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INFORMATION PROCESSING DEVICE AND INFORMATION USAGE CHARGE SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an information processing device capable of charging usage fees for usage of information and to an information usage charge system including the information processing device.

2. Description of the Related Art

Examples of conventional information processing devices include game machines that are often installed in game centers and shopping centers and karaoke machines that are often installed in drinking establishment and karaoke specialty shops. Because charges for using these devices are collected at the site where the device is installed, either the owner of the information processing device, or a person entrusted with collection of usage fees, must go to each information processing device and collect the money, which is troublesome and time consuming.

SUMMARY OF THE INVENTION

It is an objective of the present invention to overcome the above-described problem and to provide a system capable of automatically collecting fees for usage of information and an effective information processing device used in the system.

In order to attain the above objective and other

objectives, the present invention provides an information processing device for processing information, the device comprising: information memory means for storing information; information process execution means capable of executing a predetermine process using information stored in the information memory means; transmission means capable of accessing a transmission charge network to requesting the transmission charge network to charge fees for usage of information stored in the information memory means; and process execution control means for permitting the information process execution means to execute the predetermined processes using the information stored in the information memory means only after the fees for usage of the information is charged by the transmission charge network.

According to another aspect, the present invention provides an information usage charge system for charging fees for usage of information, the system comprising: a plurality of information process devices each for using desired information; and a charge center, connected to the plurality of information process devices via a transmission charge network, for charging the information process devices fees for usage of the information, the charge center including: charge information transmission means for receiving a charge information transmission request from an information process device, and for transmitting the charge information, via the

transmission charge network, to the information process device which has requested the charge information transmission, wherein each of the plurality of information process device includes: information memory means for storing information; information process execution means capable of executing predetermined processes using information stored in the information memory means; transmission means, connectable to the transmission charge network, for transmitting the charge information transmission request to the charge center and for receiving the charge information transmitted from the charge center; and process execution control means for permitting the information process execution means to execute the predetermined processes using the information stored in the information memory means only after the transmission means receives the charge information.

According to a further aspect, the present invention provides an information processing device comprising: information memory means capable of storing information; information process execution means capable of executing predetermined processes using information stored in the information memory means; transmission means capable of accessing a transmission charge network having a charge function; and charge control means for charging, using the charge function of the transmission network, fees for usage of information stored in the information memory means.

According to still another aspect, the present invention provides an information usage charge system comprising: a charge center provided with charge information transmission means for transmitting charge information via a charge transmission network, the charge transmission network having a charge function; and a plurality of information process devices connected to the charge center via the charge transmission network, each information process device including: information memory means capable of storing information; information process execution means capable of executing predetermined processes using information stored in the information memory means; transmission means capable of accessing the transmission charge network; and charge control means for charging information usage fees for usage of information stored in the information memory means with using the charge function of the transmission network when the information center transmits the charge information over the transmission charge network.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the invention will become more apparent from reading the following description of the preferred embodiment taken in connection with the accompanying drawings in which:

Fig. 1(A) is a block diagram showing a structure of an information usage charge system of a first embodiment of

the present invention;

Fig. 1(B) is a block diagram showing a structure of an information processing device constituting the system of Fig. 1(A);

Fig. 2 is a block diagram showing a structure of a videotex center constituting the system of Fig. 1(A);

Fig. 3(A) is a block diagram showing a structure of a game machine according an example of the information processing device of Fig. 1(B);

Fig. 3(B) is a block diagram showing a structure of a karaoke machine according another example of the information processing device of Fig. 1(B);

Fig. 4 is a block diagram showing a structure of a game/karaoke machine according still another example of the information processing device of Fig. 1(B);

Fig. 5 is a flowchart showing charge control processes conducted in the information processing device;

Fig. 6 illustrates transmission sequences attained between the information processing device and the videotex center;

Fig. 7 is a flowchart showing charge control processes conducted in the information processing device according to a second embodiment; and

Fig. 8 illustrates transmission sequences attained between the information processing device and the videotex

center according to the second embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An information processing device and an information usage charge system including the information processing device according to preferred embodiments of the present invention will be described while referring to the accompanying drawings wherein like parts and components are designated by the same reference numerals to avoid duplicating description.

A first embodiment will be described below with reference to Figs. 1(A) through 6.

Fig. 1 (A) is a schematic view showing an information usage charging system according to the first embodiment. Fig. 1 (B) is a block diagram showing configuration of each of the information processing devices 10, which are the main components of the system shown in Fig. 1 (A).

As shown Fig. 1 (A), the information usage charge system includes a videotex center 1 and a plurality of information processing devices 10. The videotex center 1 and the plurality of information processing devices 10 are connected via a transmission charge network 5. In this example, the transmission charge network 5 is of a videotex communication service capable of charging fees for usage of information. Representative examples of the videotex type communication service include: Character And Pattern Tele-

phone Access Information Network (CAPTAIN) system provided in Japan; North American Presentation Level Protocol Syntax (NAPLPS) system provided in North America; and Conference of European Posts and Telecommunication (CEPT) system provided in Europe. The videotex network 5 is characterized in that fees can be optionally set depending on the content of the information package.

The videotex transmission network 5 will be described below in greater detail.

As shown in Fig. 1(A), the videotex transmission network 5 is constructed from a videotex communication processor (VCP) 5a and a plurality of public telephone circuits 5b connected to the VCP. The videotex communication processor 5a is connected to the videotex center 1. The plurality of public telephone circuits 5b are connected to the information processing devices 10. The videotex communication processor 5a performs various transmission processes. In more concrete terms, the VCP 5a serves to connect and switch the public telephone circuits 5b to the videotex center 1 when the corresponding information processing devices 10 attempt to access the videotex transmission network 5. In Japan, a user can dial "166" and the five digit number of the videotex center 1 to connect the corresponding public telephone circuit to the videotex center 1. The VCP 5a also serves to manage the information processing

devices 10, that is, the terminals of the users. The VCP 5a also serves to manage subscribers to the videotex center 1. The VCP 5a serves to charge transmission fees and fees for usage of information to the information processing devices 10. A telephone company collects fees for the usage of information in stead of the videotex center 1. The VCP 5a can additionally control telephone calls between the information processing devices 10 and the videotex center 1 and performs conversion process such as protocol conversion and code/pattern conversion.

The videotex center 1 serves as a charge center for managing how fees are charged to the respective information processing devices 10. In the conventional method of using the transmission charge network 5, the videotex center 1 also serves as an information center for storing various informations such as character/pattern data. When an information processing device 10 (a user terminal) accesses the network 5 to request the videotex center 1 to transmit desired information, the videotex center 1 transmits the requested information to the subject information processing device 10 via the network 5. When receiving the information, the information processing device 10 performs predetermined processes using the information. Then, the videotex center 1 determines the information usage fees according to the content of the information. The videotex center 1 transmits,

to the VCP 5a, charge information that the subject information processing device 10 is charged the information usage fees as compensation for usage of the information. Upon receipt of the charge information, the VCP 5a charges the user the information usage fees. The VCP 5a transmits the charge information further to the information processing device 10. The charge information will inform the user that the user has been charged for the information usage fees.

Contrarily, according to the present invention, the videotex center 1 is used simply as a charge center for managing charge status of the information processing devices 10. Each information processing device 10 stores information, but is prohibited from using the information until the device 10 is charged by the VCP 5a for usage fees of that information.

As shown in Fig. 1 (B), each information processing device 10 according to the present invention includes a central control device 11; a memory device 13; an information process execution device 15; and a transmission control device 17 connected to the network 5. The memory device 13 stores various informations which the information process execution device 15 can use to execute predetermined processes. These informations can be prestored in the memory device 13 or can be stored therein afterward. The transmission device 17 is constructed from a modem, for example, for

performing data transmission over the network 5.

The central control device 11 executes predetermined charge control processes according to a charge control program 11a stored therein. According to the predetermined charge control processes, the central control device 11 prohibits the process execution device 15 from using any information stored in the memory 13 until the information processing device 10 is charged for information usage fees. When a user requests that the process execution device 15 execute the predetermined processes using information stored in the memory 13, the central control device 11 determines fees for usage of the information. The central control device 11 then requests the videotex center 1 to supply the VCP 5a of the network 5 with charge information indicating that the information processing device 10 is charged for the determined information usage fees. Upon receipt of the charge information, the VCP 5a charges the information usage fees to the subject information processing device 10. After the information processing device 10 is charged for the information usage fees, the process execution device 15 is permitted to execute the predetermined processes using the information.

Next, an explanation of the configuration of the videotex center 1 will be provided while referring to Fig. 2. The videotex center 1 includes a host computer 51, a memory

device 53, an input device 55, a transmission control device 57, a printer 59, and a CRT 61. The memory device 53 prestores various control programs for controlling the host computer 51 to manage the charge status of the respective information processing devices 10. According to the control programs, when receiving charge information request from an information processing device 10, the host computer 51 produces charge information indicating that the information processing device 10 is charged for the usage fees. The host computer 51 also serves to identify the information processing device 10 when accessed from the information processing device 10.

The memory device 53 also stores a charge file, for each of the information processing devices 10, which indicates whether the corresponding device 10 has been charged for usage fees. The transmission device 57 is constructed from a modem, for example, which is connected to the network 5 and which is for transmitting data with the network 5.

Various commands can be inputted via the input device 55. For example, a command can be inputted for causing the host computer 51 to prepare a charge record based on the charge file stored in the memory device 53 for each information processing devices 10, then to print out the charge record by the printer 59 or display it on the CRT 61.

Examples of the information processing device 10

shown in Fig. 1(B) will be described below. A game device shown in Fig. 3(A) and a karaoke device shown in Fig. 3(B) are the examples of the information processing devices 10.

As shown in Fig. 3(A), the central control device 11 in the game device 10 prestores: the charge control program 11a; a game performance program; and a game fee table indicating fees for one play, fees per time unit, and the like for each of a plurality of types of games available in the game device 10. The central control device 11 is connected to a CD-ROM 23, which serves as the memory device 13 of Fig. 1 (B); a key input device 25 and a screen display control device 26; and the transmission control device 17.

A joystick 28 is connected to the key input device 25. The key input device 25 supplies the central control device 11 with commands inputted by a user at the joystick 28. A television monitor 29 is connected to the screen display control device 26. The screen display control device 26 controls the television monitor 29 to display game screen. The joystick 28, the key input device 25, the television monitor 29, and the screen display control device 26 cooperate to serve as the information process execution device 15 of Fig. 1 (B).

The CD-ROM 23 stores a plurality of game informations which are formatted so that they can not be used in their present forms. For example, the game information signals are

stored in the CD-ROM 23 in a scrambled format. In order to use the game information, the central control device 11 has to be first connected to the transmission charge network 5 through the transmission control device 17. Then the central control device 11 executes the charge control program 11a, which results in predetermined charge processes to be performed using the charge function of the transmission charge network 5. After the game device 10 has been properly charged, the central control device 11 converts the game information into a usable format before achieving game performances according to the game performance program. The central control device 11 controls the key input device 25 and the screen display control device 26, with the game performance program, so as to perform game operations with the game information.

As shown in Fig. 3(B), the central control device 11 in the karaoke device 10 prestores: the charge control program 11a; a karaoke performance program; and a karaoke fee table indicating fees for per song, fees per time unit, and the like for karaoke performances available in the karaoke device 10. The central control device 11 is connected to a hard disk 33, which serves as the memory device 13 of Fig. 1 (B); a sound reproduction circuit 35 and the screen display control device 26; and the transmission control device 17. The central control unit 11 is provided with a control panel

or a remote control unit (not shown in the drawing), with which a user can select a karaoke song he or she desires to sing.

A mixer/amplifier 38 is connected to the sound reproduction circuit 35. A speaker 41 and a microphone 43 are connected to the mixer/amplifier 38. The television monitor 29 is connected to the screen display control device 26. The mixer/amplifier 38, the sound reproduction circuit 35, the speaker 41, the microphone 43, the television monitor 29, and the screen display control device 26 cooperate to provide karaoke performances, that is, to serve as the information process execution device 15 of Fig. 1 (B).

The hard disk 33 stores information on about several thousands karaoke songs. Information on each karaoke song includes song number information and actual song information. The song number information serves as distinction information for distinguishing between songs. The actual song information is made up of: lyric information; background image information; and standard Musical Instrument Digital Interface (MIDI) performance information, which serves as performance sound information. The background image information is an encoded image information which is prepared as suitable for the corresponding song.

The karaoke song information can not be used in the format in which is stored. For example, the karaoke song

information signals are stored in the hard disk 33 in a scrambled format. In order to use the karaoke song information, the central control device 11 has to be first connected to the transmission charge network 5 via the transmission control device 17. The central control device 11 executes the charge control program 11a so that the predetermined charge process is performed using the charge function of the transmission charge network 5. When the karaoke device 10 is charged, the central control device 11 converts the karaoke song information into a format that can be used. The central control device 11 then controls the sound reproduction circuit 35 and the screen display control device 26 to execute karaoke performance with using the karaoke song information.

More specifically, when the karaoke song information is converted into the usable format, the user operates the control panel or the remote control unit to select a song he or she wants to sing, whereupon the central control device 11 executes karaoke performance processes according to the karaoke performance program. According to the predetermined karaoke performance program, the central control device 11 retrieves, from the hard disk 33, the performance information, lyric information, and background information that correspond to the selected song and that have been converted into usable forms. The performance information is trans-

ferred to the sound reproduction circuit 35. The lyric information and the background image information are transferred to the screen display control device 26.

The performance information outputted to the sound reproduction circuit 35 is converted into an analog performance signal and then transferred to the mixer/amplifier 38, where it is electrically amplified and mixed at an appropriate rate with the user's voice as inputted to the microphone 43. The mixed sound signal is outputted from the speaker as a musical performance. Simultaneously with the performance information, the screen display control device 26 superimposes the lyric information on the background image information and displays the results on the monitor television 29 as a written prompt, or telop, on a background image.

A game/karaoke device can be provided as another example of the information processing device 10. The game/karaoke device 10 can be constructed from combination of the game device shown in Fig. 3(A) and the karaoke device shown in Fig. 3(B). As shown in Fig. 4, the game/karaoke device can be constructed from the central control device 11 stored with the charge control program 11a, the game performance program, the karaoke performance program, the game fee table, and the karaoke fee table. The game/karaoke device is further provided with: the transmission control device 17; the CD ROM 23, the key input device 25, and the joy stick 28

for providing game performances; the hard disk 33, the sound reproduction circuit 35, the mixer/amplifier 38, the speaker 41, and the microphone 43 for providing karaoke performances; and the screen display control device 26 and the television monitor 29 for providing both the game and karaoke performances. The central control device 11 is provided with the control panel or the remote control unit for designating desired karaoke songs.

The charge processes conducted by the central control device 11 based on the charge control program 11a will be described below while referring to the flowchart in Fig. 5 and the transmission sequence chart of Fig. 6. Fig. 6 shows transmission sequences between the information process device 10 and the videotex center 1. Steps in the flowcharts will be referred to as Si (wherein i = 100, 110, ... i). The following explanation assumes that the information processing device 10 is the game/karaoke device shown in Fig. 4.

As shown in Fig. 5, the game/karaoke device 10 waits that an user inputs his/her selection from the control panel or the joy stick 28. When a selection is inputted (S100), the central control device 11 calculates information usage fee (S110) and controls the screen display control device 26 to display the calculated information usage fee on the television monitor 29 (S120).

Processes performed in S100 will be described here in

further detail. First, the central control device 11 is in a standby state. In this standby state, the central control device 11 controls the screen display control device 26 to continuously display an initial menu screen on the television monitor 29. The initial menu screen 29 shows karaoke and a list of game types for the user's selection. When a user selects one of the game types from the game type list, the central control device 10 controls the display control device 26 to display another menu for setting a usage range for the selected game type. The user can therefore select a usage range within which he or she desires to perform the selected type game. Usage ranges for games include the duration of play time and the number of plays, wherein one play is defined from when the game starts to when the game is over. When selecting the number of plays as the usage range, the user will input the number of plays he or she wants. When selecting the usage time as the usage range, the user will input a desired time period in, for example, hour or day units, that he or she wants to play. The user can input his/her desired usage range by moving the cursor displayed on the screen of the television monitor 29 to the desired position on the menu. For example, when the user wants to play a game ten times, the user inputs the number "10" after the menu heading for indicating the desired number of plays. When the user wants the right to play certain games for two

hours, or over a period of three days, he or she inputs two hours or three days in the appropriate heading. Of course, the minimal units described above can be modified. For example, usage time can be set so as to be selectable in single minute units.

On the other hand, when the user selects karaoke instead of games, the central control device 11 controls the control device 26 to display another menu for setting karaoke usage range on the television monitor 29. The user can therefore select a usage range in which he or she desires to perform karaoke performances. Examples of usage ranges for karaoke include number of songs and usage period. When a user wants to use karaoke information in song units, he or she inputs in single song units the number of songs he or she wants to sing. For example, the user inputs the number "10" or "20" as the number of songs he or she wants the right to sing. When a user wants to use an unlimited amount of karaoke information over a set duration of time, in the same manner as with game selection, he or she inputs hour units or day units. Of course, minute units can also be used as the minimum time unit.

In this way, a user selects and inputs the type of information desired to be used and a desired usage range. That is, the user selects and inputs the particular game type and its usage range when selecting games or only the usage

range when selecting karaoke.

Then, the central control device 11 calculates in S110 the information usage fee for the selected information type and usage range. The central control device 11 previously stores fees for one usage, fees per time unit, and the like in table form for each information type. Calculations of fees are therefore performed based on this fee table. Discounts can be provided when a great number of games or karaoke songs are selected or when the games or karaoke songs are desired to be performed for more than certain length of time.

For example, when karaoke is selected and inputted in S100, the determination of the information usage fee is performed for the designated usage range based on the fee table for the karaoke performance. On the other hand, when games are selected and inputted in S100, the determination of the information usage fee is performed for the game type and the usage range and the game fee table in S110. It is noted that the game type is unnecessarily considered when the same fee is charged regardless of the type of game. However, the charge system often changes depending on the particular game. Therefore, fees for one play, fees per time unit, and the like are prestored in the fee table for each game type.

Then, the fee determined for the information usage is displayed on the television monitor 29 in S120. Next, the

user selects in S130 whether or not he or she will pay the displayed fee to enter the next process, that is, actual usage of the game or the karaoke song. A screen on the television monitor 29 indicates which keys a user is to press to use or reject usage of the information.

When the user indicates his or her desire to pay the fee in order to proceed to the next process (S130:YES), then the central control device 11 controls the transmission control device 17 to access the transmission charge network 5 so that the subject information processing device 10 is connected to the videotex center 1. Then, in S140 the central control device 11 produces a charge information request. The charge information request is for requesting the videotex center 1 transmission of charge information for charging the information usage fee that is determined in S110. The central control device 11 then controls the transmission control device 17 to transmit the charge information request to the videotex center 1. In the videotex center 1, when receiving the charge information request, the host computer 51 retrieves from the memory device 53 charge information based on the incoming data of the charge information request. The charge information is for controlling the VCP 5a in the network 5 to charge the subject information processing device 10 for the usage fee which is indicated in the charge information request. The

host computer 51 then controls the transmission control device 57 to transmit the charge information to the VCP 5a in the charge transmission network 5. When receiving the charge information, the VCP 5a operates to charge the subject information processing device 10 for that information usage fee. The VCP 5a transmits the charge information further to the subject information processing device 10. The charge information informs the subject information transmission device 10 that the subject information processing device 10 has been charged for the information usage fee.

When the information processing device 10 performs steps S140 and S150, signal transmission is attained between the information processing device 10 and the videotex center 1 in the following manner.

As shown in Fig. 6, the subject information processing device 10 first connects with the videotex center 1 over the network 5. Then, the transmission control device 17 of the subject information processing device 10 transmits its password, or its telephone number, to the videotex center 1. When the videotex center 1 receives the password or the telephone number via the transmission control device 57, the host computer 51 compares the password or the telephone number, with that registered in the host computer 51 for the subject information processing device 10. If the password or telephone number is one registered for the subject informa-

tion processing device 10, then the videotex center 1 responds that the password or telephone number is a proper match. Then, the videotex center 1 enters into a condition where it is capable of reception of various signals from the subject information processing device 10. After the subject information processing device 10 receives the proper match response and the videotex center 1 enters the condition where it is capable of reception, the subject information processing device 10 transmits the charge information request to the videotex center 1 via the transmission charge network 5. Upon receipt of the charge information request, the videotex center 1 retrieves from the memory device 53 charge information based on the incoming data of the charge information request. It will be assumed in for exemplary purposes that the fee is 1,000 Japanese yen. The videotex center 1 then transmits the charge information to the information processing device 10 via the transmission charge network 5.

When the videotex center 1 transmits the charge information over the transmission charge network 5, the charge function of the transmission charge network 5, i.e., the charge function of the VCP 5a automatically charges the subject information processing device 10. In this example, the subject information processing device 10 is charged 1,000 yen. Charges are added to the charge file stored in the memory 52 in the videotex center 1 that corresponds to the

subject information processing device 10. The charges can be collected, for example, with the telephone bill for the subject information processing device 10.

Returning to Fig. 5, when the information processing device 10 receives this charge information in S150, then the central control device 11 permits, in S160, usage of the selected game type or karaoke. In more concrete terms, if the user has selected game performance in S100, the central control device 11 converts the format of information of the selected game type into a usable format. If the user has selected karaoke performance in S100, the central control device 11 converts the format of the karaoke information into a usable format. In other words, the transmitted charge information serves as key information for descrambling data of the selected game type or karaoke information. Afterward, the central control device 11 executes the game or karaoke performance while using the game or karaoke information within the usage range selected and inputted in S100. For example, if the user has inputted in S100 that he or she wants to play a game ten times, the central control device 11 counts the number of plays the user performs, and prohibits further performances when the tenth play is finished. If the usage range is a time duration, such as for two hours or two days, the central control device 11 sets a completion time, and prohibits further performances when the completion time

is reached. When the usage range is restricted by the number of plays, the central control device 11 can control the control device 26 to display remaining number of plays on the screen 29 after the end of each play. When usage range is restricted by time period, the central control device 11 can control the control device 26 to display the remaining amount of time or the time from when usage will be prohibited. The same type of functions can be implemented for karaoke use as well.

On the other hand, when S130 of Fig. 5 results in a negative determination, that is, when the user selects not to proceed to the next process, then the program will proceed to S170, where whether or not the user indicates a desire to terminate processes. If so (S170:YES), then this program is terminated. On the other hand, if the user indicates that processes should not be terminated (S170:NO), then the program returns to S100, whereupon processes in S100 and on are repeated.

In the above-described first embodiment, fees for usage of information are determined at individual information processing devices 10. However, the fees can be determined at the videotex center 1.

A second embodiment will be described below with reference to Figs. 7 and 8. In this embodiment, the information usage fee is calculated by the host computer 51 in the

videotex center 1. The host computer 51 prestores the game fee table and the karaoke fee table. The control program stored in the memory 53 is modified so that the host computer 51 determines the information usage fees based on the fee tables and usage fee determination information transmitted from each information processing device 10 as will be described later. The memory 53 serves to temporarily store the determined information usage fees. The host computer 51 further serves to produce the charge information indicating that the corresponding information processing device 10 is charged for the determined usage fees. Similarly to the first embodiment, the memory device 53 in the present embodiment stores the charge files for each of the information processing devices 10. The memory device 53 further stores a plurality of usage range tables each indicating various usage ranges selectable for performance of each game type and for performance of karaoke.

According to the present embodiment, the charge control program 11a is modified to perform charge control processes as shown in Fig. 7. Transmission sequences are attained between each information processing device 10 and the videotex center 1 as shown in Fig. 8.

Except the above-described points, the information processing device 10 and the information charge system of the second embodiment are the same as those of the first embodi-

ment described referring to Figs. 1 through 4.

The charge processes conducted by the central control device 11 based on the modified charge control program 11a will be described below while referring to the flowchart in Fig. 7 and the transmission sequence chart of Fig. 8. The following explanation assumes that the information processing device 10 is the game/karaoke device.

Similarly to the first embodiment, in the standby state in S200, the television monitor 29 is controlled to continuously display an initial menu screen showing a game type list and karaoke. A selection of one of the listed game types or karaoke is awaited in S210. When one is selected, the central control device 11 controls the transmission control device 17 to transmit the selected result to the videotex center 1 in S220.

As shown in Fig. 8, when the user inputs, in S210, one game type or karaoke desired to be performed, the subject information processing device 10 connects with the videotex center 1 and transmits password to the videotex center in the same manner as in the first embodiment. When receiving the password match response from the videotex center 1, the subject information processing device 10 transmits the selected result to the videotex center 1. Based on the transmitted selection, the host computer 51 retrieves from the memory device 53 a usage range table indicative of

various usage ranges settable for the selected game type or karaoke. The host computer 51 controls the transmission control device 57 to transmit the usage range table to the subject information processing device 10.

Returning to Fig. 7, when the central control device 11 receives the usage range table via the transmission control device 17, the central control device 11 controls, in S230, the display control device 26 to display the usage range table on the television monitor 29. The central control device 11 then awaits, in S240, that the user inputs a usage range within which he or she desires to use information of the selected karaoke or game type. The content of usage ranges and the manner it is inputted are the same as described while referring to Fig. 5. When the user selects and inputs his or her desired usage range (S240:YES), the central control device 11 controls the transmission control device 17 to transmit the selected and inputted usage range to the videotex center 1 in S250.

As shown in Fig. 8, when receiving the user's designated usage range, the host computer 51 in the videotex center 1 calculates information usage fees based on that usage range and the previously received selection of game type or karaoke while referring to the fee table stored in the host computer 51. Then, the host computer 51 controls the transmission control device 57 to transmit data on the

calculated information usage fees to the subject information processing device 10 via the transmission charge network 5.

Returning to Fig. 7, when receiving the data on the information usage fees, the central control device 11 controls in S260 the display control device 26 to display the received information usage fee along with a guidance display. The guidance display is for asking whether the user wants to pay the displayed fee and proceed to the next process, that is, to actual play of the game or the karaoke performance.

When the user indicates a desire to pay the fee and proceed to the next process (S270:YES), the central control device 11 controls in S280 the transmission control device 17 to transmit charge information request to the videotex center 1. Thus, the information processing device 10 requests the videotex center 1 to transmit charge information indicating that the subject information processing device 10 is charged for that usage fee.

As shown in the transmission schedule in Fig. 8, the information processing device 10 transmits data of the charge information request to the videotex center 1 via the transmission charge network 5. In response to this request, the videotex center 1 transmits charge information, for charging the fee determined in the videotex center 1, to the information processing device 10 via the transmission charge network 5. In the same manner as in the first embodiment, the charge

function of the transmission charge network 5, i.e., the charge function of the VCP 5a will automatically charge the information processing device 10 when the videotex center 1 transmits the charge information over the transmission charge network 5 to the subject information processing device 10.

Similarly as in the first embodiment, when the information processing device 10 receives the charge information in S290, usage of the selected game or karaoke is permitted in S300. Afterward, the game or karaoke performance is executed. Of course, the usage range selected in S240 is also controlled. These processes are performed in the same manner as described in the first embodiment.

On the other hand, when S270 results in a negative determination, that is, when the user indicates a desire not to proceed to the next process, whether or not the user desires to terminate the program is determined in S310. If so (S310:YES), then this program is completed. On the other hand, if the user indicates a desire not to terminate processes (S310:NO), then the program returns to S200.

As described above, in the information processing devices 10 according to the embodiments, the memory device 13 is capable of storing information and the information process execution device 15 can use information stored in the memory device 13. The transmission control device 17 can access the charge transmission network 5 having a charge function. The

central control device 11 charges usage fees for the information stored in the memory 13 with using the charge function of the charge transmission network 5. The usage fees can therefore be automatically collected together with transmission fees.

In the examples shown in Figs. 3(A) and 4, the CD-ROM 23 serves as the memory device 13 for storing game software information, based on which predetermined games will be executed. In the examples shown in Figs. 3(B) and 4, the hard disk 33 serves as the memory device 13 for storing karaoke performance information, based on which predetermined karaoke performances are executed. The transmission control device 17 is capable of accessing the transmission charge network 5 having a function for charging information usage fees. The usage fees for game software information or karaoke performance information can be charged using the charge function of the transmission charge network 5. Accordingly, the usage fees for information can be automatically collected using the transmission charge network 5 without troublesome manual operations.

When the usage fee is determined in the information processing devices 10 as described while referring to Figs. 5 and 6, it is desirable to use the charge function of the transmission charge network 5 to charge information usage fees, which are individually determined based on the karaoke

usage record, which shows the number of songs performed or the duration of performance time, or the game usage record, which shows the game types or usage time.

While the invention has been described in detail with reference to specific embodiments thereof, it would be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention, the scope of which is defined by the attached claims.

For example, in the above-described embodiments, the information stored in the memory device 13 is formatted so that it can not be used in its present form. After the information processing device 10 is charged by the charge transmission network 5, the central control device 11 converts the format of the information into a usable format to permit the execution device 15 to perform processings with using the information. However, other various methods can be applied to prohibit usage of information until the device 10 is charged for information usage fees. For example, the charge control program 11a may be modified so that the central control device 11 can not access the memory 13 until receiving the charge information. In this case, the information can be stored in a usable format.

In addition to the karaoke song information and game software which were given as examples of information stored

in the information processing devices 10, the present invention can be applied to other various informations such as character informations, weather report or traffic informations, for example, which are already used in videotex transmission systems.

The videotex center 1 may be structured not only to transmit charge information but also to transmit other actual information such as additional karaoke song information.

Though the description of the processes of Figs. 5, 6, 7, and 8 are given for the game/karaoke device of Fig. 4, those processes can be applied to the devices of Figs. 3(A) and 3(B).

As described above, according to the present invention, the information processing device includes: an information memory which is capable of storing information; and an information process execution portion capable of using that information. For example, when the information memory stores karaoke performance information, game software, or both, the information process execution portion is for executing a predetermined karaoke performance based on the karaoke performance information, a predetermined game based on the game software information, or both.

The information processing device further includes a transmission portion capable of accessing a charge transmission network having a charge function. Using the charge

function of the charge transmission network, charge control is achieved to charge fees for usage of information stored in the memory. Therefore, the fee for information used at the information process execution device can be automatically collected without troublesome human intervention.

The information processing device can be provided with an information usage fee determination portion for determining fees for usage of information. This information usage fee determination is desirable because the charge function of the charge transmission network can be used to collect information usage fees determined individually based on usage range for karaoke performances (for example, a forecasted number of song performances or duration of usage time) or the usage range for game (for example, usage duration or game type). According to the basic method for using karaoke or game information, a usage range is first designated before the information is used. Examples of usage ranges include a projected time period such as two hours or one day for usage of the information or a number usages such as number of songs for karaoke or the number of plays for games. When the usage range is designated, the usage fee for the usage range is determined and then charged to the user using the charge transmission network. It is desirable that processes for prohibiting further usage of the information be undertaken when the limits of the usage range are reached.

When fees for usage of information are determined in the information process device, the information process device then requests that the charge center transmit charge information so that the determined fee be charged to the information process device. In response to this request, the charge center transmits charge information via the charge transmission network so that the above-determined usage fee is charged to the information process device. For example, a list of fees according to the user's charge record can be prepared for each information process device and then collected with the user's telephone bill.

Alternatively, the information usage fees can be determined at the charge center. In this case, the charge information that the charge center transmits over the charge transmission network to cause the charge transmission network to charge the user is based on the information usage fees determined at the charge center. The information process device transmits information for determining the usage fees over the charge transmission network to the charge center. The charge center determines the usage fees based on this information. Examples of information for determining usage fees include a projected usage duration or a projected number of executions of predetermined processes as set at the information process device. The charge center determines usage fees based on this information. The charge center

transmits charge information over the charge transmission network to the information process device, whereupon the user is charged.



What is claimed is:

1. An information processing device for processing information, the device comprising:

information memory means for storing information;

information process execution means capable of executing a predetermine process using information stored in the information memory means;

transmission means capable of accessing a transmission charge network to requesting the transmission charge network to charge fees for usage of information stored in the information memory means; and

process execution control means for permitting the information process execution means to execute the predetermined processes using the information stored in the information memory means only after the fees for usage of the information is charged by the transmission charge network.

2. An information process device as claimed in claim 1, further comprising information usage fee calculation means for calculating fees for usage of the information, the transmission means requesting the transmission charge network to charge the information usage fees calculated by the information usage calculation means.

3. An information process device as claimed in claim 1, further comprising input means for designating information desired to be executed by the information process execution

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means, the process execution control means permitting the information process execution means to execute the predetermined processes using the designated information stored in the information memory means.

4. An information process device as claimed in claim 3, wherein the information usage fee calculation means calculates fees for usage of the designated information, and further comprising display means for displaying the calculated information usage fees.

5. An information process device as claimed in claim 1, wherein the input means designates a type of information desired to be executed by the information process execution means, the process execution control means permitting the information process execution means to execute the predetermined processes using the designated type of information which is stored in the information memory means.

6. An information process device as claimed in claim 1, wherein the input means designates a usage range, within which the information process execution means is desired to execute the predetermined processes with using the information, the process execution control means permitting the information process execution means to execute the predetermined processes within the designated usage range of information.

7. An information process device as claimed in claim



6, wherein the input means designates the number of informations desired to be executed by the information process execution means, the process execution control means permitting the information process execution means to execute the predetermined processes using the designated number of information.

8. An information process device as claimed in claim 6, wherein the input means designates a time period during which the information process execution means is desired to execute the predetermined processes, the process execution control means permitting the information process execution means to execute the predetermined processes during the designated time period.

9. An information usage charge system for charging fees for usage of information, the system comprising:

a plurality of information process devices each for using desired information; and

a charge center, connected to the plurality of information process devices via a transmission charge network, for charging the information process devices fees for usage of the information, the charge center including:

charge information transmission means for receiving a charge information transmission request from an information process device, and for transmitting the charge information, via the transmission charge network, to the information

process device which has requested the charge information transmission,

wherein each of the plurality of information process device includes:

information memory means for storing information;

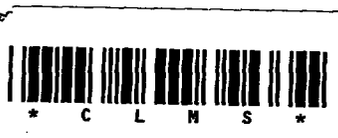
information process execution means capable of executing predetermined processes using information stored in the information memory means;

transmission means, connectable to the transmission charge network, for transmitting the charge information transmission request to the charge center and for receiving the charge information transmitted from the charge center; and

process execution control means for permitting the information process execution means to execute the predetermined processes using the information stored in the information memory means only after the transmission means receives the charge information.

10. An information usage charge system as claimed in claim 9, wherein each of the information process devices further includes input means for designating a manner how the information process execution means is desired to execute the predetermined processes using the information.

11. An information usage charge system as claimed in claim 10, wherein the transmission means transmits data on



the designated manner to the charge center, and

wherein the charge center further includes information usage fee calculation means for calculating fees for usage of the designated manner based on the transmitted data on the designated manner, the charge information transmission means including charge information producing means for producing a charge information indicating that the information process device is charged for the calculated fees, the charge information producing means producing the charge information upon receipt of the charge information transmission request from the information process device, the process execution control means permitting, upon receipt of the charge information, the information process execution means to execute the predetermined processes of the designated manner with using the information stored in the information memory means.

12. An information usage charge system as claimed in claim 11, wherein the charge center further includes:

fee storing means for storing the calculated fees for usage of the designated manner;

fee information transmitting means for transmitting data on the calculated usage fees to the information process device, and

wherein each of the information process device includes judging means for judging whether the calculated

usage fees are confirmed, the transmission means transmitting the charge information transmission request to the charge center when the calculated usage fees are confirmed.

13. An information usage charge system as claimed in claim 12, wherein the charge center further includes charge information storing means for storing charge information indicating that the information processing devices have been charged.

14. An information usage charge system as claimed in claim 10, wherein each of the information procession devices further includes information usage fee calculation means for calculating fees for the designated usage manner of the information, the transmission means transmitting to the charge center information on the calculated fees together with the charge information transmission request, and

wherein the charge information transmission means in the charge center includes charge information producing means for producing a charge information indicating that the information process device is charged the calculated fees based on the transmitted information on the calculated fees, the process execution control means permitting, upon receipt of the charge information, the information process execution means to execute the predetermined processes of the designated manner with using the information stored in the information memory means.



15. An information processing device comprising:

information memory means capable of storing information;

information process execution means capable of executing predetermined processes using information stored in the information memory means;

transmission means capable of accessing a transmission charge network having a charge function; and

charge control means for charging, using the charge function of the transmission network, fees for usage of information stored in the information memory means.

16. An information process device as claimed in claim 15, wherein the information memory means is capable of storing at least one of karaoke performance information and game software information.

17. An information process device as claimed in claim 15, further comprising information usage fee determination means for determining fees for usage of information, and wherein said charge control means uses the charge function of the transmission charge network to charge information usage fees determined by the information usage determination means.

18. An information usage charge system comprising:

a charge center provided with charge information transmission means for transmitting charge information via a charge transmission network, the charge transmission network



having a charge function; and

a plurality of information process devices connected to the charge center via the charge transmission network, each information process device including: information memory means capable of storing information; information process execution means capable of executing predetermined processes using information stored in the information memory means; transmission means capable of accessing the transmission charge network; and charge control means for charging information usage fees for usage of information stored in the information memory means with using the charge function of the transmission network when the information center transmits the charge information over the transmission charge network.

19. An information usage charge system as claimed in claim 18, wherein the information process device has usage fee determining information transmission means for transmitting usage fee determining information, which is for determining information usage fees, to the charge center over the charge transmission network, and wherein the charge center includes information usage fee determining means for determining information usage fees based on the usage fee determining information received over the charge transmission network from the information process device, the charge information transmission means transmitting over the charge

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transmission network the charge information that enables charging the determined information usage fee.

20. An information usage charge system as claimed in claim 18, wherein the information process device further includes information usage fee determination means for determining fees for usage of information, and wherein said charge control means uses the charge function of the transmission charge network to charge the information usage fees determined by the information usage determination means.