

INFORMATION PROCESSING APPARATUS, INFORMATION PROCESSING METHOD, INFORMATION PROCESSING PROGRAM

BACKGROUND

1. Technical Field

[0001] The present invention relates to an information processing apparatus, an information processing method, and an information processing program.

2. Description of the Background

[0002] Against the background of recent improvements in living standards and developments in long-distance transportation services including airline flights, domestic and international travels are actively sold and purchased as products. Such travel products are representatively package tours dealt with by travel agencies, which generally issue materials as individual leaflets or a series of brochures in book form. Recently, there are websites for searching for any tour according to the purpose or destination of a trip from a client system via a communication network such as the internet.

CITATION LIST

PATENT LITERATURE

[0003] PATENT LITERATURE 1: Japanese Unexamined Patent Application No. 2002-150066

BRIEF SUMMARY

[0004] However, the conventional technique can just allow the user to search for a tour that satisfies the search condition at the search time point and cannot, for example, estimate future travel expenses and suggest the best period for a trip. That is, the

conventional technique is susceptible to improvement in convenience.

[0005] The present invention has been made in view of the foregoing, and an object thereof is to provide convenient information processing apparatus, information processing method, and information processing program.

[0006] In order to solve the problem, an information processing apparatus of the present invention includes: a first collecting unit that collects travel expenses for at least one trip together with a destination and a date of the trip; a learning unit that learns, from information collected by the first collecting unit, a transition of the travel expenses for the at least one trip for each trip; a first accepting unit that accepts a search condition for a trip including a destination and a date; and an estimating unit that estimates, in accordance with a learning result from the learning unit, a future transition of travel expenses for a trip by the destination and the date included in the search condition accepted by the first accepting unit.

[0007] The present invention provides convenient information processing apparatus, information processing method, and information processing program.

BRIEF DESCRIPTION OF DRAWINGS

[0008] FIG. 1 illustrates one example of the schematic configuration of an information processing system 1 according to a first embodiment.

FIG. 2 illustrates one example of the hardware configuration of an information processing server 3 (an information processing apparatus) according to the first embodiment.

FIG. 3 illustrates one example of a database stored in a memory of the information processing server 3 (the information processing apparatus) according to the first embodiment.

FIG. 4 illustrates one example of the functional configuration of the information processing server 3 (the information processing apparatus) according to the first embodiment.

FIG. 5 illustrates one example of a presentation screen presented (displayed) on a user terminal according to the first embodiment.

FIG. 6 illustrates one example of a presentation screen presented (displayed) on the user terminal according to the first embodiment.

FIG. 7 is a flowchart of one example of a search process in the information processing system according to the first embodiment.

FIG. 8 is a flowchart of one example of a PUSH notification process in the information processing system according to the first embodiment.

FIG. 9 illustrates one example of the functional configuration of an information processing server 3 (an information processing apparatus) according to a second embodiment.

FIG. 10 illustrates one example of a presentation screen presented (displayed) on a user terminal according to the second embodiment.

FIG. 11 is a flowchart of one example of a process of presenting the transition of accommodation expenses in the information processing system according to the second embodiment.

FIG. 12 illustrates one example of the functional configuration of an information processing server 3 (an information processing apparatus) according to a third embodiment.

FIG. 13 illustrates one example of a presentation screen (displayed) on a user terminal according to the third embodiment.

DETAILED DESCRIPTION

[0009] In the following, with reference to the drawings, a description will be given of embodiments of the present invention.

First embodiment

[0010] (Configuration of information processing system 1)

With reference to FIG. 1, an information processing system 1 according to a first embodiment includes user terminals 2 and an information processing server 3 (an information processing apparatus) communicably connected to each other via a network 5. In the first embodiment, the information processing server 3 is configured to access a website 4 (for example, an online travel site) via the network 5 to refer and acquire various types of information (details of the information will be described later). Note that, the number of the user terminals 2 and the information processing server 3 included in the information processing system 1 may be arbitrarily determined. The network 5 is just required to be capable of establishing communication, and may be in any network mode without being specified to wired or wireless configuration.

[0011] (User terminal 2)

Each user terminal 2 is a terminal for a person to access the information processing system 1 (hereinafter referred to as the user). For example, the user terminal 2 is an information communication terminal such as a smartphone or a tablet PC (personal computer). Note that, the user terminal 2 may be a desktop PC or a notebook PC. The user performs any operation on the user terminal 2 to have access to the information processing system 1. On the user terminal 2, any information required to access the information processing system 1 is presented. The user terminal 2 stores an ID that identifies the user terminal 2 itself. By the information from the user terminal

2 bearing the ID, the information processing server 3 can identify the sender user terminal 2 of the received information.

[0012] (Configuration of information processing server 3)

With reference to FIG. 2, the information processing server 3 includes a communication IF 300A, a memory 300B, a CPU 300C and the like. The information processing server 3 may include an input device such as a keyboard, a mouse, or a touchscreen, and a display apparatus such as a liquid crystal display, an organic EL (electroluminescence) display, a CRT (Cathode Ray Tube) display.

[0013] The communication IF 300A is an interface for establishing communication between the information processing server 3 and other apparatus (for example, the user terminal 2 or any website (the server of other system, for example)).

[0014] The memory 300B is, for example, an HDD (Hard Disk Drive) or a semiconductor memory (SSD (Solid State Drive)) and stores various types of database (hereinafter referred to also as "DB"), an information processing program and the like. Note that, the memory 300B may be any other apparatus or device so long as being capable of reading/writing information (data).

[0015] (Database)

With reference to FIG. 3, the memory 300B stores, for example, a user DB1 and an accumulation DB2.

[0016] (User DB1)

The user DB1 stores, in association with the user ID, the personal information of each user such as sex, age, address, contact information (a phone number, a mail address), a login ID, and a login password (hereinafter also referred to as the login PW). Note that, what information is to be stored as the personal information in the user DB1 in association with the user ID may be arbitrarily determined, and not specified to the

foregoing information. In the first embodiment, while the login ID and the login PW are assigned to the user at the time of user registration, the user may select the login ID and the login PW.

[0017] (Accumulation DB2)

The accumulation DB2 accumulates information collected by a collecting unit 301 which will be described later. Details of the information accumulated in the accumulation DB2 will be given in the description of the collecting unit 301.

[0018] Note that, as described above, in the information processing system 1, while information is stored in two databases as being physically or logically separated, the information is not necessarily separated in such a manner. The two databases may be integrated into one. Alternatively, the database may be subdivided into three or more databases.

[0019] The CPU 300C controls the information processing server 3 and includes ROM (Read Only Memory) and RAM (Random Access Memory) which are not shown.

[0020] (Functional configuration of information processing server 3)

With reference to FIG. 4, the information processing server 3 has the functions such as a collecting unit 301 (a first collecting unit), a first acquiring unit 302, a second acquiring unit 303, a third acquiring unit 304, a learning unit 305, an accepting unit 306 (a first accepting unit), an estimating unit 307, an output unit 308 (a first output unit), a memory controller 309 and the like. Note that, the functions in FIG. 4 are realized by the CPU 300C executing an information processing program stored in ROM (not shown) of the information processing server 3.

[0021] The collecting unit 301 crawls the website 4 at regular intervals (for example, once a day) and/or irregular intervals, to collect from the website 4 the travel expenses for at least one trip together with the destination and date of the trip. The

collecting unit 301 collects, for example, information on at least one trip (such as the travel expenses, the origin, the destination, the date, the accommodations, the information on events (including information on the content (type) and the date of the events) held at the destination (including locations around the destination) of the trip, the climate information (including at least one of weather and temperatures) of the destination of the trip, and the holiday information of facilities in the destination (including locations around the destination).

[0022] More specifically, the collecting unit 301 collects at least the following information:

(1) Available dates for a stay plan (including information such as the origin, the destination, the date, and the accommodations) that can be reserved, the days to the check-in date, the price at the start of sale (including information on the grades of hotel and room of the stay plan);

(2) The type, current price, and availabilities of a stay plan;

(3) The remaining days to the check-in date;

(4) The day of week of the check-in date;

(5) Non-available dates for a stay plan and the days to the check-in date;

(6) The highest price over the past year;

(7) The lowest price over the past year;

(8) The average price over the past year;

(9) The difference between the current price and the lowest price over the past year;

(10) The difference between the current price and the highest price over the past year;

(11) The difference between the current price and the average price over the past

year;

(12) The result of the same check-in date over the past years;

(13) The price of major airline tickets to the nearest or accessible airport;

(14) The information on an event held at the destination (including locations around the destination) of the trip (including the content (type) and date of the event);

(15) The climate information (including at least one of weather and temperatures) of the destination of the trip; and

(16) The holiday information of facilities in the destination (including locations around the destination).

[0023] Here, the hotel grade information may be, for example, the rating information (star rate) represented by "the number of stars" as a result of generally evaluating the hotel's quality or service and facilities, that is, restaurants, swimming pools, gyms, business centers and the like. The room grade is the rating information determined by the room type (for example, single room, twin room, suite, apartment and the like) or location (the orientation of the room or position in the building). Other information may be employed so long as it serves as the index of objective evaluations of the grades of hotel and room.

[0024] The collecting unit 301 may also collect information such as hotel names, hotel descriptions, hotel locations (the latitude and longitude, the distance from any station or a specific sightseeing spot), hotel rankings, user reviews and the like. Based on the information, similarity between specific hotels may be scored, so that the price trend forecast of one similar hotel may be used to improve the accuracy of the price trend forecast of other similar hotel. Note that, the information on a trip collected by the collecting unit 301 is stored by the memory controller 309 on the accumulation DB2.

[0025] The first acquiring unit 302 acquires information on any event scheduled to be held by the destination (including locations around the destination) and date included in the search condition accepted by the accepting unit 306.

[0026] The second acquiring unit 303 acquires the climate information (at least one of weather and temperatures) of the destination and date included in the search condition accepted by the accepting unit 306.

[0027] The third acquiring unit 304 acquires the holiday information of facilities in the destination (including locations around the destination) included in the search condition accepted by the accepting unit 306.

[0028] The learning unit 305 learns the transition of travel expenses for the available accommodations by machine learning. In other words, the learning unit 305 learns the relationship among the information pieces collected by the collecting unit 301 (the information under items (1) to (16)) for each hotel and each check-in date, to create a price trend model. The created model is used by the estimating unit 307, which will be described later, in estimating the transition of travel expenses for each hotel and each check-in date. The learning unit 305 updates the model at regular intervals and/or irregular intervals (for example, every time the information accumulated in the accumulation DB is updated).

[0029] The machine learning by the learning unit 305 may be any known scheme. By the learning unit 305 learning the relationship among the information pieces (the information under items (1) to (16)) on the online travel site and creating the price trend model for each hotel and each check-in date, the estimating unit 307 can estimate the transition of future travel expenses for each hotel and each check-in date taking into consideration of the event information, the climate information, the facility holiday information and the like.

[0030] The accepting unit 306 accepts the search condition for a trip including the origin, destination, and date transmitted from the user terminal 2.

[0031] The estimating unit 307 estimates the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date for the trip including the origin, destination, and date included in the search condition accepted by the accepting unit 306 in accordance with the learning result from the learning unit 305. Here, the estimating unit 307 estimates the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date for the trip including the origin, destination, and date included in the search condition accepted by the accepting unit 306 in accordance with the event information acquired by the first acquiring unit 302 and the learning result from the learning unit 305.

[0032] Furthermore, the estimating unit 307 estimates the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date for the trip by the origin, destination, and date included in the search condition accepted by the accepting unit 306 in accordance with the climate information acquired by the second acquiring unit 303 and the learning result from the learning unit 305.

[0033] Furthermore, the estimating unit 307 estimates the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date for the trip by the origin, destination, and date included in the search condition accepted by the accepting unit 306 in accordance with the holiday information acquired by the third acquiring unit 304 and the learning result from the learning unit 305.

[0034] Note that, in the present embodiment, while the estimating unit 307

estimates the future transition of travel expenses for each hotel and each check-in date for two adults, preferably, the user is allowed to set the number of the travelers for estimating the travel expenses by settings, such as one adult, or two adults and one child.

[0035] The output unit 308 outputs the information on the future transition of travel expenses for each hotel and each check-in date estimated by the estimating unit 307. Furthermore, the output unit 308 outputs information for presenting the travel expenses estimated by the estimating unit 307 in different manners for each predetermined period (date) corresponding to the price ranges (for example, the manners differing in display size, display color, display shape, the number of characters in text, the character font and the like). Furthermore, the output unit 308 outputs information recommending making a reservation of the trip by the search condition accepted by the accepting unit 306 when the travel expenses estimated by the estimating unit 307 fall within a predetermined range from the lowest price (for example, the range 5% higher than the lowest price of the estimated travel expenses). The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2. Note that, the predetermined range may be set arbitrarily. The predetermined range may be defined by % as in the foregoing example, or by price (for example, 10,000 yen).

[0036] The memory controller 309 controls the memory 300B. Specifically, the memory controller 309 controls the memory 300B to write and read information to and from DB1 and DB2 stored in the memory 300B.

[0037] (Display screen)

FIGS. 5 and 6 illustrate one example of a presentation screen presented (displayed)

on the user terminal 2. FIG. 5 illustrates one example where travel expenses estimated by the estimating unit 307 are presented in different manners for each predetermined period (date) corresponding to the price ranges. With reference to FIG. 5, travel expenses for each departure day of each week are separately presented for three price ranges of less than 1,500 US dollars, 1,500-2,000 US dollars, and over 2000 US dollars. Here, the price ranges are not specified to three, and may be presented in subdivided ranges.

[0038] FIG. 6 illustrates one example of the future transition of travel expenses for each hotel and each check-in date estimated by the estimating unit 307. In FIG. 6, the vertical axis indicates the estimated travel expenses and the horizontal axis indicates the number of days to the check-in date. FIG. 6 illustrates a plurality of transition graphs of estimated travel expenses between the date 30 days before the check-in date and the date one day before the check-in date (FIG. 6 illustrates transition graphs of accommodation expenses of a plurality of hotels A to E). With reference to FIG. 6, it can be seen that an earlier reservation not always provide lower travel expenses, and the transition varies among the plans (hotels in the example in FIG. 6). By presenting the screen in FIG. 6, the user can know how many days in advance would be generally advisable to make a reasonable reservation. While FIG. 6 illustrates the future transition of travel expenses for each hotel and each check-in date estimated by the estimating unit 307, the screen may just present the trend of higher travel expenses, lower travel expenses, or stationary travel expenses by the text such as "Expected to be lower in future", "Expected to be higher in future", and "Wait and see". Alternatively, the screen may present the probability of travel expenses' becoming higher or lower in future by the text such as "Expected to become lower by the probability of X% in future" or "Expected to become higher by the probability of X% in future".

[0039] (Process in information processing system)

FIGS. 7 and 8 are each a flowchart of one example of a process in the information processing system 1. In the following, with reference to FIGS. 7 and 8, a description will be given of the processes in the information processing system 1.

[0040] (Search process)

FIG. 7 is a flowchart of one example of a search process in the information processing system 1. In the following, with reference to FIG. 7, a description will be give of one example of the search process.

[0041] (Step S101)

The accepting unit 306 of the information processing server 3 determines whether or not the search condition transmitted from the user terminal 2 is accepted. When the accepting unit 306 determines that the search condition is accepted (YES), control proceeds to Step S102. When the accepting unit 306 determines that the search condition is not accepted (NO), the search process ends.

[0042] (Step S102)

The first acquiring unit 302 acquires information on any event scheduled to be held by the destination (including locations around the destination) and date included in the search condition accepted by the accepting unit 306. Note that, when there is no event scheduled to be held by the destination (including locations around the destination) and date included in the search condition accepted by the accepting unit 306, the estimating unit 307 does not take into consideration of the event information in estimating the future transition of travel expenses for a trip for each hotel and each check-in date.

[0043] (Step S103)

The second acquiring unit 303 acquires the climate information (at least one of weather and temperatures) of the destination and date included in the search condition

accepted by the accepting unit 306.

[0044] (Step S104)

The third acquiring unit 304 acquires the holiday information of facilities in the destination (including locations around the destination) included in the search condition accepted by the accepting unit 306. Note that, when there are no facilities closed by the destination (including locations around the destination) and date included in the search condition accepted by the accepting unit 306, the estimating unit 307 does not take into consideration of the holiday information of facilities in estimating the future transition of travel expenses for a trip for each hotel and each check-in date.

[0045] (Step S105)

The estimating unit 307 of the information processing server 3 estimates the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date for a trip by the origin, destination, and date included in the search condition accepted by the accepting unit 306 in accordance with the learning result (model) from the learning unit 305. Note that, the estimating unit 307 estimates the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date for a trip by the origin, destination, and date included in the search condition accepted by the accepting unit 306 taking into consideration of the event information acquired by the first acquiring unit 302, the climate information acquired by the second acquiring unit 303, and the holiday information of facilities acquired by the third acquiring unit 304.

[0046] (Step S106)

The output unit 308 outputs the future transition information of travel expenses for each hotel and each check-in date estimated by the estimating unit 307 to the user

terminal 2 that has transmitted the accepted search condition (see FIG. 6).

Furthermore, the output unit 308 outputs information for presenting the travel expenses estimated by the estimating unit 307 in different manners for each predetermined period (date) corresponding to the price ranges (for example, the manners differing in display size, display color, display shape, the number of characters in text, the character font and the like) (see FIG. 5).

[0047] (Step S107)

The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2. Note that, the user terminal 2 that has transmitted the accepted search condition can be specified by the ID that the search condition bears.

[0048] (PUSH notification process for user terminal 2)

FIG. 8 is a flowchart of one example of a PUSH notification process in the information processing system 1.

In the following, with reference to FIG. 8, a description will be given of one example of the PUSH notification process.

[0049] (Step S201)

The output unit 308 of the information processing server 3 determines whether or not the travel expenses estimated by the estimating unit 307 fall within a predetermined range from the lowest price (for example, the range 5% higher than the lowest price of the estimated travel expenses). When the output unit 308 determines that the travel expenses estimated by the estimating unit 307 fall within a predetermined range from the lowest price (YES), control proceeds to Step S202. When the output unit 308 does not determine that the travel expenses estimated by the estimating unit 307 do not fall

within a range of a predetermined range from the lowest price (NO), the PUSH notification process ends.

[0050] (Step S202)

The output unit 308 outputs information recommending making a reservation of the trip by the search condition accepted by the accepting unit 306 to the user terminal 2 that has transmitted the accepted search condition.

[0051] (Step S203)

The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2. Note that, the user terminal 2 that has transmitted the accepted search condition can be specified by the ID that the search condition bears.

[0052] As has been described above, the information processing server 3 includes: the collecting unit 301 (a first collecting unit) that collects travel expenses for at least one trip together with a destination and a date for the trip; the learning unit 305 that learns, from the information collected by the collecting unit 301, the transition of travel expenses for at least one trip for each hotel and each check-in date and for each trip; the accepting unit 306 (the first accepting unit) that accepts a search condition for a trip including a destination and a date; and the estimating unit 307 that estimates, in accordance with a learning result from the learning unit 305, the future transition of travel expenses for each hotel and each check-in date for a trip by the destination and date included in the search condition accepted by the accepting unit 306. Accordingly, the present embodiment not only searches for a tour that satisfies the search condition at the time point of search, but also estimates the future transition of travel expenses for each hotel and each check-in date to recommend the optimum period for the trip. This

provides improved user convenience.

[0053] Furthermore, the search condition includes information on the origin of a trip. The estimating unit 307 estimates the transition of future travel expenses for each hotel and each check-in date including transportation expenses for the trip. Thus, the present embodiment is capable of recommending the optimum period for the trip taking into consideration of not only accommodation expenses but also transportation expenses. This provides improved user convenience.

[0054] When the travel expenses estimated by the estimating unit 307 fall within a predetermined range from the lowest price, the output unit 308 of the information processing server 3 outputs information recommending making a reservation for the trip by the search condition accepted by the accepting unit 306. This saves the user from having to periodically search for the trip on a website to check the transition of travel expenses. This provides improved user convenience.

[0055] The output unit 308 of the information processing server 3 outputs information for presenting the travel expenses estimated by the estimating unit 307 in different manners for each predetermined period (date) corresponding to the price ranges (for example, the manners differing in display size, display color, display shape, the number of characters in text, the character font and the like). This allows the user to grasp the difference in travel expenses by date and thus provides improved convenience.

[0056] The information processing server 3 includes the first acquiring unit 302 that acquires information of any event scheduled to be held by the destination and date included in the search condition accepted by the accepting unit 306. The collecting unit 301 collects information on any event held at the destination of a trip. The learning unit 305 learns the relationship between the event information collected by the

collecting unit 301 and the travel expenses for at least one trip. The estimating unit 307 estimates the future transition of travel expenses for each hotel and each check-in date for a trip by the destination and date included in the search condition accepted by the accepting unit 306 in accordance with the event information acquired by the first acquiring unit 302 and the learning result from the learning unit 305. That is, the present embodiment estimates the future transition of travel expenses for each hotel and each check-in date taking into consideration of any event scheduled to be held by the destination and date included in the search condition accepted by the accepting unit 306. This provides the precisely estimated future transition of travel expenses.

[0057] The information processing server 3 includes the second acquiring unit 303 that acquires the climate information including at least one of weather and temperatures by the destination and date included in the search condition accepted by the accepting unit 306. The collecting unit 301 collects the climate information of the destination of a trip. The learning unit 305 learns the relationship between the climate information collected by the collecting unit 301 and the travel expenses for at least one trip. The estimating unit 307 estimates the future transition of travel expenses for each hotel and each check-in date of a trip by the destination and date included in the search condition accepted by the accepting unit 306 in accordance with the climate information acquired by the second acquiring unit 303 and the learning result from the learning unit 305. That is, the present embodiment estimates the future transition of travel expenses for each hotel and each check-in date taking into consideration of the climate information of the destination and date included in the search condition accepted by the accepting unit 306. This provides the precisely estimated future transition of travel expenses.

[0058] The information processing server 3 includes the third acquiring unit 304 that acquires the holiday information of facilities in the destination included in the

search condition accepted by the accepting unit 306. The collecting unit 301 collects the holiday information of facilities in the destination of a trip. The learning unit 305 learns the relationship between the holiday information collected by the collecting unit 301 and travel expenses for at least one trip. The estimating unit 307 estimates the future transition of travel expenses for each hotel and each check-in date for a trip by the destination and date included in the search condition accepted by the accepting unit 306 in accordance with the holiday information acquired by the third acquiring unit 304 and the learning result from the learning unit 305. That is, the present embodiment estimates the future transition of travel expenses for each hotel and each check-in date taking into consideration of the holiday information of facilities in the destination included in the search condition accepted by the accepting unit 306. This provides precisely estimated future transition of travel expenses.

Second embodiment

[0059] The information processing system 1 according to the second embodiment divides a region including the destination included in the search condition accepted from the user terminal 2 into at least two regions, and present for each region the average accommodation fee of the accommodations located in each region in different manners corresponding to the price ranges. Furthermore, the information processing system 1 according to the second embodiment presents the transition of past accommodation fees of accommodations located in the destination included in the search condition accepted from the user terminal 2. In the following, a description will be given of the information processing system 1 according to the second embodiment. The configuration identical to that in the information processing system 1 according to the first embodiment is denoted by an identical reference character and repetitive

descriptions will be omitted.

[0060] (Functional configuration of information processing server 3)

FIG. 9 illustrates one example of the functional configuration of the information processing server 3 (an information processing apparatus) according to the second embodiment. With reference to FIG. 9, the information processing server 3 has the functions of the collecting unit 301 (a second collecting unit), the first acquiring unit 302, the second acquiring unit 303, the third acquiring unit 304, the learning unit 305, the accepting unit 306 (a second accepting unit), the estimating unit 307, the output unit 308 (a second output unit), the memory controller 309, a fourth acquiring unit 310, a calculating unit 311 and the like. Note that, the functions in FIG. 9 are realized by the CPU 300C executing an information processing program stored in ROM (not shown) of the information processing server 3. In the following, a description will be given of the functions of the information processing server 3 (the information processing apparatus) in FIG. 9. The description will be given of the difference from the functions of the information processing server 3 according to the first embodiment having been described with reference to FIG. 4 and repetitive descriptions will be omitted.

[0061] The fourth acquiring unit 310 acquires the accommodation fee of the accommodations located in a region including the destination included in the search condition accepted by the accepting unit 306. Note that, the fourth acquiring unit 310 acquires the accommodation fee of the date included in the search condition.

[0062] The calculating unit 311 divides the region into at least two regions, and calculates for each region the average accommodation fee of the accommodations located in each region according to the accommodation fee acquired by the fourth acquiring unit 310.

[0063] The output unit 308 outputs information for presenting the average accommodation fee calculated by the calculating unit 311 in different manners corresponding to the price ranges (for example, the manners differing in display size, display color, display shape, the number of characters in text, the character font and the like). The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, the liquid crystal monitor) of the user terminal 2.

[0064] Furthermore, the output unit 308 outputs, according to the information collected by the collecting unit 301, information on the transition of past accommodation fees of accommodations located in the destination included in the search condition accepted by the accepting unit 306. Specifically, the output unit 308 acquires, from the information collected by the collecting unit 301 and accumulated in the accumulation DB2, the past accommodation fees for a predetermined period (for example, past one year) of the accommodations located in the destination included in the search condition accepted by the accepting unit 306. The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2. Note that, the length of the predetermined period is arbitrarily determined. For example, it may be six months or several months, or the user may make a choice among the presented alternatives.

[0065] (Display screen)

FIG. 10 illustrates one example of the presentation screen presented (displayed) on the user terminal 2. FIG. 10 illustrates one exemplary presentation of the transition of past accommodation fees of the accommodations located in the destination included in the search condition accepted by the accepting unit 306 according to the information

collected by the collecting unit 301.

[0066] (Process in information processing system)

FIG. 11 is a flowchart of one example of a process in the information processing system 1. In the following, with reference to FIG. 11, a description will be given of the process in the information processing system 1.

[0067] (Process of presenting transition of accommodation expenses)

FIG. 11 is a flowchart of one example of a process of presenting the transition of accommodation expenses in the information processing system 1. In the following, with reference to FIG. 11, a description will be given of one example of the process of presenting the transition of accommodation expenses.

[0068] (Step S301)

The accepting unit 306 of the information processing server 3 determines whether or not the search condition transmitted from the user terminal 2 is accepted. When the accepting unit 306 determines that the search condition is accepted (YES), control proceeds to Step S302. When the accepting unit 306 determines that the search condition is not accepted (NO), the search process ends.

[0069] (Step S302)

The output unit 308 acquires, from the information collected by the collecting unit 301 and accumulated in the accumulation DB2, the past accommodation fees for a predetermined period (for example, past one year) of the accommodations located in the destination included in the search condition accepted by the accepting unit 306.

[0070] (Step S303)

The output unit 308 outputs information on the transition of the acquired past accommodation fees of the accommodations to the user terminal 2 that has transmitted the accepted search condition (see FIG. 10).

[0071] (Step S304)

The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2. Note that, the user terminal 2 that has transmitted the accepted search condition can be specified by the ID that the search condition bears.

[0072] As has been described above, the information processing server 3 includes: the collecting unit 301 that collects travel expenses for at least one trip together with a destination and a date for the trip; the accepting unit 306 (the second accepting unit) that accepts a search condition for a trip including a destination; and the output unit 308 that outputs, according to the information collected by the collecting unit 301, information on the transition of past accommodation fees of accommodations located in the destination included in the search condition accepted by the accepting unit 306. This allows the user to recognize whether the current accommodation expenses are reasonable against the trend of past accommodation expenses, and hence provides improved user convenience.

Third embodiment

[0073] The information processing system 1 according to the first and second embodiments estimates and presents, in response to the search condition input by the user, the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date. An information processing system 1 according to a third embodiment not only estimate and present the future transition of travel expenses (at least one of accommodation expenses and transportation expenses) for each hotel and each check-in date in response to the search

condition input by the user, but also recommends the higher grade (condition) of room or hotel at the same price. In the following, a description will be given of the information processing system 1 according to the third embodiment. The configuration identical to that in the information processing system 1 according to the first and second embodiments is denoted by an identical reference character and repetitive descriptions will be omitted.

[0074] (Functional configuration of information processing server 3)

FIG. 12 illustrates one example of the functional configuration of the information processing server 3 (the information processing apparatus) according to the third embodiment. With reference to FIG. 12, the information processing server 3 includes the collecting unit 301 (the second collecting unit), the first acquiring unit 302, the second acquiring unit 303, the third acquiring unit 304, the learning unit 305, the accepting unit 306 (the second accepting unit), the estimating unit 307, the output unit 308 (the first output unit), the memory controller 309, the fourth acquiring unit 310, the calculating unit 311, a recommending unit 312 and the like. Note that, the functions in FIG. 12 are realized by the CPU 300C executing an information processing program stored in ROM (not shown) of the information processing server 3. In the following, a description will be given of the functions of the information processing server 3 (the information processing apparatus) in FIG. 12. The description will be given of the difference from the functions of the information processing server 3 according to the first and second embodiments having been described with reference to FIGS. 4 and 9 and repetitive descriptions will be omitted.

[0075] The recommending unit 312 determines whether or not there exists a trip (plan) of a higher grade (condition) of room or hotel at the same price as the travel expenses output from the output unit 308 in the information collected by the collecting

unit 301, in other words, the information accumulated in the accumulation DB2.

When exists, the recommending unit 312 recommends the higher grade of room or hotel at the same price. Specifically, the recommending unit 312 instructs the output unit 308 to output information on the higher grade of room or hotel at the same price accumulated in the accumulation DB2, and the output unit 308 outputs the information on hotel recommended by the recommending unit 312 according to the instruction. The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5, and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2.

[0076] Note that, in the information processing system 1 according to the third embodiment, the recommending unit 312 of the information processing server 3 may: determine whether or not there exists a trip (plan) of a higher grade (condition) of room or hotel at the same price as the travel expenses output from the output unit 308 in the trip estimated by the estimating unit 307; and when exists, recommend the higher grade of room or hotel at the same price estimated by the estimating unit 307. Specifically, the recommending unit 312 instructs the output unit 308 to output information on the higher grade of room or hotel at the same price estimated by the estimating unit 307, and the output unit 308 outputs the information on the hotel recommended by the recommending unit 312 according to the instruction. The information output from the output unit 308 is transmitted to the user terminal 2 via the network 5 and presented (displayed) on the display apparatus (for example, a liquid crystal monitor) of the user terminal 2.

[0077] (Display screen)

FIG. 13 illustrates one example of the presentation screen presented (displayed) on the user terminal 2. FIG. 13 illustrates an example of presenting the trip (plan)

recommended by the recommending unit 312. FIG. 13 illustrates an example where a higher grade of hotel is available at the same price. In FIG. 13, the information of the hotel recommended by the recommending unit 312 is presented on the upper side, and the information of the comparison-target hotel (the information originally output from the output unit 308) is presented on the lower side. Note that, where in the display apparatus of the user terminal 2 the information of the hotel recommended by the recommending unit 312 and the information of the comparison target hotel are to be presented (displayed) is arbitrarily determined, and not specified to the example in FIG. 13.

[0078] [Other embodiments]

The foregoing is the description of the embodiments of the present invention. The present invention is not limited to the first to third embodiments and includes other modifications and variations within the range not deviating from the spirit of the present invention recited in the scope of claims. Furthermore, the first to third embodiments are merely examples for describing the present invention and do not limit the scope of the invention. Various changes such as additions, omissions, and replacements can be made with the embodiment within the scope not deviating from the spirit of the invention.

INDUSTRIAL APPLICABILITY

[0079] An information processing apparatus, an information processing method, and an information processing program that improve convenience in planning a trip are provided.

Reference Signs List

[0080]

1 information processing system

2 user terminal

3 information processing server (information processing apparatus)

300A communication IF

300B memory

300C CPU

301 collecting unit (first and second collecting units)

302 first acquiring unit

303 second acquiring unit

304 third acquiring unit

305 learning unit

306 accepting unit (first and second accepting units)

307 estimating unit

308 output unit (first and second output units)

309 memory controller

310 fourth acquiring unit

311 calculating unit

312 recommending unit

5 network

DB1 user database

DB2 accumulation database

WHAT IS CLAIMED IS:

1. An information processing apparatus comprising:

a first collecting unit that collects travel expenses for at least one trip together with a destination and a date of the trip;

a learning unit that learns, from information collected by the first collecting unit, a transition of the travel expenses for the at least one trip for each trip;

a first accepting unit that accepts a search condition for a trip including a destination and a date; and

an estimating unit that estimates, in accordance with a learning result from the learning unit, a future transition of travel expenses for a trip by the destination and the date included in the search condition accepted by the first accepting unit.

2. The information processing apparatus according to claim 1, wherein

the search condition includes information on an origin of the trip, and

the estimating unit estimates a transition of future travel expenses including transportation expenses of the trip.

3. The information processing apparatus according to claim 1 or 2, further

comprising

a first output unit that outputs information on the future transition of the travel expenses estimated by the estimating unit, wherein

the first output unit outputs information recommending making a reservation for a trip by the search condition accepted by the first accepting unit when the travel expenses estimated by the estimating unit fall within a predetermined range from a lowest price.

4. The information processing apparatus according to claim 3, wherein the first output unit outputs information for presenting the travel expenses estimated by the estimating unit in different manners corresponding to price ranges for each predetermined period.

5. The information processing apparatus according to any one of claims 1 to 4, further comprising

a first acquiring unit that acquires information on an event scheduled to be held by the destination and the date included in the search condition accepted by the first accepting unit, wherein

the first collecting unit collects information on an event held at the destination of the trip,

the learning unit learns relationship between the event information collected by the first collecting unit and the travel expenses for the at least one trip, and

the estimating unit estimates a future transition of travel expenses for a trip by the destination and the date included in the search condition accepted by the first accepting unit in accordance with the event information acquired by the first acquiring unit and a learning result from the learning unit.

6. The information processing apparatus according to any one of claims 1 to 5, further comprising

a second acquiring unit that acquires climate information including at least one of weather and temperatures by the destination and the date included in the search condition accepted by the first accepting unit, wherein

the first collecting unit collects climate information of the destination of the trip,

the learning unit learns relationship between the climate information collected by the first collecting unit and the travel expenses for the at least one trip, and

the estimating unit estimates a future transition of travel expenses for a trip by the destination and the date included in the search condition accepted by the first accepting unit in accordance with the climate information acquired by the second acquiring unit and a learning result from the learning unit.

7. The information processing apparatus according to any one of claims 1 to 6, further comprising

a third acquiring unit that acquires holiday information of facilities in the destination included in the search condition accepted by the first accepting unit, wherein

the first collecting unit collects holiday information of facilities in the destination of the trip,

the learning unit learns relationship between the holiday information collected by the first collecting unit and the travel expenses for the at least one trip, and

the estimating unit estimates a future transition of travel expenses for a trip by the destination and the date included in the search condition accepted by the first accepting unit in accordance with the holiday information acquired by the third acquiring unit and a learning result from the learning unit.

8. The information processing apparatus according to any one of claim 3 or 4, further comprising

a recommending unit that recommends any trip that involves travel expenses of

a price range similar to the travel expenses output from the first output unit and that is conditionally superior to the trip for which the travel expenses are presented, and
the first output unit outputs information on the trip recommended by the recommending unit.

9. An information processing method comprising:

collecting, by a first collecting unit, travel expenses for at least one trip together with a destination and a date of the trip;

learning, by a learning unit, from information collected by the first collecting unit, a transition of the travel expenses for the at least one trip for each trip;

accepting, by the first accepting unit, a search condition for a trip including a destination and a date; and

estimating, by an estimating unit, in accordance with a learning result from the learning unit, a future transition of travel expenses for a trip by the destination and the date included in the search condition accepted by the first accepting unit.

10. An information processing program causing a computer to function as:

a first collecting unit that collects travel expenses for at least one trip together with a destination and a date of the trip;

a learning unit that learns, from information collected by the first collecting unit, a transition of the travel expenses for the at least one trip for each trip;

a first accepting unit that accepts a search condition for a trip including a destination and a date; and

an estimating unit that estimates, in accordance with a learning result from the learning unit, a future transition of travel expenses for a trip by the destination and the

date included in the search condition accepted by the first accepting unit.

11. An information processing apparatus comprising:

a second collecting unit that collects travel expenses for at least one trip together with a destination and a date of the trip;

a second accepting unit that accepts a search condition for a trip including a destination; and

a second output unit that outputs, according to information collected by the second collecting unit, information on a transition of a past accommodation fee of accommodations located in the destination included in the search condition accepted by the second accepting unit.