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(54) **Information processing apparatus, information processing method and program for preventing unauthorized non-contact access**

Gerät, Verfahren und Programm zur Verarbeitung von Informationen und zur Verhinderung von unerlaubten drahtlosen Zugriffen

Dispositif, procédé et programme pour le traitement des données et pour l'empêchement des accès illicites par l'interface non-contact

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- **PATENT ABSTRACTS OF JAPAN vol. 2003, no.
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A (MITSUBISHI ELECTRIC CORP), 10 January
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EP 1 457 915 B1

Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to an apparatus and a method for information processing, a recording medium, and a program, and particularly to an apparatus and a method for information processing, a recording medium, and a program that restrict external access to a non-contact type IC, for example.

[0002] A card is a typical medium including a non-contact type IC. The card includes the non-contact type IC, an antenna, and the like. A load of the antenna is varied by electromagnetic waves radiated from an external reader/writer, whereby data is read and written in the non-contact type IC.

[0003] Since the non-contact type IC card does not need to be brought into direct contact with the reader/writer, the non-contact type IC card is easy to handle, and has a wide range of applications. For example, a method is proposed which controls user access by a non-contact type IC card having a personal ID registered therein (see Patent Literature 1).

[Patent Literature 1]

Japanese Patent Laid-Open No. 2003-6578

[0004] When the non-contact type IC is incorporated in a terminal apparatus such as a portable telephone, a personal computer or the like, functions specific to the terminal apparatus can be used. For example, by including a reader/writer in a terminal apparatus, the transmission apparatus itself can read and write data in the non-contact type IC.

[0005] However, since the non-contact type IC allows non-contact reading and writing, important data can be read easily by an unauthorized person, and thus the non-contact type IC has a problem of being lacking in security.

[0006] US 6,424,029 B1 discloses a non-contact chip card in which contactless communication is controlled by means of a user operated capacitive switch.

SUMMARY OF THE INVENTION

[0007] The present invention has been made in view of the above, and it is accordingly an object of the present invention to, when there is access to a non-contact type IC, control the access and inform a user of external access.

[0008] An information processing apparatus according to the invention is defined in claim 1. A corresponding method is set out in claim 8. Claim 10 concerns a recording medium with a computer program for carrying out method according to the present invention. Claim 11 relates to a corresponding program.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIG. 1 is a diagram showing a connection between a non-contact IC reader/writer and a terminal apparatus according to an embodiment of the present invention;

FIG. 2 is a block diagram showing an example of configuration within the terminal apparatus;

FIG. 3 is a diagram showing an example of history information recorded by a storing unit;

FIG. 4 is a flowchart of assistance in explaining access control processing;

FIG. 5 is a diagram showing an example of display of a confirmation screen; and

FIG. 6 is a diagram showing an example of configuration of another non-contact type IC.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] Preferred embodiments of the present invention will hereinafter be described with reference to the drawings.

[0011] FIG. 1 shows a connection between a non-contact IC reader/writer 3 and a terminal apparatus 1 according to an embodiment of the present invention.

[0012] The terminal apparatus 1 comprises a portable telephone, for example. The terminal apparatus 1 can read and write various data from and to a non-contact type IC 2 included therein. The terminal apparatus 1 detects an access from the non-contact IC reader/writer 3 to the non-contact type IC 2, and informs a user of the access. The terminal apparatus 1 further restricts the access (which will be described later in detail).

[0013] In addition to the reading and writing of various data from and to the non-contact type IC 2 by the terminal apparatus 1, various data can be read or written from or to the non-contact type IC 2 via electromagnetic waves radiated from the non-contact IC reader/writer 3. Specifically, in response to electromagnetic waves radiated from the non-contact IC reader/writer 3, the non-contact type IC 2 can notify data recorded in a memory 33 (FIG. 2) to the non-contact IC reader/writer 3 or record data transmitted from the non-contact IC reader/writer 3 in the memory 33.

[0014] The non-contact IC reader/writer 3 radiates electromagnetic waves to the non-contact type IC 2, and transmits and receives various data on the basis of change in a load of an antenna (not shown) to the non-contact type IC 2.

[0015] FIG. 2 is a block diagram showing an example of configuration within the terminal apparatus 1. As shown in FIG. 2, a CPU (Central Processing Unit) 11, a ROM (Read Only Memory) 12, a RAM (Random Access Memory) 13, an operating unit 14, a display unit 15, a storing unit 16, an audio processing unit 17, a commu-

nication unit 19, a drive 20, and a signal judging unit 28 are interconnected via a control line 22 for transmitting control data and the like. Also, the ROM 12, the RAM 13, a microphone 24, a speaker 25, a light generating unit 26, a vibration generating unit 27, and the signal judging unit 28 are interconnected via a data line 23 for transmitting audio data and the like. These parts are brought into an operable state by power supplied from a power supply circuit not shown in the figure.

[0016] The CPU 11 performs various processing according to an access control program stored in the ROM 12 or an access control program loaded from the storing unit 16 into the RAM 13. Generally, the ROM 12 stores basically fixed data of parameters for calculations and various programs to be used by the CPU 11. The ROM 12 also stores a terminal ID of the terminal apparatus 1. The RAM 13 stores data and the like necessary for the CPU 11 to perform various processing as required.

[0017] The operating unit 14 comprises buttons, switches, a jog dial or the like. The operating unit 14 inputs various instructions corresponding to operations by a user to the CPU 11.

[0018] The display unit 15 comprises a display such as an LCD (Liquid Crystal Display) or the like. The display unit 15 displays various information in the form of text and images.

[0019] The storing unit 16 comprises a nonvolatile memory or the like. The storing unit 16 records various programs to be executed by the CPU 11, data and the like. The storing unit 16 also records history information when access is made to the non-contact type IC 2 from an external apparatus such as the non-contact IC reader/writer 3 or the like, or the terminal apparatus 1 (internal) (details will be described later with reference to FIG. 3).

[0020] The audio processing unit 17 subjects high-frequency data supplied from the communication unit 19 to spectrum despreding processing, thereby converts the high-frequency data into an analog audio signal, and then outputs the analog audio signal to the speaker 25. Also, the audio processing unit 17 converts an audio signal obtained by collecting sound by the microphone 24 into digital audio data, subjects the digital audio data to spectrum spreading processing, and then outputs the result to the communication unit 19.

[0021] An antenna 18 transmits and receives radio waves to and from a base station (not shown), or a fixed radio station. The communication unit 19 amplifies a received signal received by the antenna 18, subjects the signal to frequency conversion processing and analog-to-digital conversion processing, and then outputs the result to the audio processing unit 17. Also, the communication unit 19 subjects digital audio data supplied from the audio processing unit 17 to digital-to-analog conversion processing and frequency conversion processing, and then transmits the result via the antenna 18.

[0022] The drive 20 is connected to the terminal apparatus 1 as required. A removable medium 21 such as

a magnetic disk, an optical disk, a magneto-optical disk, a semiconductor memory or the like is inserted into the drive 20 as required. An access control program read from the removable medium 21 is installed in the storing unit 16 as required.

[0023] The microphone 24 converts audio obtained by collecting sound into an electric signal, and then outputs the electric signal to the audio processing unit 17 via the data line 23. The speaker 25 outputs predetermined audio corresponding to data supplied via the data line 23 or the analog audio signal.

[0024] The light generating unit 26 generates predetermined light corresponding to an electric signal supplied from the CPU 11. The vibration generating unit 27 generates a predetermined vibration corresponding to an electric signal supplied from the CPU 11.

[0025] The signal judging unit 28 is connected to the non-contact type IC 2. The signal judging unit 28 reads or writes various data from or to the non-contact type IC 2. Also, the signal judging unit 28 refers to history information recorded in the storing unit 16 on the basis of access information notified from the non-contact type IC 2, determines whether an external apparatus (for example the non-contact IC reader/writer 3) making access to the non-contact type IC 2 is permitted the access, and then notifies a result of the determination to the CPU 11.

[0026] The non-contact type IC 2 comprises a control unit 31, an antenna 32, and a memory 33. The control unit 31 includes a CPU, a ROM, a RAM and the like. The control unit 31 reads data in the memory 33 or writes data to the memory 33 in response to variation in a load of the antenna 32. The antenna 32 varies the load in response to electromagnetic waves radiated from the non-contact IC reader/writer 3, and thereby transmits and receives various data.

[0027] FIG. 3 shows an example of history information recorded by the storing unit 16. In the storing unit 16, an access source, an access description, and access permission/denial are recorded in correspondence with an access date.

[0028] The access date indicates a date of access to the non-contact type IC 2. The access source indicates a terminal ID of an external apparatus making access to the non-contact type IC 2. The access description indicates a description of access to the non-contact type IC 2. The access permission/denial indicates whether the access from the external apparatus to the non-contact type IC 2 is permitted or not.

[0029] In the example of FIG. 3, a terminal ID of "0001", an access description of "data reading", and information "permitted" on access permission/denial are recorded in association with an access date of "2003/1/1". Also, a terminal ID of "0015", an access description of "data rewriting", and information "denied" on access permission/denial are recorded in association with the access date of "2003/1/1".

[0030] Access control processing performed by the terminal apparatus 1 when access to the non-contact

type IC 2 is made will next be described with reference to a flowchart of FIG. 4. This processing is performed by starting an access control program when power to a main unit of the terminal apparatus 1 is turned on.

[0031] At a step S1, the CPU 11 determines whether a power supply button, not shown, is operated by a user and thereby power to the main unit is turned off. When the CPU 11 determines at the step S1 that power to the main unit is not turned off, the processing proceeds to a step S2. That is, the access control processing is performed at all times while power to the terminal apparatus 1 is on.

[0032] At the step S2, the signal judging unit 28 determines whether an access to the non-contact type IC 2 is detected. That is, the signal judging unit 28 determines whether access information is notified from the non-contact type IC 2, and stands by until an access to the non-contact type IC 2 is detected.

[0033] Specifically, for example, when the user performs an operation for access to the non-contact type IC 2 using the operating unit 14, the CPU 11 controls the signal judging unit 28 on the basis of the operation to access the non-contact type IC 2. Thus, the control unit 31 of the non-contact type IC 2 detects that access to the non-contact type IC 2 is made from the terminal apparatus 1, and notifies the detection as access information to the signal judging unit 28.

[0034] Alternatively, for example, when the non-contact IC reader/writer 3 is brought close to the terminal apparatus 1, an electromagnetic wave radiated from the non-contact IC reader/writer 3 is received by the antenna 32 of the non-contact type IC 2. Thus, the control unit 31 of the non-contact type IC 2 detects access from the non-contact IC reader/writer 3 in response to variation in the load of the antenna 32, and notifies the detection as access information to the signal judging unit 28.

[0035] When the signal judging unit 28 determines at the step S2 that an access to the non-contact type IC 2 is detected, that is, when the signal judging unit 28 determines that access information is notified from the non-contact type IC 2, the processing proceeds to a step S3. The signal judging unit 28 determines on the basis of the notified access information whether the access source is internal.

[0036] When the signal judging unit 28 determines at the step S3 that the access source is internal, that is, when the signal judging unit 28 determines that the access source is the signal judging unit 28 itself (terminal apparatus 1), the signal judging unit 28 notifies the CPU 11 of the internal access. The processing then proceeds to a step S9. On the other hand, when the signal judging unit 28 determines at the step S3 that the access source is not internal, that is, when the signal judging unit 28 determines that the access source is an external apparatus such as the non-contact IC reader/writer 3, the signal judging unit 28 notifies the CPU 11 of the access from the external apparatus. The processing then proceeds to a step S4.

[0037] At the step S4, on the basis of the notification from the signal judging unit 28, the CPU 11 controls the display unit 15, the speaker 25, the light generating unit 26, or the vibration generating unit 27 to generate a predetermined stimulus in order to inform the user of the external access to the non-contact type IC 2.

[0038] Thereby, the display unit 15 displays a warning message saying "External access detected", for example, the speaker 25 outputs the warning message as audio, the light generating unit 26 generates predetermined light, and the vibration generating unit 27 generates a predetermined vibration, to thus inform the user of the detection of the access.

[0039] The stimulus may be generated by using one of these informing means or a combination of these informing means. The informing means can be arbitrarily selected and set in the terminal apparatus 1 by the user.

[0040] After the predetermined stimulus is generated at the step S4, the signal judging unit 28 refers to history information (FIG. 3) recorded in the storing unit 16 at a step S5. Then, at a step S6, the signal judging unit 28 determines whether the external apparatus accessing the non-contact type IC 2 is permitted the access.

[0041] When the access source is an external apparatus having the terminal ID of "0001", for example, since access is permitted to the apparatus in the example of FIG. 3, the signal judging unit 28 determines that the apparatus is permitted the access.

[0042] When the access source is an external apparatus having the terminal ID of "0015", for example, since access is not permitted to the apparatus in the example of FIG. 3, the signal judging unit 28 determines that the apparatus is not permitted the access.

[0043] When the terminal ID of the access source is not recorded in the storing unit 16, for example, the signal judging unit 28 determines that the apparatus is making a first access. The apparatus is not permitted access yet at the step S6.

[0044] When the signal judging unit 28 determines at the step S6 that the external apparatus accessing the non-contact type IC 2 is permitted the access, the signal judging unit 28 notifies the determination result to the CPU 11. The processing then proceeds to the step S9. On the other hand, when the signal judging unit 28 determines at the step S6 that the external apparatus accessing the non-contact type IC 2 is not permitted the access, the signal judging unit 28 notifies the determination result to the CPU 11. The processing then proceeds to a step S7.

[0045] When the signal judging unit 28 notifies the CPU 11 of the determination result indicating that the external apparatus is not permitted the access, the CPU 11 controls the display unit 15 to display a confirmation screen 51 as shown in FIG. 5 at the step S7. The user is prompted to select permission or denial of the access at the step S7.

[0046] A message saying "External access detected. Do you permit access?" and a Yes button 52 and a No

button 53 are displayed on the confirmation screen 51 shown in FIG. 5. Incidentally, while the message indicating the access is displayed on the confirmation screen 51, the access source, the access description and the like can be displayed in addition to the message.

[0047] The user sees the message on the confirmation screen 51. The user selects the Yes button 52 using the operating unit 14 when permitting the external access. The user selects the No button 53 using the operating unit 14 when denying the external access.

[0048] At a step S8, the CPU 11 determines whether the external apparatus accessing the non-contact type IC 2 is permitted the access. That is, the CPU 11 determines whether the user selected the Yes button 52 on the confirmation screen 51. When the CPU 11 determines that the external apparatus is permitted the access, the processing proceeds to the step S9.

[0049] At the step S9, the CPU 11 enables the internal access or the access from the external apparatus permitted by the user. Thus, predetermined processing is performed in response to the internal access or the access from the external apparatus to the non-contact type IC 2.

[0050] At a step S10, after the internal access or the access from the external apparatus is enabled by the processing at the step S9, the CPU 11 records the access date, the access source, the access description, and the access permission/denial ("permitted" in this case) as history information in the storing unit 16 (FIG. 3).

[0051] When the CPU 11 determines at the step S8 that the external apparatus is not permitted the access, that is, the user selected the No button 53 on the confirmation screen 51, the processing proceeds to a step S11 to disable access from the external apparatus. Thereby unauthorized access from the external apparatus to the non-contact type IC 2 is eliminated.

[0052] At a step S12, after access from the external apparatus is disabled by the processing at the step S11, the CPU 11 records the access date, the access source, the access description, and the access permission/denial ("denied" in this case) as history information in the storing unit 16 (FIG. 3).

[0053] After the processing at the step S10 or the step S12, the processing returns to the step S1 to repeat the above-described processing. Then, when it is determined at the step S1 that the power to the main unit is turned off, the processing is ended.

[0054] As described above, when access from an external apparatus to the non-contact type IC 2 is detected, the terminal apparatus 1 determines whether or not to permit the access, and generates a stimulus by displaying a warning, generating sound, generating light, or generating vibration. Therefore the user can recognize external access by a sense of vision, hearing, or touch. Thereby unauthorized access to the non-contact type IC 2 without being noticed by the user can be prevented.

[0055] In addition, the user can select informing means that makes the recognition by the user easier from the informing means for displaying a warning, generating sound, generating light, and generating vibration to notify access detection from the terminal apparatus 1. Further, by changing the informing means according to the access source, it is possible to readily distinguish between access from a specific person and access from an unknown person.

[0056] In addition, since the terminal apparatus 1 described above records history information in the storing unit 16 each time access is made to the non-contact type IC 2, it is possible to check access sources, access descriptions and the like regularly. Thus, when access is made from the same external apparatus many times in a short period of time, for example, it can be determined that the access is unauthorized. In this case, when access is made from the external apparatus next time, the CPU 11 may reject the access immediately without asking the user whether to allow the access (that is, without displaying the confirmation screen 51 in the processing of the step S7 in FIG. 4).

[0057] Further, while the description above has been made by taking a portable telephone as an example of the terminal apparatus 1, the present invention is not limited to this; for example the present invention is widely applicable to electronic apparatus such as personal computers, PDAs (Personal Digital Assistants), digital video cameras, television receivers or the like.

[0058] Further, while when access to the non-contact type IC 2 is detected, the terminal apparatus 1 determines whether or not to permit the access, the non-contact type IC 2 itself may determine whether or not to permit the access. An example of configuration of a non-contact type IC 2 in that case is shown in FIG. 6.

[0059] In the example of FIG. 6, in addition to a control unit 31, an antenna 32, and a memory 33, the non-contact type IC 2 has a signal judging unit 61 having a similar function to that of the signal judging unit 28 in the terminal apparatus 1, and an output control unit 62. The memory 33 records various data as well as history information as shown in FIG. 3, which information is recorded when access is made to the non-contact type IC 2.

[0060] Description will next be made of access control processing when access is made to the non-contact type IC 2 shown in FIG. 6. Incidentally, since the access control processing is basically the same as the access control processing performed by the terminal apparatus 1 which processing has been described with reference to the flowchart of FIG. 4, the access control processing will be described briefly.

[0061] For example, when the non-contact IC reader/writer 3 is brought close to the non-contact type IC 2, an electromagnetic wave radiated from the non-contact IC reader/writer 3 is received by the antenna 32. Thus, the control unit 31 detects access from the non-contact IC reader/writer 3 in response to variation in the load of the

antenna 32, and notifies the detection as access information to the signal judging unit 61.

[0062] On the basis of the access information notified from the control unit 31, the signal judging unit 61 refers to the history information recorded in the memory 33 to determine whether to permit the non-contact IC reader/writer 3 the access, and then notifies a result of the determination to the control unit 31.

[0063] On the basis of the result of the determination notified from the signal judging unit 61, in order to inform the user of the external access to the non-contact type IC 2, the control unit 31 controls the output control unit 62 to output an electric signal corresponding to a predetermined stimulus.

[0064] Thus, when access from an external apparatus to the non-contact type IC 2 is detected, the non-contact type IC 2 itself can determine whether to permit the access.

[0065] The series of processes described above can be carried out not only by hardware but also by software. When the series of processes is to be carried out by software, a program forming the software is installed from a network or a recording medium onto a computer incorporated in special hardware, or for example a general-purpose personal computer that can perform various functions by installing various programs thereon.

[0066] As shown in FIG. 2, the recording medium is not only formed by the removable medium 21 distributed to users to provide the program separately from the apparatus proper, the removable medium 21 including a magnetic disk (including flexible disks), an optical disk (including CD-ROM (Compact Disk-Read Only Memory) and DVD (Digital Versatile Disk)), a magneto-optical disk (including MD (Mini-Disk) (trademark)), a semiconductor memory or the like which has the program recorded thereon, but also formed by the storing unit 16, the ROM 12 or the like which has the program recorded thereon and which is provided to the user in a state of being preincorporated in the apparatus proper.

[0067] It is to be noted that in the present specification, the steps describing the program recorded on the recording medium include not only processing carried out in time series in the described order but also processing carried out in parallel or individually and not necessarily in time series.

[0068] The present invention is not limited to the details of the above described preferred embodiments. The scope of the invention is defined by the appended claims and all changes and modifications as fall within the scope of the claims are therefore to be embraced by the invention.

Claims

1. Information processing apparatus including a non-contact type data carrier IC (2), the latter comprising means (32) for communicating with an external ap-

paratus (3) via electromagnetic waves, the information processing apparatus comprising:

- communicating means (28) for communicating data with said non-contact type data carrier IC (2);
- detecting means (28, 31, 61) for detecting access to said non-contact type data carrier IC (2);
- determining means (28) for determining whether a result of detection by said detecting means indicates access by said communicating means (28) or access from said external apparatus (3); and
- access controlling means (28) for controlling an access from said external apparatus (3) to said non-contact type data carrier IC (2) based on predetermined information when said determining means (28) determines that the result of detection by said detecting means (28, 31, 61) indicates an access from said external apparatus (3).

2. Information processing apparatus according to claim 1, further comprising recording means (16) for recording history information on access when said access controlling means (28) permits the access from said external apparatus (3).

3. Information processing apparatus according to claim 2,
characterised in
that said predetermined information is said recording history information recorded in said recording means (16); and
said access controlling means is arranged to refer to said history information recorded in said recording means and, when history information corresponding to said external apparatus (3) is retrieved, to control the access from said external apparatus based on said history information.

4. Information processing apparatus according to claim 2,
characterised in
that said predetermined information is said recording history information recorded in said recording means (16); and
said access controlling means (28) is arranged to refer to said history information recorded in said recording means and to display a selection screen for allowing selection of permission or denial of the access when history information corresponding to said external apparatus is not retrieved; and
said recording means is arranged to record said history information on a basis of an operation of said selection screen by a user.

5. Information processing apparatus according to one of the claims 1 to 4, further comprising informing means (15, 25, 26, 27) arranged for informing of an access when said determining means (28) determines that the result of detection by said detecting means (28, 31, 61) indicates an access from said external apparatus (3).

6. Information processing apparatus according to claim 5,
characterised in
that said informing means (15, 25, 26, 27) is arranged to inform of the access by warning display, sound, light, or vibration.

7. Information processing apparatus according to claim 5 or 6,
characterised in
that said informing means (15, 25, 26, 27) is arranged to change an informing method according to the source (1, 3) of an access.

8. Information processing method for an information processing apparatus (1) including a non-contact type data carrier IC (2), the latter comprising means (32) for communicating with an external apparatus (3) via electromagnetic waves, said information processing method comprising:

- a communicating step (S1) for communicating data between communicating means (28) of said information processing apparatus and said non-contact type data carrier IC (2);
- a detecting step (S2) for detecting access to said non-contact type data carrier IC (2);
- a determining step (S3) for determining whether a result of detection by processing of said detecting step indicates access by processing of said communicating step or access from said external apparatus (3); and
- an access controlling step (S8) for controlling an access from said external apparatus (3) based on predetermined information when processing of said determining step (S3) determines that the result of detection by the processing of said detecting step (S2) indicates an access from said external apparatus (3).

9. Information processing method according to claim 8,
characterised by
an informing step (S4) for informing of an access when in the process of said determining step (S3) it is determined that the result of detection obtained by processing said detecting step (S2) indicates an access from said external apparatus (3).

10. Recording medium with a computer readable pro-

gram recorded thereon, the computer readable program being adapted to perform, when executed, an information processing of an information processing apparatus that includes a non-contact type data carrier IC (2), the latter being adapted to communicate with an external apparatus via electromagnetic waves, said computer readable program, when executed, comprising:

- a communicating step for communicating data between communicating means (28) of said information processing apparatus and said non-contact type data carrier IC (2);
- a detecting step (S2) for detecting access to said non-contact type data carrier IC (2);
- a determining step (S3) for determining whether a result of detection by processing of said detecting step (S2) indicates access by processing of said communicating step or access from said external apparatus (3); and
- an access controlling step (S8) for controlling an access from said external apparatus (3) when processing of said determining step (S3) determines that the result of detection by the processing of said detecting step (S2) indicates an access from said external apparatus (3).

11. Program adapted to make, when executed, a computer perform information processing of an information processing apparatus including a non-contact type data carrier IC (2), the latter being adapted to communicate with an external apparatus via electromagnetic waves, said information processing performed upon executing the program comprising:

- a communicating step for communicating data between communicating means (28) of said information processing apparatus and said non-contact type data carrier IC (2);
- a detecting step (S2) for detecting access to said non-contact type data carrier IC (2);
- a determining step (S3) for determining whether a result of detection by processing of said detecting step (S2) indicates access by processing of said communicating step or access from said external apparatus (3); and
- an access controlling step (S8) for controlling an access from said external apparatus (3) when processing of said determining step (S3) determines that the result of detection by the processing of said detecting step (S2) indicates an access from said external apparatus (3).

12. Program according to claim 11,
characterised in

that said information processing performed upon executing the program further comprises an informing step (S4) for informing of an access when in the

process of said determining step (S3) it is determined that the result of detection obtained by processing said detection step (S2) indicates an access from said external apparatus (3).

Patentansprüche

1. Informationsverarbeitungsgerät mit einer integrierten Kontaktlostyp-Datenträgerschaltung (2), welche letztere eine Einrichtung (32) zum Kommunizieren mit einem externen Gerät (3) über elektromagnetische Wellen aufweist, wobei das Informationsverarbeitungsgerät aufweist:

- eine Kommunizierungseinrichtung (28) zum Kommunizieren von Daten mit der integrierten Kontaktlostyp-Datenträgerschaltung (2),
- eine Detektierungseinrichtung (28, 31, 61) zum Detektieren eines Zugriffs auf die integrierte Kontaktlostyp-Datenträgerschaltung (2),
- eine Bestimmungseinrichtung (28) zum Bestimmen, ob ein Resultat eines Detektierens durch die Detektierungseinrichtung einen Zugriff durch die Kommunizierungseinrichtung (28) oder einen Zugriff vom externen Gerät (3) anzeigt, und
- eine Zugriffssteuerungseinrichtung (28) zum Steuern eines Zugriffs vom externen Gerät (3) auf die integrierte Kontaktlostyp-Datenträgerschaltung (2) auf der Basis einer vorbestimmten Information, wenn die Bestimmungseinrichtung (28) bestimmt, dass das Resultat eines Detektierens durch die Detektierungseinrichtung (28, 31, 61) einen Zugriff vom externen Gerät (3) anzeigt.

2. Informationsverarbeitungsgerät nach Anspruch 1, außerdem mit einer Aufzeichnungseinrichtung (16) zum Aufzeichnen von Geschichteinformation beim Zugriff, wenn die Zugriffssteuerungseinrichtung (28) den Zugriff vom externen Gerät (3) erlaubt.

3. Informationsverarbeitungsgerät nach Anspruch 2, **dadurch gekennzeichnet**,

dass die vorbestimmte Information die in der Aufzeichnungseinrichtung (16) aufgezeichnete Aufzeichnungsgeschichteinformation ist, und die Zugriffssteuerungseinrichtung so ausgebildet ist, dass sie sich auf die in der Aufzeichnungseinrichtung aufgezeichnete Geschichteinformation bezieht, wenn die mit dem externen Gerät (3) korrespondierende Geschichteinformation wiedergewonnen wird, um den Zugriff vom externen Gerät auf der Basis der Geschichteinformation zu steuern.

4. Informationsverarbeitungsgerät nach Anspruch 2,

dadurch gekennzeichnet,

dass die vorbestimmte Information die in der Aufzeichnungseinrichtung (16) aufgezeichnete Aufzeichnungsgeschichteinformation ist, und die Aufzeichnungssteuerungseinrichtung (28) so ausgebildet ist, dass sie sich auf die in der Aufzeichnungseinrichtung aufgezeichnete Geschichteinformation bezieht, um einen Auswahlbildschirm zum Ermöglichen einer Auswahl einer Erlaubnis oder einer Verweigerung des Zugriffs anzuzeigen, wenn die mit dem externen Gerät korrespondierende Geschichteinformation nicht wiedergewonnen wird, und die Aufzeichnungseinrichtung so ausgebildet ist, dass sie die Geschichteinformation auf der Basis einer Bedienung des Auswahlbildschirms durch einen Benutzer aufzeichnet.

5. Informationsverarbeitungsgerät nach einem der Ansprüche 1 bis 4,

außerdem mit einer Informierungseinrichtung (15, 25, 26, 27), die ausgebildet ist zum Informieren über einen Zugriff, wenn die Bestimmungseinrichtung (28) bestimmt, dass das Resultat eines Detektierens durch die Detektierungseinrichtung (28, 31, 61) einen Zugriff vom externen Gerät (3) anzeigt.

6. Informationsverarbeitungsgerät nach Anspruch 5, **dadurch gekennzeichnet**,

dass die Informierungseinrichtung (15, 26, 26, 27) zum Informieren über den Zugriff durch warnende Anzeige, Ton, Licht oder Vibration ausgebildet ist.

7. Informationsverarbeitungsgerät nach Anspruch 5 oder 6,

dadurch gekennzeichnet,

dass die Informierungseinrichtung (15, 25, 26, 27) zum Ändern eines Informierungsverfahrens entsprechend der Zugriffsquelle (1, 3) ausgebildet ist.

8. Informationsverarbeitungsverfahren für ein Informationsverarbeitungsgerät (1) mit einer integrierten Kontaktlostyp-Datenträgerschaltung (2), welche letztere eine Einrichtung (32) zum Kommunizieren mit einem externen Gerät (3) über elektromagnetische Wellen aufweist, wobei das Informationsverarbeitungsverfahren aufweist:

- einen Kommunizierungsschritt (S1) zum Kommunizieren von Daten zwischen einer Kommunizierungseinrichtung (28) des Informationsverarbeitungsgeräts und der integrierten Kontaktlostyp-Datenträgerschaltung (2),
- einen Detektierungsschritt (S2) zum Detektieren eines Zugriffs auf die integrierte Kontaktlostyp-Datenträgerschaltung (2),
- einen Bestimmungsschritt (S3) zum Bestimmen, ob ein Resultat eines Detektierens durch

- die Verarbeitung des Detektierungsschritts einen Zugriff durch die Verarbeitung des Kommunizierungsschritts oder einen Zugriff vom externen Gerät (3) anzeigt, und
- einen Zugriffssteuerungsschritt (S8) zum Steuern eines Zugriffs vom externen Gerät (3) auf der Basis vorbestimmter Information, wenn die Verarbeitung des Bestimmungsschritts (S3) bestimmt, dass das Resultat eines Detektierens durch die Verarbeitung des Detektierungsschritts (S3) einen Zugriff vom externen Gerät (3) anzeigt.
9. Informationsverarbeitungsverfahren nach Anspruch 8, **gekennzeichnet durch** einen Informierungsschritt (S8) zum Informieren über einen Zugriff, wenn bei der Verarbeitung des Bestimmungsschritts (S3) bestimmt wird, dass das **durch** die Verarbeitung des Detektierungsschritts (S2) erhaltene Detektierungsergebnis einen Zugriff vom externen Gerät (3) anzeigt.
10. Aufzeichnungsmedium mit einem darauf aufgezeichneten Computer-lesbaren Programm, wobei das Computer-lesbare Programm ausgebildet ist, um, wenn ausgeführt, eine Informationsverarbeitung eines Informationsverarbeitungsgeräts, das eine integrierte Kontaktlostyp-Datenträgerschaltung (2) aufweist, welche letztere zum Kommunizieren mit einem externen Gerät über elektromagnetische Wellen ausgebildet ist, auszuführen, wobei das Computer-lesbare Programm, wenn ausgeführt, aufweist:
- einen Kommunizierungsschritt zum Kommunizieren von Daten zwischen einer Kommunizierungseinrichtung (28) des Informationsverarbeitungsgeräts und der integrierten Kontaktlostyp-Datenträgerschaltung (2),
 - einen Detektierungsschritt (S2) zum Detektieren eines Zugriffs auf die integrierte Kontaktlostyp-Datenträgerschaltung (2),
 - einen Bestimmungsschritt (S3) zum Bestimmen, ob ein Resultat eines Detektierens durch die Verarbeitung des Detektierungsschritts (S2) einen Zugriff durch die Verarbeitung des Kommunizierungsschritts oder einen Zugriff vom externen Gerät (3) anzeigt, und
 - einen Zugriffssteuerungsschritt (S8) zum Steuern eines Zugriffs vom externen Gerät (3), wenn die Verarbeitung des Bestimmungsschritts (S3) bestimmt, dass das Resultat eines Detektierens durch die Verarbeitung des Detektierungsschritts (S2) einen Zugriff vom externen Gerät (3) anzeigt.
11. Programm, das ausgebildet ist, um, wenn ausgeführt, einen Computer zu veranlassen, eine Infor-

mationsverarbeitung eines Informationsverarbeitungsgeräts mit einer integrierten Kontaktlostyp-Datenträgerschaltung (2), welche letztere zum Kommunizieren mit einem externen Gerät über elektromagnetische Wellen ausgebildet ist, auszuführen, wobei die bei der Ausführung des Programms ausgeführte Informationsverarbeitung aufweist:

- einen Kommunizierungsschritt zum Kommunizieren von Daten zwischen einer Kommunizierungseinrichtung (28) des Informationsverarbeitungsgeräts und der integrierten Kontaktlostyp-Datenträgerschaltung (2),
- einen Detektierungsschritt (S2) zum Detektieren eines Zugriffs auf die integrierte Kontaktlostyp-Datenträgerschaltung (2),
- einen Bestimmungsschritt (S3) zum Bestimmen, ob ein Resultat eines Detektierens durch die Verarbeitung des Detektierungsschritts (S2) einen Zugriff durch die Verarbeitung des Kommunizierungsschritts oder einen Zugriff vom externen Gerät (3) anzeigt, und
- einen Zugriffssteuerungsschritt (S8) zum Steuern eines Zugriffs von einem externen Gerät (3), wenn die Verarbeitung des Bestimmungsschritts (S3) bestimmt, dass das Resultat eines Detektierens durch die Verarbeitung des Detektierungsschritts (S2) einen Zugriff vom externen Gerät (3) anzeigt.

12. Programm nach Anspruch 11, **dadurch gekennzeichnet,**

dass die bei der Ausführung des Programms ausgeführte Informationsverarbeitung außerdem einen Informierungsschritt (S4) zum Informieren über einen Zugriff, wenn bei der Verarbeitung des Bestimmungsschritts (S3) bestimmt wird, dass das durch die Verarbeitung des Detektierungsschritts (S2) erhaltene Detektierungsergebnis einen Zugriff vom externen Gerät (3) anzeigt, aufweist.

Revendications

1. Dispositif de traitement d'informations comportant un circuit IC de support de données du type sans contact (2), ce circuit IC comprenant des moyens (32) pour communiquer avec un dispositif externe (3) par l'intermédiaire d'ondes électromagnétiques, le dispositif de traitement d'informations comprenant :
 - des moyens de communication (28) pour communiquer des données avec le circuit IC (2) de support de données du type sans contact,
 - des moyens de détection (28,31,61) pour détecter l'accès audit circuit IC (2) de support de données de type sans contact;

- des moyens de détermination (28) pour déterminer si un résultat de détection par lesdits moyens de détection indique l'accès par lesdits moyens de communication (28) ou l'accès à partir dudit dispositif externe (3);
 - des moyens de commande d'accès (28) pour commander un accès à partir dudit dispositif externe (3) en direction dudit circuit IC (2) formant support de données du type sans contact, sur la base d'une information prédéterminée dans lequel lesdits moyens prédéterminés (28) déterminent que le résultat de la détection par lesdits moyens de détection (28,31,61) indique un accès à partir dudit dispositif externe (3).
2. Dispositif de traitement d'informations selon la revendication 1, comprenant en outre des moyens d'enregistrement (16) pour enregistrer une information d'historique concernant l'accès lorsque lesdits moyens de commande d'accès (28) permettent l'accès à partir dudit dispositif externe (3).
3. Dispositif de traitement d'informations selon la revendication 2, **caractérisé en ce que** ladite information prédéterminée est ladite information d'historique d'enregistrement enregistrée dans lesdits moyens d'enregistrement (16); et lesdits moyens de commande d'accès sont agencés de manière à se référer à ladite information historique enregistrée dans lesdits moyens d'enregistrement et, lorsque l'information d'historique correspondant audit dispositif externe (3) est récupérée, pour commander l'accès à partir dudit dispositif externe, sur la base de ladite information historique.
4. Dispositif de traitement d'informations selon la revendication 12, **caractérisé en ce que** ladite information prédéterminée est ladite information d'historique d'enregistrement enregistrée dans ledit moyen d'enregistrement (16); et lesdits moyens de commande d'accès (28) sont agencés de manière à se référer à l'information historique enregistrée dans lesdits moyens d'enregistrement et à afficher un écran de sélection pour permettre la sélection d'autorisations ou de rejets de l'accès lorsque ladite information historique correspondant audit dispositif externe n'est pas récupérée; et lesdits moyens d'enregistrement sont agencés pour enregistrer ladite information historique sur la base d'une opération dudit écran de sélection par un utilisateur.
5. Dispositif de traitement d'informations selon l'une des revendications 1 à 4,
- 5 mine que le résultat de détection par lesdits moyens de détection (28,31,61) indique un accès de la part dudit dispositif externe (3).
- 5 6. Dispositif de traitement d'informations selon la revendication 5, **caractérisé en ce que** lesdits moyens d'informations (15,25,26,27) sont agencés de manière à informer de l'accès par un affichage, un son, une lumière ou une vibration d'avertissement.
- 10 7. Dispositif de traitement d'informations selon la revendication 5 ou 6, **caractérisé en ce que** lesdits moyens d'informations (15,25,26,27) sont agencés de manière à modifier un procédé d'informations conformément à la source (1,3) d'un accès.
- 15 8. Procédé de traitement d'informations pour un dispositif de traitement d'informations (1) comprenant un circuit IC (2) formant porteur de données du type sans contact, ce dernier comprenant des moyens (32) pour la communication avec un dispositif extérieur par l'intermédiaire d'ondes électromagnétiques, ledit procédé de traitement d'informations comprenant :
- 20 - une étape de communication (S1) pour communiquer des données entre des moyens de communication (28) dudit dispositif de traitement d'informations et un circuit IC (2) de support de données du type sans contact,
- 25 - une étape de détection (S2) pour détecter l'accès audit circuit IC (2) de support de données du type sans contact;
- 30 - une étape de détermination (S3) pour déterminer si un résultat de détection au moyen du traitement de ladite étape de détection indique l'accès au moyen du traitement de ladite étape de communication ou l'accès à partir dudit dispositif externe (3); et
- 35 - une étape de commande d'accès (S8) pour commander un accès depuis ledit dispositif externe (3) sur la base d'une information prédéterminée lors du traitement de ladite étape de détermination (S3) établit que le résultat de détection effectué au moyen du traitement de ladite étape de détection (S2) indique un accès à partir dudit dispositif externe (3).
- 40 9. Procédé de traitement d'informations selon la revendication 8, **caractérisé par** une étape d'information (S4) pour fournir l'information d'un accès lorsque, lors du processus de ladite étape de détermination (S3), il est établi que le résultat de la détection obtenue par le traitement lors dudit pas de détection (S2) indique un accès à partir dudit dispositif externe (3).
- 45 50 55

10. Support d'enregistrement dans lequel est enregistré un programme lisible par ordinateur, le programme lisible par ordinateur étant adapté pour réaliser, lorsqu'il est exécuté, un traitement d'informations d'un dispositif de traitement d'informations qui inclut un circuit IC (2) formant support de données du type sans contact, ce dernier étant adapté pour communiquer avec un dispositif externe par l'intermédiaire d'ondes électromagnétiques, ledit programme de lecture par ordinateur comprenant, lorsqu'il est exécuté :

- une étape de communication pour communiquer des données entre des moyens de communication (28) dudit dispositif de traitement d'informations et ledit circuit IC (2) formant support de données du type sans contact;
- une étape de détection (S2) pour détecter l'accès audit circuit IC (2) formant support de données du type sans contact;
- une étape de détermination (S3) pour déterminer si un résultat de détection par le traitement de ladite étape de détection (S2) indique un accès par traitement de ladite étape de communication ou un accès à partir dudit dispositif externe (3); et
- une étape de commande d'accès (S8) pour commander un accès à partir dudit dispositif externe (3), lorsque le traitement de ladite étape de détermination (S3) établit que le résultat de la détection par le traitement effectué lors de ladite étape de détection (S2) indique un accès à partir dudit dispositif externe (3).

11. Programme adapté pour amener, lorsqu'il est mis en oeuvre, un ordinateur à exécuter un traitement d'informations ou dans un dispositif de traitement d'informations incluant un circuit IC (2) formant support de données du type sans contact, ce dernier étant adapté pour communiquer avec un dispositif externe par l'intermédiaire d'ondes électromagnétiques, ledit traitement d'informations étant exécuté lors de l'exécution du programme comprenant :

- une étape de communication pour communiquer des données entre des moyens de communication (28) dudit dispositif de traitement d'informations et ledit circuit IC (2) formant support de données du type sans contact;
- une étape de détection (S2) pour détecter l'accès audit circuit IC (2) formant support de données du type sans contact;
- une étape de détermination (S3) pour déterminer si un résultat de détection par le traitement de ladite étape de détection (S2) indique un accès par traitement de ladite étape de communication ou un accès à partir dudit dispositif externe (3); et

- une étape de commande d'accès (S8) pour commander un accès à partir dudit dispositif externe (3), lorsque le traitement de ladite étape de détermination (S3) établit que le résultat de la détection par le traitement effectué lors de ladite étape de détection (S2) indique un accès à partir dudit dispositif externe (3).

12. Programme selon la revendication 11, caractérisé en ce

que ledit traitement d'informations exécuté lors de l'exécution du programme comprend en outre une étape d'informations (S4) pour informer d'un accès lors du procédé de ladite étape de détermination (S3), il est établi que le résultat de la détection obtenu par le traitement de ladite étape de détection (S2) indique un accès à partir dudit dispositif externe (3).

FIG. 1

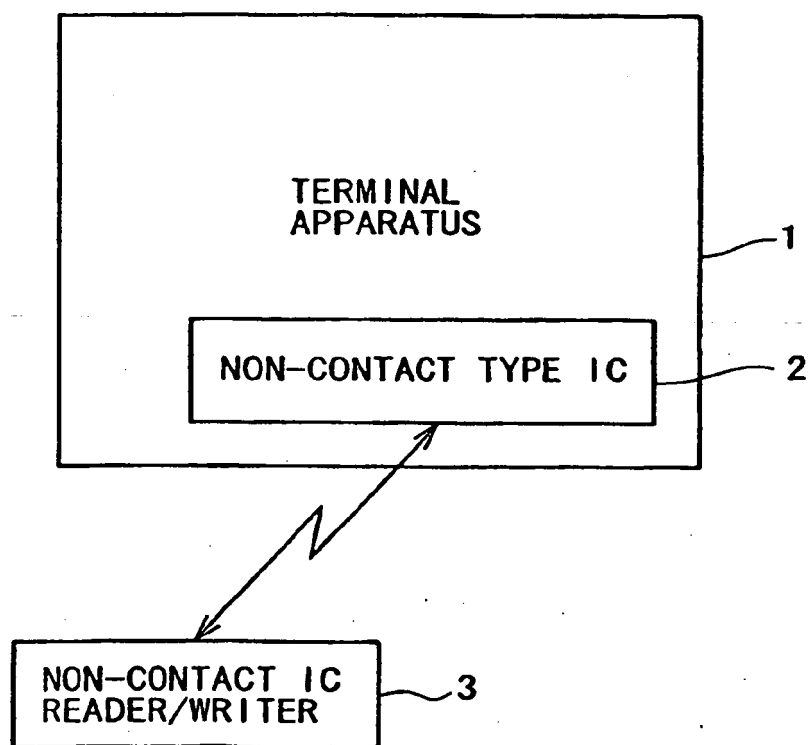


FIG. 2

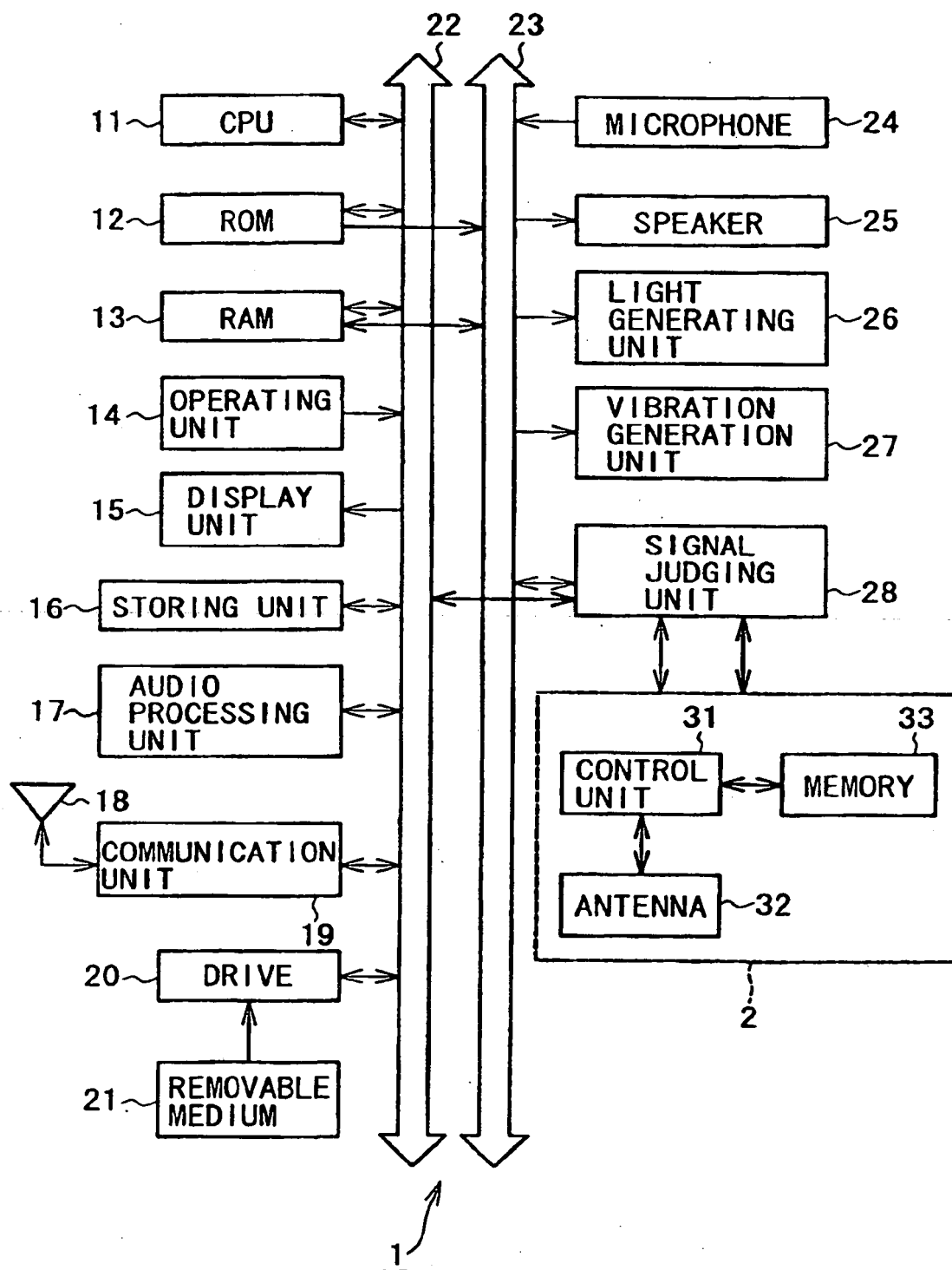


FIG. 3.

ACCESS DATE	ACCESS SOURCE	ACCESS DESCRIPTION	ACCESS PERMISSION/ DENIAL
2003/1/1	0001	DATA READING	PERMITTED
2003/1/1	0015	DATA REWRITING	DENIED
....			

FIG. 4

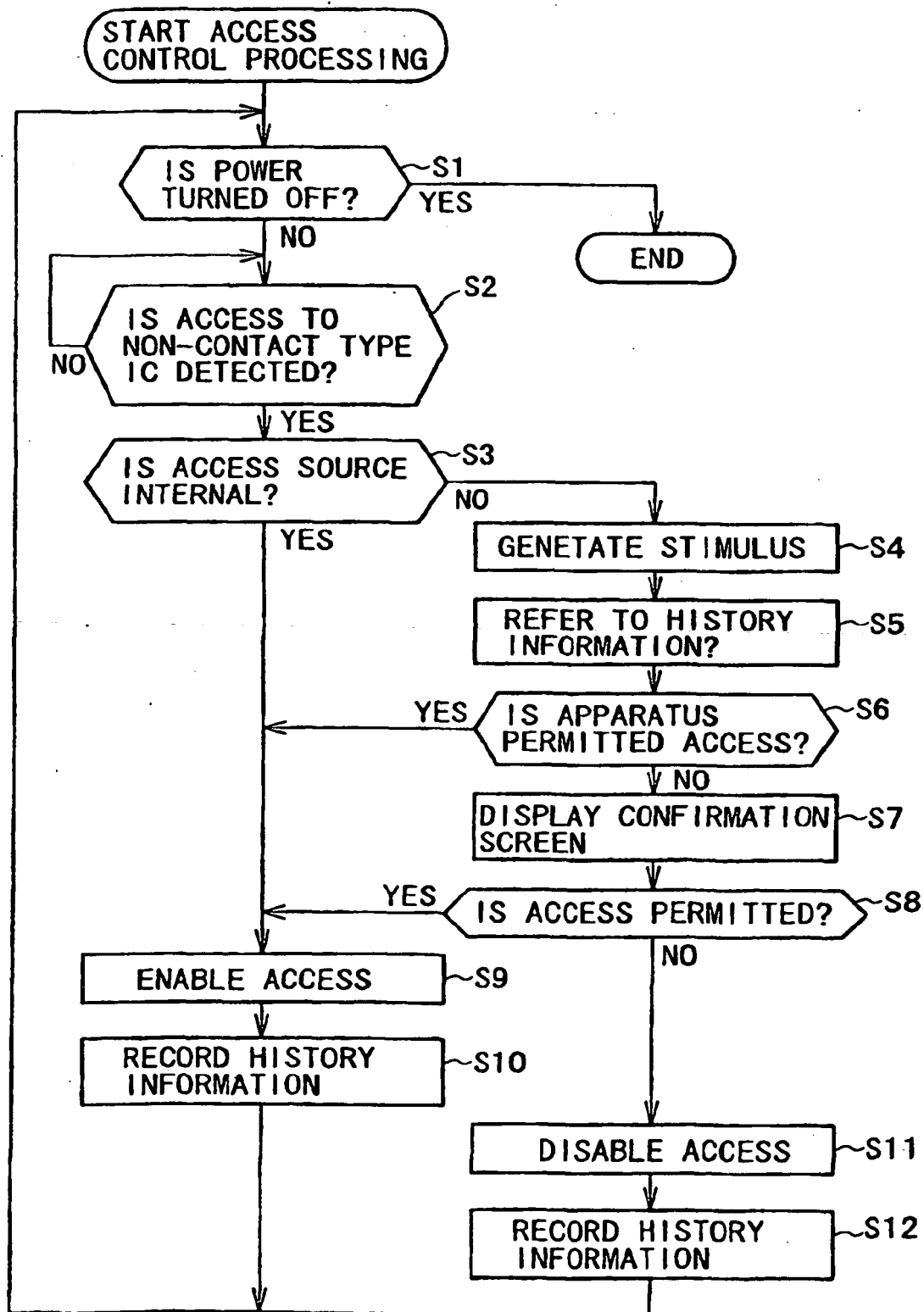


FIG. 5

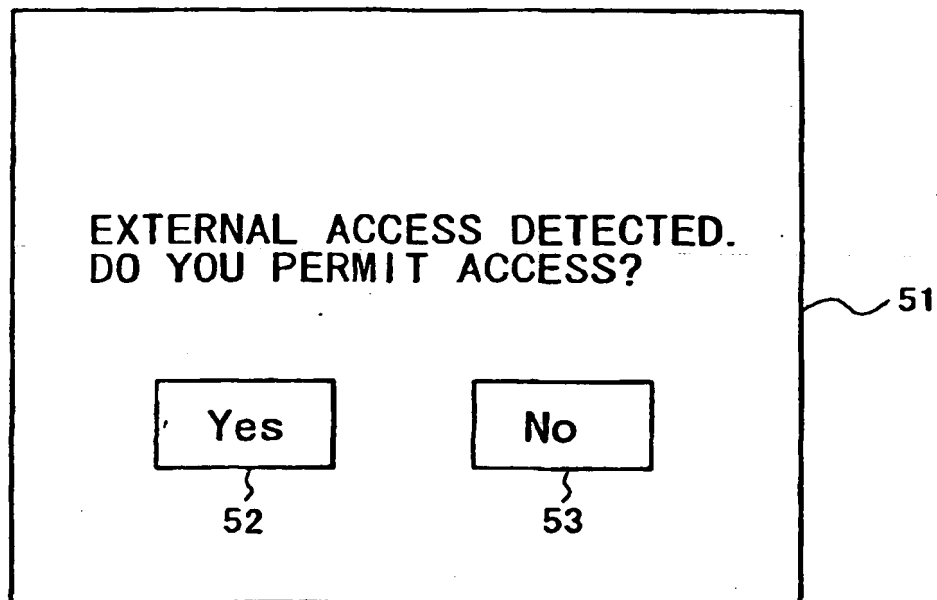


FIG. 6

