shop is assigned a priority level A). If determining that the subject shop is a recommended shop, the CPU 1401 proceeds to S122; if not determining that subject shop is a recommended shop, the CPU 1401 proceeds to S124.

At S122, the CPU 1401 performs RESERVE icon addition processing. In the RESERVE icon addition processing, the CPU 1401 sets a flag to add a description to display a RESERVE icon below the acquired shop data. The displaying a RESERVE icon for a recommended shop can direct the user to the recommended shop naturally.

Upon completion of this processing, the CPU 1401 proceeds to S124.

At S124, the CPU 1401 performs response data creation processing. More specifically, the CPU 1401 creates response data based on the information stored in the storage area and an answer template of the determined answer pattern.

For example, in the case where the subject shop is identified as the shop having a shop ID 001, the answer pattern is determined to be 010000001 (specific answer 1), and information "10:00-0:00" is acquired from Field 10 of the shop ID 001, the CPU 1401 creates response data "The open hours are 10:00-0:00." and stores the data to the storage area for the response in the RAM 1403 and proceeds to S126.

At S126, the CPU 1401 sets the answering-in-process flag to OFF and exits the dialogue condition control processing.

At S128, the CPU 1401 performs questioning data creation processing and exits the dialogue condition control processing.

For example, the CPU 1401 stores data including questioning data for requesting an entry clarifying about which shop the question is (e.g., "Which shop do you want to know about? Enter the name of the shop.") to the storage area for the response.

A plurality of kinds of questioning data may be provided. Such configuration enables the dialogue to use various expressions.

At S130, the CPU 1401 performs first filtering processing and proceeds to S132. The first filtering processing performs extraction based on the first search condition. This processing will be described later in detail.

At S132, the CPU 1401 determines whether any result (extraction result) is obtained in the first filtering processing. If determining that at least one extraction result is obtained, the CPU 1401 proceeds to S136; if determining that no extraction result is obtained, the CPU 1401 proceeds to S134.

At S134, the CPU 1401 performs fixed answer data creation processing. For example, the CPU 1401 stores data including a fixed answer to ask for re-entry (e.g., "Sorry, our facilities do not have any shop meeting your request. Do you have any other question?") to the storage area for the response.

A plurality of fixed answers may be provided. Such configuration enables the dialogue to use various expressions.

At S136, the CPU 1401 performs second filtering processing and proceeds to S138. The second filtering processing changes the order of display (the order of priority) based on the priority level. This processing will be described later in detail.

At S138, the CPU 1401 performs response data creation processing and exits the dialogue condition control processing.

More specifically, the CPU 1401 creates response data based on the information stored in the storage area and the answer template of the determined answer pattern.

For example, in the case where the answer pattern is determined to be 000000001 (Scenario 1), the first filtering processing narrows down the shops to four shops, and the second filtering processing determines the shop IDs 001, 002, and 003, the CPU 1401 creates response data "According to the database, there are four restaurants in total . . . " and stores the response data to the storage area for the response in the RAM 1403.

FIG. 27 is an example of a flowchart of the first filtering processing.

At S140, the CPU 1401 retrieves a search item and a search word from the RAM 1403 and proceeds to S142.

At S142, the CPU 1401 extracts shop records (shop data) from the shop database based on the search item and the search word and proceeds to S144.

For example, in the case where the search item is Field 1 and the search word is "Chinese food", the CPU 1401 extracts all records including "Chinese food" in Field 1 from the shop database.

At S144, the CPU 1401 stores the extracted shop records to a predetermined storage area in the RAM 1403 and exits the first filtering processing.

FIG. 28 is an example of a flowchart of the second filtering processing.

At S150, the CPU 1401 applies first sorting to the extracted shop records in accordance with the priority levels and proceeds to S152. If a plurality of shop records have the same priority level, the CPU 1401 determines the shop having a smaller numbered shop ID to have a higher priority.

At S152, the CPU 1401 assigns weights to the shop records in accordance with the weight determination table, applies second sorting to the shop records sorted by the first sorting, and proceeds to S154.

For example, the CPU 1401 assigns a weight "1" to the shop records having six or more available seats (the shops to be assigned the highest priority), a weight "2" to the shop records having one to five available seats, and a weight "3" to the other shop records with reference to the weight determination table. The CPU 1401 sorts the shop records (second sorting) in accordance with the assigned weights.

That is to say, the CPU 1401 can change the order of display determined in accordance with the priority levels to the order of display in accordance with the weights.

At S154, the CPU 1401 determines whether the user is logged in (login information is stored). If determining that the user is logged in, the CPU 1401 proceeds to S156; if not determining that the user is logged in, the CPU 1401 proceeds to S166.

At S156, the CPU 1401 sends the user ID included in the login information to the history server (not shown) holding a variety of history information such as the history of visited shops to request history information and proceeds to S158.

At S158, the CPU 1401 determines whether a response has been received from the history server. If determining that a response has been received from the history server, the CPU 1401 proceeds to S160; if determining that no response has been received from the history server, the CPU 1401 repeats the processing of S158.

At S160, the CPU 1401 counts the number of visits to each shop sorted by the second sorting with reference to the history information, sets a regular customer flag to ON if the user has visited the shop three times or more, and proceeds to S162.

At S162, the CPU 1401 determines whether the user is a regular customer. More specifically, the CPU 1401 determines whether the regular customer flag is ON in each of the shop records. If determining that the user is a regular customer of at least one of the shops, the CPU 1401 proceeds to S164; if not determining that the user is a regular customer of any of the shops, the CPU 1401 proceeds to S166.

At S164, the CPU 1401 applies third sorting to the shop records sorted by the second sorting in accordance with the number of visits to each shop (in this example, whether the user is a regular customer of each shop), and proceeds to S166.

At S166, the CPU 1401 stores the sorted shop records to a predetermined storage area in the RAM 1403, identifies and extracts the top three records, and exits the second filtering processing.

The second filtering processing is not limited to the above-described processing. The order of sorting is not limited to the first sorting (S150), the second sorting (S152), and then the third sorting (S154 to S164) but any order can be employed as appropriate.

FIG. 29 is an example of a flowchart of the icon input processing.

At S170, the CPU 1401 determines whether the pressed is a RESERVE icon. If determining that the pressed is a RESERVE icon, the CPU 1401 proceeds to S172; if not determining that the pressed is a RESERVE icon, the CPU 1401 proceeds to S182.

At S172, the CPU 1401 determines whether the pressed RESERVE icon is of the recommended shop. If determining that the pressed RESERVE icon is of the recommended shop, the CPU 1401 proceeds to S174; if not determining the pressed RESERVE icon is of the recommended shop, the CPU 1401 proceeds to S178.

At S174, the CPU 1401 performs reservation status acquisition processing and proceeds to S176. In the reservation status acquisition processing, the CPU 1401 accesses the shop server 3000 for the shop to be reserved to check the current vacancy information and acquires the information.

At S176, the CPU 1401 performs response data creation processing and proceeds to S196.

More specifically, the CPU 1401 creates response data based on the information stored in the storage area and the answer template (e.g., FIG. 16E) of the determined answer pattern. For example, in the case where the information acquired from the shop server is "16:00, 17:00, 18:00", the CPU 1401 creates response data "Enter the visit time and the number of visitors . . . " and stores the response data to the storage area for the response in the RAM 1403. The user is provided a selection of 16:00, 17:00, and 18:00 for the visit time.

At S178, the CPU 1401 determines whether the CPU 1401 has requested the user's confirmation to reserve the unrecommended shop (whether the CPU 1401 has provided a response suggesting reconsideration of the reservation of the unrecommended shop). If determining that the CPU 1401 has requested the user's confirmation, the CPU 1401

proceeds to S174; if not determining that the CPU 1401 has requested the user's confirmation, the CPU 1401 proceeds to S180.

At S180, the CPU 1401 performs response data creation processing and proceeds to S196.

More specifically, the CPU 1401 creates response data based on the information stored in the storage area and the answer template (e.g., FIG. 16D) of the determined answer pattern. For example, in the case where the RESERVE icon of unrecommended Restaurant B is pressed for the first time, the CPU 1401 creates response data "Reservation of Restaurant B? . . . " and stores the response data to the storage area for the response in the RAM 1403.

At S182, the CPU 1401 determines whether the pressed is a MORE DETAILS icon. If determining that the pressed is a MORE DETAILS icon, the CPU 1401 proceeds to S184; if not determining is that the pressed is a MORE DETAILS icon, the CPU 1401 proceeds to S188.

At S184, the CPU 1401 retrieves the shop record of the shop associated with the MORE DETAILS icon among the shop records stored in the RAM 1403 and proceeds to S186.

At S186, the CPU 1401 performs response data creation processing and proceeds to S188.

More specifically, the CPU 1401 creates response data based on the information stored in the storage area and the answer template (e.g., FIG. 16C) of the determined answer pattern. For example, in the case where the pressed is the MORE DETAILS icon of Restaurant A, the CPU 1401 creates response data "Here are more details of Restaurant A . . . " and stores the response data to the storage area for the response in the RAM 1403.

At S188, the CPU 1401 determines whether the pressed is a HERE icon. If determining that the pressed is a HERE icon, the CPU 1401 proceeds to S192; if not determining that the pressed is a HERE icon, the CPU 1401 proceeds to S190.

At S190, the CPU 1401 performs response data creation processing on a corresponding other icon and proceeds to S196.

At S192, the CPU 1401 performs reservation processing and proceeds to S194. In the reservation processing, the CPU 1401 sends reservation information (e.g., the visit time and the number of visitors) to the shop server 3000 of the shop to be reserved, requests a reservation, and acquires a response thereto.

At S194, the CPU 1401 performs response data creation processing on the corresponding icon and proceeds to S196.

More specifically, the CPU 1401 creates response data based on the information stored in the storage area and the answer template (e.g., FIG. 16F) of the determined answer pattern. For example, in the case where the HERE icon of Restaurant A is pressed, the CPU 1401 creates response data "Reservation of Restaurant A is completed . . . " and stores the response data to the storage area for the response in the RAM 1403.

At S196, the CPU 1401 performs output processing and exits the icon input processing. More specifically, the CPU 1401 retrieves the data (including a response, HTML data, and image data) stored in the storage area for the response as output information and sends the information to the user terminal that has sent a request.

FIG. 30 is a diagram for illustrating an example (input and output screen 550) of an input and output screen. The input and output screen 550 is a web page (or a part of a web page) displayed by the web browser run on a user terminal. The input and output screen 550 may be displayed as either an independent window page or a part of a web page.

The input and output screen 550 includes a character image display area 551, an output area 552, a scroll bar 553, an input area 554, and an ASK button 555.

The character image display area 551 is an area for displaying a character image; the character can be changed depending on the input or output (response). For example, the character may be controlled to show different expressions depending on the response, even if the character is the same.

The output area 552 is an area for displaying a response output by the dialogue server 1.

The scroll bar 553 is displayed on the right of the output area 552 when the content to be displayed in the window exceeds the height of the window. As the operating part shaped like a knob on the scroll bar 553 is dragged upward or downward, the display area of the window is scrolled to show the upper or lower part that has not been seen.

The input area 554 is an area for the user to enter a text such as a question. In response to a touch operation on the input area 554, a keypad is displayed on the screen to allow the user to enter a text. A keyboard may be provided for the input.

The ASK button 555 is to be pressed by a touch operation of the user after the user has entered a text to the input area 554 (in the present embodiment, the ASK button may be a button or link to be pressed (clicked) with a mouse). In response to press of the ASK button 555, the entered text is sent to the dialogue server 1 via the network using a protocol such as HTTP.

[Example of Dialogue]

With reference to FIGS. 31A and 31B, an example of a service to be provided by the dialogue system 1000 is described.

As shown in FIG. 31A, when a user inputs "I want to eat Chinese food." (C1), the dialogue system 1000 extracts restaurants serving Chinese food, determines the order of display in view of the priority levels, weights, and history information, and provides a search result to the user (C2). In this example, assume that the system 1000 determines Restaurant A to be recommended based on the priority levels.

Subsequently, in response to press of the RESERVE icon of Restaurant B, a response screen about Restaurant B is displayed (C3). Since Restaurant B is not a recommended shop, the response screen shows acknowledgement information "Reservation of Restaurant B?" and positive information "Restaurant B is popular for dandan noodles", and subsequently, negative information "We have checked the availability but Restaurant B is full . . . " and finally, positive information on the recommended restaurant "How about Restaurant A? Restaurant A is available right now." with a RESERVE icon to encourage the user to reserve Restaurant A.

These messages enable the user to reconsider Restaurant B unrecommended by the administrator and naturally direct the user to Restaurant A recommended by the administrator.

Subsequently, in response to an input "What is the recommendation of this restaurant?" by the user (C4), the system 1000 identifies "this restaurant". In this example, the previous message includes Restaurant A and Restaurant B; the system 1000 determines that Restaurant A shown latest is the subject (subject shop) of the dialogue. Hence, the system 1000 acquires today's recommendation of Restaurant A "jiaozi" from the shop database and provides "jiaozi" (C5).

As noted from this example, if the subject of the dialogue cannot be determined from one input sentence, the system

1000 reads back the dialogue one by one to determine the subject to achieve more natural dialogue.

In this phase, if the response is about a recommended shop, a RESERVE icon is displayed; if the response is about an unrecommended shop, no RESERVE icon is displayed. Such a configuration can naturally direct the user to Restaurant A recommended by the administrator.

Subsequently, in response to an input of "Tell me the open hours." from the user (C6), the system **1000** acquires the open hours of Restaurant A "10:00-0:00" from the shop database and displays the information (C7).

Subsequently, in response to press of the RESERVE icon, the system **1000** displays a reservation screen (C8). In response to selection of "16:00-16:30" for the visit time and "2" for the number of visitors from the pull-downs and a press of the HERE icon, the system **1000** displays a reservation completion screen showing a guidance (an example of guidance information) such as a map for contributing to use of the restaurant (C9). If the user terminal includes a printer device, the screen includes a PRINT icon. The map file is stored in a predetermined storage area such as the external storage device **1404**.

Second Embodiment

The present embodiment describes another method of providing commercial information with reference to FIG. **32**. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

FIG. **32** is an example of a flowchart of login processing.

At S**300**, the CPU **1401** receives login information and proceeds to S**302**.

At S**302**, the CPU **1401** extracts user information such as a user ID from the login information and stores the user information to a predetermined storage area of the RAM **1403**. Upon completion of this processing, the CPU **1401** proceeds to S**304**.

At S**304**, the CPU **1401** acquires a shop name ranked at a specific priority level (for example, the highest level) and a today's recommendation from the shop database and creates a recommendation sentence including the shop name and the today's recommendation based on a recommendation sentence template and proceeds to S**306**.

For example, in the case where a shop name "Restaurant A" and a today's recommendation "jiaozi" are acquired, the CPU **1401** creates a recommendation sentence "If you want to have good jiaozi, how about Restaurant A?" The template of the recommendation sentence ("If you want to have good <today's recommendation>, how about <shop name>?") is prepared in advance and stored in the external storage device **1404**.

At S**306**, the CPU **1401** acquires questions that have entered more frequently than a predetermined number of times from the history database and proceeds to S**308**.

At S**308**, the CPU **1401** adds the recommendation sentence and the questions to a suggestion list and proceeds to S**310**.

At S**310**, the CPU **1401** creates an initial screen data including the suggestion list and proceeds to S**312**.

At S**312**, the CPU **1401** sends the created initial screen data as initial screen information to the user terminal that has requested the login processing.

More specifically, the CPU **1401** sends data to the user terminal so that, when the user enters a text at the user terminal, the user terminal will predict the text to be entered by the user with reference to the suggestion list and provide candidates for the text in the lower part of the input area (the input area on the web page displayed by the web browser run on the user terminal).

This configuration supports the user in entering a frequent question, and further, naturally directs the user to the shop recommended by the administrator by providing information on the shop when the user inputs a question.

The login processing is not limited to the above-described processing.

For example, the suggestion list may be updated not only at the login processing but every time the CPU **1401** communicates with the user terminal. This configuration enables recommended information to be provided in real time.

The dialogue system **1000** may include a suggest server; the suggest server may have a suggest database holding successful responses (hits) to the inputs frequently made in the past. Alternatively, the dialogue system **1000** may include the suggest database in place of the history database.

Third Embodiment

The present embodiment describes another method of providing commercial information with reference to FIGS. **33**A to **33**C, **34**A, and **34**B. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

[Unrecommended Shop Exclusion Determination Tables]

FIGS. **33**A to **33**C are diagrams for illustrating examples of unrecommended shop exclusion determination tables. An unrecommended shop exclusion determination table is to determine whether the response to be provided includes inappropriate information in view of additional information such as the current situation or the user's attribute.

The unrecommended shop exclusion determination table shown in FIG. **33**A specifies information on unrecommended shops (shops to be excluded) depending on the age. The unrecommended shop exclusion determination table shown in FIG. **33**B specifies information on unrecommended shops (shops to be excluded) depending on the sex. The unrecommended shop exclusion determination table shown in FIG. **33**C specifies information on shops (shops to be excluded) located on each floor.

FIGS. **34**A and **34**B are an example of a flowchart of recommendation optimization processing. In the recommendation optimization processing, a value ON or OFF are preset to each step of the processing (processing related to setting A to setting D) to optimize the recommendation. The recommendation optimization processing is performed at an appropriate time between the processing of S**130** and the processing S**138** in FIG. **26**.

At S**320**, the CPU **1401** determines whether the setting A is ON. If determining the setting A is ON, the CPU **1401** proceeds to S**322**; if not determining the setting A is ON, the CPU **1401** proceeds to S**326**.

At S**322**, the CPU **1401** acquires the current date and time and proceeds to S**324**.

At S**324**, the CPU **1401** selects the shops during closed hours based on the current date and time with reference to Field 10 of the shop database, stores the selected shops to a predetermined storage area of the RAM **1403**, and proceeds to S**326**.

At S326, the CPU 1401 determines whether the setting B is ON. If determining the setting B is ON, the CPU 1401 proceeds to S328; if not determining the setting B is ON, the CPU 1401 proceeds to S336.

At S328, the CPU 1401 determines whether the user is logged in (login information is stored). If determining that the user is logged in, the CPU 1401 proceeds to S330; if not determining that the user is logged in, the CPU 1401 proceeds to S336.

At S330, the CPU 1401 determines whether the user is aged from 0 to 19. If determining that the user is aged from 0 to 19, the CPU 1401 proceeds to S332; if not determining that user is aged from 0 to 19, the CPU 1401 proceeds to S334.

At S332, the CPU 1401 selects the shops to be excluded based on the age. More specifically, the CPU 1401 selects the shops to be excluded with reference to the unrecommended shop exclusion determination table shown in FIG. 33A and stores the selected shops to the predetermined storage area of the RAM 1403. Upon completion of this processing, the CPU 1401 proceeds to S334.

At S334, the CPU 1401 selects the shops to be excluded based on the sex. More specifically, the CPU 1401 selects the shops to be excluded with reference to the unrecommended shop exclusion determination table shown in FIG. 33B and stores the selected shops to the predetermined storage area of the RAM 1403.

For example, in the case where the user is a male, the shop IDs 011 and 012 are selected. Upon completion of this processing, the CPU 1401 proceeds to S336.

At S336, the CPU 1401 determines whether the setting C is ON. If determining the setting C is ON, the CPU 1401 proceeds to S338; if not determining the setting C is ON, the CPU 1401 proceeds to S342.

At S338, the CPU 1401 locates the floor (current floor) on which the user is. More specifically, the CPU 1401 acquires installation information from a terminal management database (not shown) based on the terminal ID of the user terminal to determine on which floor the user terminal being used by the user is installed. Upon completion of this processing, the CPU 1401 proceeds to S340.

At S340, the CPU 1401 selects the shops to be excluded based on the current floor. More specifically, the CPU 1401 selects the shops to be excluded with reference to the unrecommended shop exclusion determination table shown in FIG. 33C and stores the selected shops to the predetermined storage area of the RAM 1403.

For example, in the case where the current floor is the third floor, the shops on the floors other than the third floor (or the shops on the 1st floor, the second floor, and the fourth floor) are selected. Upon completion of this processing, the CPU 4101 proceeds to S342 in FIG. 34B.

At S342, the CPU 1401 determines whether the setting D is ON. If determining the setting D is ON, the CPU 1401 proceeds to S344; if not determining the setting D is ON, the CPU 1401 proceeds to S352.

At S344, the CPU 1401 determines whether the user is logged in (login information is stored). If determining that the user is logged in, the CPU 1401 proceeds to S346; if not determining that the user is logged in, the CPU 1401 proceeds to S352.

At S346, the CPU 1401 acquires the rank of the user from the member management server 13. More specifically, the CPU 1401 sends the user ID to the member management server 13 to acquire the rank indicating whether the user is rich. It should be noted that the member management server 13 analyzes a variety of information such as behavioral history, presumes the financial ability, ranks the user, and stores the rank together with the user ID.

Upon completion of this processing, the CPU 1401 proceeds to S348.

At S348, the CPU 1401 determines whether the acquired rank is higher than a specific rank. If determining that the acquired rank is higher than the specific rank, the CPU 1401 proceeds to S350; if not determining that the acquired rank is higher than the specific rank, the CPU 1401 proceeds to S352.

At S350, the CPU 1401 selects the shops having a price range lower than a specific amount with reference to the Field n of the shop database, stores the selected shops to the predetermined storage area in the RAM 1403, and proceeds to S352.

At S352, the CPU 1401 excludes the selected shops from the extraction results and exits the recommendation optimization processing.

The above-described processing selects shops not to be recommended based on the current date and time and excludes the selected shops. The narrowing down the recommended shops depending on the current date and time enables the dialogue to be more practical.

The above-described processing selects shops not to be recommended based on the user information (not only the age and the sex but may be the birthday and/or the preference of the user) and excludes the selected shops. The narrowing down the recommended shops depending on the user enables the dialogue to be more natural.

The above-described processing selects shops not to be recommended based on the location of the user and excludes the selected shops. The narrowing down the recommended shops depending on the location of the user enables the dialogue to care about the user.

The above-described processing excludes lower price range shops that are not preferred by a rich user. In general, when a cheap thing is recommended, rich people might feel unpleased. The narrowing down the recommended shops depending on the rank of the user eliminates displeasing the user and enables the dialogue to be more natural.

As described above, the recommendation optimization processing changes the priorities by selecting shops not to be recommended or by assigning weights to the shops not to be recommended, so that a timely and more pertinent answer can be provided to the question from the user.

Fourth Embodiment

The present embodiment describes another method of providing commercial information with reference to FIGS. 35 and 36. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

FIG. 35 is an example of a flowchart of icon input processing. This processing is different from the processing in FIG. 29 in the point that S200 and S202 are added.

After the processing of S184, the CPU 1401 proceeds to S200.

At S200, the CPU 1401 determines whether the shop associated with the MORE DETAILS icon is a recommended shop (whether the shop is assigned a priority level A). If determining that the shop associated with the MORE DETAILS icon is not a recommended shop, the CPU 1401

proceeds to S202; if determining that the shop associated with the MORE DETAILS icon is a recommended shop, the CPU **1401** proceeds to S186.

At S202, the CPU **1401** performs recommendation information addition processing. More specifically, the CPU **1401** creates recommendation information based on the template for additional recommendation and stores the recommendation information to the storage area for the response in the RAM **1403**.

The template for additional recommendation (e.g., "By the way, <Shop Name> is having a discount sale of <Bargain Item (not shown)> today.") is prepared and stored in the external storage device **1404** in advance.

As shown in FIG. **36**, in response to an input "I want to buy a dress." from a user (C11), the CPU **1401** extracts shops providing clothes, determines the order of display in view of the priority levels, weights, and history information, and provides the search result to the user (C12). In this example, assume that the Shop M is determined to be recommended.

Subsequently, in response to press of the MORE DETAILS icon of Shop N, the CPU **1401** displays the details of the Shop N and further, provides positive information on the recommended Shop M "By the way, Shop M is having a discount sale of T-shirts today." (C13).

Providing the positive information on Shop M casually as described above can naturally direct the user to Shop M recommended by the administrator.

Then, in response to an input "Where is Shop M?" (C14), the CPU **1401** shows a guidance (map) to Shop M (C15).

Fifth Embodiment

The present embodiment describes another method of providing commercial information with reference to FIGS. **37** and **38**. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

FIG. **37** is an example of a flowchart of dialogue condition control processing. This processing is different from the processing in FIG. **26** in the point that S220 to S230 are added.

At S220, the CPU **1401** determines whether the answer pattern is scenario. If determining that the answer pattern is a scenario, the CPU **1401** proceeds to S130; if not determining that the answer pattern is a scenario, the CPU **1401** proceeds to S222.

At S222, the CPU **1401** acquires coupon information from the member management server **13** based on the user ID and proceeds to S224.

At S224, the CPU **1401** extracts shop records including the acquired coupon information from the shop database and stores the shop records to a predetermined storage area in the RAM **1403**.

For example, in the case where the acquired coupon information is "coupon 1" and "coupon 2", the CPU **1401** extracts shop records having the shop IDs 001 and 002. Upon completion of this processing, the CPU **1401** proceeds to S226.

At S226, the CPU **1401** determines whether any extraction result is obtained. If determining that some extraction result is obtained, the CPU **1401** proceeds to S228; if determining that no extraction result is obtained, the CPU **1401** proceeds to S230.

At S228, the CPU **1401** performs response data creation processing and exits the dialogue condition control processing. More specifically, the CPU **1401** creates response data based on the information stored in the storage area and the answer template (not shown) of the determined answer pattern and stores the response data to the storage area for the response in the RAM **1403**.

At S230, the CPU **1401** performs fixed answer data creation processing and exits the dialogue condition control processing.

For example, the CPU **1401** stores data including a fixed answer indicating that no available coupon is found (e.g., "Sorry, available coupons cannot be found. Do you have any other question?") to the storage area for the response.

The processing has been described using coupons by way of example; however, the same applies points.

As shown in FIG. **38**, in response to an input "Tell me shops I can use a coupon." from the user (C21), the CPU **1401** extracts the shops that accept a coupon and provides the search result to the user (C22).

Subsequently, in response to an input "Print out the coupons." from the user (C23), the CPU **1401** provides a message indicating that the user terminal cannot print the coupons because the user terminal does not have a printer function and a guidance of the user terminal having a printer function (C24). If the user terminal has a printer function, the coupons are printed based on the input from the user.

Sixth Embodiment

The present embodiment describes another method of providing commercial information with reference to FIGS. **39** and **40**. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

FIG. **39** is a diagram for illustrating an example of data (external facility data) stored in an external facility database. Each record of the external facility data includes information such as a facility ID, a name of facility, a priority level, and information on the shuttle bus stop.

The external facility data is added, altered, or deleted through an external facility data creation screen (not shown) and an external facility data management screen (not shown) like the shop data.

Each field of the shuttle bus stop includes the file name (e.g., "MAP1") of a map file is stored. The map file is stored in a predetermined storage area such as the external storage device **1404**. Each field of the time table stores the file name of a time table file (e.g., time table A). The time table file is stored in a predetermined storage area such as the external storage device **1404**.

As illustrated in FIG. **40**, in response to an input "I want to go to A Land by bus tomorrow." from the user (C31), the CPU **1401** extracts data from the facility database and displays an extraction result (C32).

The extraction result includes information on the external facility (the route from the current position to the shuttle bus stop and the walking time to the bus stop, the travel time by shuttle bus, and the time table of the shuttle bus). Furthermore, information on the weather forecast for tomorrow is retrieved and displayed as well.

In the extraction processing, the CPU **1401** retrieves the search item and the search word from the storage area. Subsequently, the CPU **1401** extracts an external facility record from the external facility database based on the

search item and the search word. Then, the CPU **1401** stores the extracted external facility record and creates response data in accordance with an answer template for the external facility.

In addition, the processing for the dialogue about shops is applicable to the dialogue about external facilities. For example, in response to an input "Is there any good theme park near here?" from a user, the CPU **1401** extracts theme parks from the external facility database, determines the order of display in view of the priority levels, weights, and history information, and provides the search results to the user.

The shop database, the knowledge database, the answer template database, and the external facility database may be structured as a single database; some of the databases may be structured as one database; or one of the databases may be structured as a plurality of separate databases. That is to say, the structure to hold the data may be varied as appropriate.

Seventh Embodiment

The present embodiment describes another method of providing commercial information using another data structure with reference to FIGS. **41** to **44**. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

FIG. **41** is a diagram for illustrating an example of a data structure of the knowledge data **310** to be used in the dialogue system **1000**.

To make an effective response to a text input by a user with a user terminal, the dialogue server **1** of the dialogue system **1000** uses data stored in the knowledge data **310**. The knowledge data **310** includes a plurality of units (FIG. **41** shows only Unit **1** in detail). Each unit includes at least one reference text and at least one response text (which corresponds to an answer template); the reference text and the response text are associated with each other and constitute a set.

The reference text is a text to be compared with an input sentence of the user received from the user terminal; FIG. **41** shows three reference texts Qs (Q1-1, Q1-2, and Q1-3). Although the Q seems to represent the initial letter of question, the denotation is merely for convenience; the reference text does not need to be in the form of a question (interrogative sentence). For example, the reference text can be a text in various forms such as a word, an affirmative sentence, a negative sentence, a greeting, and the like.

If the unit includes a plurality of reference texts, one reference text is a representative reference text (representative Q) and the other reference texts are synonymous sentences. In FIG. **41**, the Q1-1 is a representative Q and the Q1-2 and the Q1-3 are the synonymous sentences of Q1-1. That is to say, a unit includes a collection of reference texts having the same meaning (very close meanings that can be referred to as being synonymous).

A response text is a text associated with the reference texts (as a response to the reference texts); FIG. **41** shows two response texts As (A1-1 and A1-2). Although the A seems to represent the initial letter of answer, the denotation is merely for convenience; the response text does not need to be a sentence in the form of an answer to some question. For example, the response text can be a text in various forms such as a word, an interrogative sentence, an affirmative sentence, a negative sentence, a greeting, and the like.

One unit includes one or more reference texts and one or more response texts and the reference texts and the response texts are associated with one another; the correspondence relation between the reference text and the response text can be one to one, one to n, n to one, or n to n.

Furthermore, one unit includes an attribute associated with each response text (attribute of A). The attribute of A represents the attribute of the response text. A response condition indicates in what condition the associated response text is appropriate for the response. If the unit does not have a plurality of response texts, the response condition is not necessary because the response can be uniquely determined.

Defining the set of reference texts and response texts associated therewith plus the attributes of the response texts as QA, each QA has an attribute (attribute of QA). The attribute of QA is represented by information including response behavior setting information (B1) or information including applicability setting information (F1). The response behavior setting information is to specify some behavior (action) to be taken by the user terminal of the user if the input sentence of the user is determined to be semantically closest to (hit on) the reference text of the unit. The applicability setting information is to specify whether the reference text Q is to be a suggestion, whether to record a log about this QA, or the like. It should be noted that this attribute of QA can be regarded as attribute associated with the reference text (the group of the reference texts including the representative Q and the synonymous sentences if the unit includes a plurality of reference sentences).

Although FIG. **41** shows that the knowledge data **310** is managed as unified data, at least part of the data can be managed as different data while maintaining the association relations. For example, a collection of QAs can be stored as first data and a collection of the attributes of the QAs can be stored as second data together with the identifiers of the QAs.

FIG. **42** is a diagram for schematically illustrating ways of determining a response to an input sentence (a diagram for illustrating examples of relations between an input sentence and a response) using the knowledge data **310**. It should be noted that the attributes of QA (response behavior setting information and applicability setting information) in each unit of the knowledge data **310** described with FIG. **41** are omitted from FIG. **42**.

First, the case in FIG. **42**(A) is described. Assume that a unit **1** (identical to Unit **1** shown in FIG. **41**) is provided for the knowledge data **310**, that input sentences **1** and **2** are entered by users, and that a Q1-1 is hit as the semantically closest text to the input sentence **1** and a Q1-3 is hit as the semantically closest text to the input sentence **2** (assuming that no other unit exists). In the case of FIG. **42**(A), an A1-2 is displayed for the response to the input sentence **1** and further, the A1-2 is displayed for the response to the input sentence **2** as well. This is because, regarding the response condition or the attribute of A, the response condition for the A1-2 is satisfied by both of the input sentence **1** and the input sentence **2**.

Next, the case in FIG. **42**(B) is described. Assume that a unit **2** (in which one reference text (Q2-1) is associated with two response texts (A2-1 and A2-2)) is provided for the knowledge data **310**, that input sentences **3** and **4** are entered by users **10**, that the Q2-1 is hit as the semantically closest text to the input sentence **3** and also to the input sentence **4** (assuming that no other unit exists). In the case of FIG.

42(B), the A2-1 is displayed for the response to the input sentence **3** and the A2-2 is displayed for the response to the input sentence **4**. This is because, regarding the response condition or the attribute of A, the response condition for the A2-1 is satisfied by the input sentence **3** and the response condition for the A2-2 is satisfied by the input sentence **4**.

Like this case, even if a plurality of input sentences hit on the same reference text, different responses could be displayed depending on the response condition.

Next, the case in FIG. **42**(C) is described. Assume that a unit **3** (in which three reference texts (Q3-1, Q3-2, and Q3-3) are associated with one response text (A3)) is provided for the knowledge data **310**, that an input sentence **5** is entered by a user **10**, that the Q3-2 is hit as the semantically closest text to the input sentence **5** (assuming that no other unit exists). In the case of FIG. **42**(C) the A3 is displayed for the response to the input sentence **5**.

FIG. **42**(D) shows the simplest case. Assume that a unit **4** (in which one reference text (Q4) is associated with one response text (A4)) is provided for the knowledge data **310**, that an input sentence **6** is entered by a user **10**, that the Q4 is hit as the semantically closest text to the input sentence **6** (assuming that no other unit exists). In the case of FIG. **42**(D), the A4 is displayed for the response to the input sentence **6**.

FIG. **43** is a diagram for illustrating an example (new QA addition screen **850**) of a new QA addition screen to add a new QA to the knowledge data **310**.

The new QA addition screen **850** includes a Q display area **851**, an Add Synonymous Sentence button **852**, an A display area **853**, an Add Response Sentence button **854**, a response action setting button **855**, an applicability setting button (Not Applicable button) **856**, and a Register button **857**.

The Q display area **851** includes an entry area for entering a Q; the system administrator enters a question or other kind of sentence that is expected to be entered by the users to this entry area so that an input sentence of a user will hit on the Q as being determined through comparison that the input sentence is semantically close to this Q. Furthermore, synonymous sentences or semantically similar sentences and expressions can be registered as a plurality of Qs. For this purpose, an Add Synonymous Sentence button **852** is provided. Upon press of this button, an entry area is added; the system administrator enters a synonymous sentence to the added entry area. In the example of FIG. **43**, the second entry area in the Q display area **851** is an area to enter a synonymous sentence (a text "Is there any Chinese food restaurant?" is provided). The Q entered in the first entry area ("I want to eat Chinese food.") is a requirement and called representative Q.

Synonymous sentences can be added as many as desired in relation to a representative Q. Such configuration can absorb fluctuations in expression among users. In other words, inputs in various expressions entered by users can hit one of the Qs including the representative Q and the synonymous sentences, so that an assigned A can be output effectively. The X button provided on the right of the entry area for a synonymous sentence is to delete the synonymous sentence.

Below the Q display area **851**, an A display area **853** is provided. An A is a response text and sent to the web browser of the user terminal when the input sentence of a user hits on one of the Qs set as described above; the system administrator enters an A appropriate for the Qs in the first row of the A display area **853**.

In the example of FIG. **43**, the system administrator enters a response "According to our database, there are <Number of hits> restaurants in total . . . " as the first response. This A is to guide a user (in a complex facility, for example) who has entered a sentence like the foregoing Q such as "I want to eat Chinese food", "Is there any Chinese food restaurant?", or the like, by answering that "According to our database, there are <Number of hits> restaurants in total . . . ".

The first entry area of the A display area **853** is provided with a Simple Configuration button and a Custom Configuration button for setting response conditions; however, the first A cannot be assigned response conditions. Unless a plurality of As are to be set, the system administrator presses the Register button **857** upon completion of entry to the first entry area to complete the new QA addition.

If the system administrator presses the Add Response Sentence button **854** after entering the first A to the A display area **853**, the second entry area is displayed in the A display area **853** and the system administrator enters the second A to the area. Such configuration enables different response sentences to be output in accordance with the predetermined conditions in response to input sentences having the same purport.

For the second and subsequent As to be specified in the A display area **853**, a Simple Configuration button and a Custom Configuration button are displayed to specify response conditions; the system administrator can press either one. In this example, the response conditions on the first A are evaluated first and if the response conditions are satisfied, the first A is determined to be a response and is sent to the user terminal; accordingly, the order of the second and subsequent As can be changed to coordinate the priorities in evaluation. Furthermore, the second and the subsequent As can be deleted together with their response conditions with the X button provided on the right of the entry area for entering the A.

Below the A display area **853**, a response action setting button **855** is provided. Upon press of this button, an entry area to specify the response action is displayed. The details thereof are described later.

Below the response action setting button **855**, an applicability setting button **856** is provided. Upon press of this button, an entry area to specify whether the QA should be subject to a suggestion, for example. The details thereof are described later.

On the bottom of the new QA addition screen **850**, a Register button **857** is provided. Upon press of this button, information on the Qs, As, response conditions, and the like entered in the Q display area **851** and the A display area **853** is stored in the knowledge data **310**.

FIG. **44** is a diagram for illustrating an example (custom configuration screen **840**) of a custom configuration screen. The custom configuration screen **840** includes an A display area **841**, a batch operation setting area **842**, a conditional expression setting area **843**, an Add button **844**, a Save button **845**, an attribute setting area **846**, and an Add button **847**.

The A display area **841** shows the A for which response conditions are to be specified with this custom configuration screen **840**. In this example, the Custom Configuration button has been pressed to configure the response conditions for the second A in FIG. **43**; accordingly, the second A is displayed in the A display area **841**.

The batch operation setting area **842** shows a pull-down list to select a batch operation for the conditional expressions. Selecting Edit enables editing the conditional expressions selected with the checkboxes collectively; selecting

Delete enables deleting the conditional expressions selected with the checkboxes collectively.

The conditional expression setting area **843** provides entry areas to enter the response conditions for the second A in the form of conditional expression. In the example of FIG. **44**, one conditional expression is specified. Individual conditional expressions can use AND condition or OR condition.

The first conditional expression is "n (number of hits)>3". This conditional expression is compared with the data following "talk_option=" included in the request parameter of the URI sent from the user terminal and if the data matches the conditional expression, the data is determined to satisfy the response condition.

The conditional expression indicated in the conditional expression setting area **843** is associated with the second A and stored in the knowledge data **310** upon press of the Apply button provided on the right of the conditional expression.

The Add button **844** is to add another entry area for a conditional expression in the conditional expression setting area **843** so that a new conditional expression can be specified there.

The attribute setting area **846** provides entry areas to enter the attributes for the second A in the form of conditional expression. In the example of FIG. **44**, one conditional expression is specified. Individual conditional expressions can use AND condition or OR condition.

For example, the first conditional expression is "Field 10=Chinese food".

The conditional expression indicated in the attribute setting area **846** is associated with the second A and stored in the knowledge data **310** upon press of the Apply button provided on the right of the conditional expression.

The Add button **847** is to add another entry area for a conditional expression in the attribute setting area **846** so that a new conditional expression can be specified there.

The Save button **845** is to save the conditional expressions in the entry areas displayed in the conditional expression setting area **843** and the attribute setting area **846**.

As described above, the conditional expressions specified with the custom configuration screen **840** are compared with the parameters appended by the web browser of the user terminal and whether the response conditions are satisfied is determined in accordance with the comparison results. Accordingly, setting various parameters in the user terminal enables creation of wide variation in responses.

For example, a user terminal sends information obtainable by the user terminal to the dialogue server **1**; then, the dialogue server **1** can select a different response depending on the information. Specifically, the user terminal may send information on the version of the OS or the web browser, or the model of the user terminal, so that the dialogue server **1** can select a response. In addition, if the user terminal can acquire information on the specifics of the input of the user (such as the number of inputs and the time of input) with an imaging device, the dialogue server **1** can select a response in accordance with this information.

Creating the knowledge data **310** is not limited to the above-described configuration. For example, the registering, altering, and deleting knowledge data may be performed by uploading a CSV (Comma-Separated Values) including knowledge data without using the screen.

Eighth Embodiment

The present embodiment describes another method of providing commercial information with reference to FIG. **45**. In the present embodiment, elements different from those described in the first embodiment are mainly described; the same elements as those described in the first embodiment are denoted by the same reference signs and description thereof is omitted as appropriate.

FIG. **45** is a diagram for illustrating an example of a weight determination table. In the weight determination table, shops are specified correspondingly to discount sale periods. The shops are updated with appropriate timing (for example, periodically or in real time).

Basically, the weights (priority levels) are determined to be higher if the current date is in a discount sale period.

For example, at S**152** in FIG. **28**, the CPU **1401** assigns a weight "1" to the shop records of the shops holding a discount sale (the shops to be assigned the highest priority) among the shop records sorted by the first sorting. Then, the CPU **1401** sorts the shop records (second sorting) in accordance with the assigned weights.

This processing coordinates the shops to be recommended depending on the current date, enabling the dialogue to be more practical.

The weight determination table is not limited to the above-described example. Any weight determination table designed by the administrator can be employed.

Ninth Embodiment

In the present embodiment, the dialogue system **1000** includes a setting unit capable of changing the language (Japanese, English, Chinese, or Spanish) to be used for the dialogue.

The setting unit may be configured so that the user can select the language or the setting unit will identify the language from the input sentence to change the language to be used.

The configurations described in the first embodiment to the ninth embodiment can be combined as appropriate.

As set forth above, embodiments of the present invention have been described; however, they are merely specific examples and not to limit the present invention. The specific elements such as the individual units can be modified in design as appropriate. The effects described in the embodiments are merely the most advantageous effects achieved by the present invention and the effects of the present invention are not limited to the effects described in the embodiments.

In addition, the foregoing detailed description has mainly provided characteristic features for better understanding of the present invention. The present invention is not limited to the embodiments provided in the foregoing detailed description and can be applied to other embodiments to achieve a broad application range. Further, the terms and expressions used in the present specification are to appropriately describe the present invention, and not to limit the interpretation of the present invention. In addition, it would be obvious for those skilled in the art to conceive of configurations, systems, and/or methods other than those included in the concept of the present invention in view of the concept of the invention described in the present specification. Therefore, recitations of the claims must be regarded to include equivalent features within the scope of the technical idea of the present invention. The Abstract is provided for patent offices, general public institutions, or those skilled in the art who are not fully familiarized with patents, legal terms, and professional terminology to be able to readily understand the technical features and the essences of the present invention through simple investigation. Accordingly, the Abstract is not to limit the scope of the invention to be

evaluated by the recitations of the claims. To fully understand the object(s) of the present invention and advantageous effect(s) unique to the present invention, it is encouraged to sufficiently refer to the documents already disclosed.

The detailed description provided hereinabove includes processing executed by a computer. The foregoing description and expressions are provided for those skilled in the art to most efficiently understand the present invention. In the present specification, each of the steps employed to derive a result is to be understood as processing without self-contradiction. In each of the steps, an electric or magnetic signal is transmitted, received, and/or recorded. Such a signal is expressed in the form of bit, value, symbol, character, term, number, or the like; however, it should be noted that these expressions are employed for clarity of explanation. Although some steps in the present specification are described using expressions common with human acts, the processing is actually executed by various devices. Furthermore, other elements necessary to perform the steps are obvious from the above description.

The invention claimed is:

1. A commercial information providing system comprising:

a user interface comprising at least one of a physical or virtual button, a physical or virtual keyboard, a mouse, an icon displayed on electronic display device, or a microphone capable of accepting input of question information representing a question from a user;

a non-transitory computer readable storage device including a knowledge database holding knowledge data including a plurality of sets of commercial information related to commercial facilities and a plurality of response templates of responses to question information input from the user interface;

an administrator interface comprising at least one of a physical or virtual button, a physical or virtual keyboard, a mouse, an icon displayed on electronic display device, or a microphone capable of accepting setting of a priority level to prioritize providing a specific set of commercial information among the plurality of sets of commercial information;

a searching and providing engine including a control device communicatively connectable to the knowledge database and configured to, upon reading computer readable instructions received from the non-transitory computer readable storage device, perform processing of extracting at a set of commercial information to be provided from the plurality of sets of commercial information and a response template to be used from the plurality of response templates based on the question information input from the user interface and creating response information using the response template, the response information including a set of commercial information selected from the extracted at the set of commercial information based on the priority level; and

an information providing device configured to output one or more of an audio or visual signal so as to provide the response information created by the control device to the user,

wherein the knowledge data stored in the database is further composed of a plurality of units, each including a reference text query that is compared with an input text query, and a response text that is associated with the reference text query,

wherein the reference text query is associated with information comprising one or more of:

a predetermined response condition, which is a condition on information input from the user interface, other than the input text query, for selecting a response text from among a plurality of response texts to be sent to the user interface;

a predetermined response behavior setting, which is information for defining a behavior of the user interface when a selected response text is received by the user interface; and,

a predetermined applicability setting, which is information for specifying whether the reference text query is to be a suggestion and/or whether to record the input text query into a log; and

wherein data to be included in the response text is based on the auxiliary information associated with the reference text query and a semantic closeness of the input text query and the reference text query being greater than or equal to a predetermined threshold.

2. The commercial information providing system according to claim **1**, further comprising a terminal device installed in the commercial facilities and connected with the control device to be able to communicate with the control device,

wherein the terminal device includes the user interface.

3. The commercial information providing system according to claim **1**, wherein the control device is configured to change the priority level in accordance with a weight assigned depending on predetermined information different from the question information input from the user interface.

4. The commercial information providing system according to claim **1**, wherein the response information created by the control device includes action request information for encouraging the user to react to the commercial information included in the response information.

5. The commercial information providing system according to claim **1**,

wherein the user interface is configured to accept input of use request information for requesting to use a set of commercial information included in the response information provided by the information providing device,

wherein the control device is configured to create guidance information for contributing to use of the set of commercial information designated by the use request information in response to input of the use request information from the user interface, and

wherein the information providing device is configured to provide the guidance information created by the control device to the user.

6. A commercial information providing method for a commercial information providing system including a user interface comprising at least one of a physical or virtual button, a physical or virtual keyboard, a mouse, an icon displayed on electronic display device, or a microphone capable of accepting input of question information representing a question from a user, a non-transitory computer readable storage device including a knowledge database holding knowledge data including a plurality of sets of commercial information related to commercial facilities and a plurality of response templates of responses to question information input from the user interface, an administrator interface comprising at least one of a physical or virtual button, a physical or virtual keyboard, a mouse, an icon displayed on electronic display device, or a microphone capable of accepting setting of a priority level to prioritize providing a specific set of commercial information among the plurality of sets of commercial information, a searching and providing engine including a control device communicatively connectable to the database, and an information

providing device configured to output one or more of an audio or visual signal, the commercial information providing method comprising:

upon the control device reading computer readable instructions received from the non-transitory computer readable storage device, the control device performing the control steps of:

connecting, by the control device, to the knowledge database;

extracting, by the control device, a set of commercial information to be provided from the plurality of sets of commercial information and a response template to be used from the plurality of response templates based on the question information input from the user interface; and

creating, by the control device, response information using the response template, the response information including a set of commercial information selected based on the priority level from the extracted the set of commercial information; and

an information providing step of providing via an output one or more of an audio or visual signal, by the information providing device, the response information created by the control device to the user;

wherein the knowledge data stored in the database is further composed of a plurality of units, each including a reference text query that is compared with an input text query, and a response text that is associated with the reference text query,

wherein the reference text query is associated with information comprising one or more of:

a predetermined response condition, which is a condition on information input from the information providing device, other than the input text query, for selecting a response text from among a plurality of response texts to be sent to the information providing device;

a predetermined response behavior setting, which is information for defining a behavior of the information providing device when a selected response text is received by the information providing device; and,

a predetermined applicability setting, which is information for specifying whether the reference text query is to be a suggestion and/or whether to record the input text query into a log; and,

wherein data to be included in the response text is based on the auxiliary information associated with the reference text query and a semantic closeness of the input text query and the reference text query being greater than or equal to a predetermined threshold.

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