



US 20050125460A1

(19) **United States**(12) **Patent Application Publication****Yu et al.**(10) **Pub. No.: US 2005/0125460 A1**(43) **Pub. Date:****Jun. 9, 2005**(54) **[METHOD FOR RESOTORING BACKUP DATA]**(52) **U.S. Cl. 707/203**(76) Inventors: **Lindeng Yu, Taipei Hsien (TW);
Zhong-Yang Wang, Taipei Hsien (TW)**(57) **ABSTRACT**

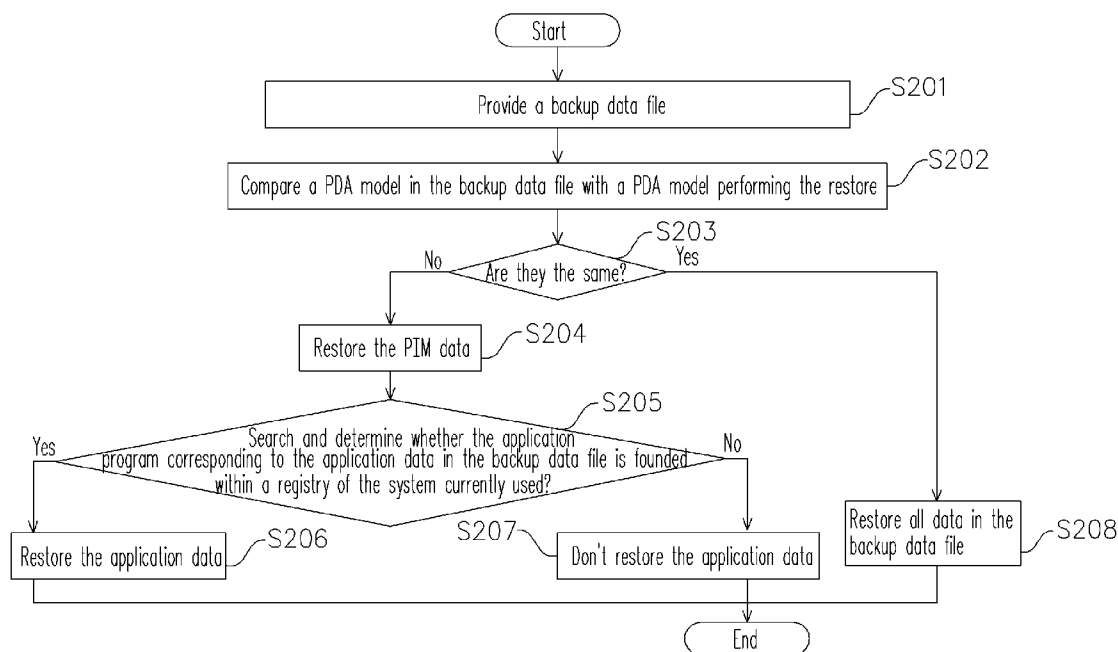
Correspondence Address:

**JIANQ CHYUN INTELLECTUAL PROPERTY
OFFICE****7 FLOOR-1, NO. 100****ROOSEVELT ROAD, SECTION 2****TAIPEI 100 (TW)**

A method for restoring backup data in an electronic system is provided. The method provides a backup data file, and the backup data file includes at least one record of application data. Then, an application program corresponding to the application data is searched within a registry of the electronic system. If it is found, the application data is restored; otherwise, the application data is not restored. The present invention further provides a method for restoring backup data in a mobile system. The method provides a backup data file, and the backup data file includes a self-restore program. Then, the self-restore program is performed in the mobile device to restore data. Therefore, the present invention can restore data to the mobile device without having to install additional restore program.

(21) Appl. No.: **10/707,708**(22) Filed: **Jan. 6, 2004**(30) **Foreign Application Priority Data**

Dec. 4, 2003 (TW)..... 92134148

Publication Classification(51) **Int. Cl.⁷ G06F 17/30**

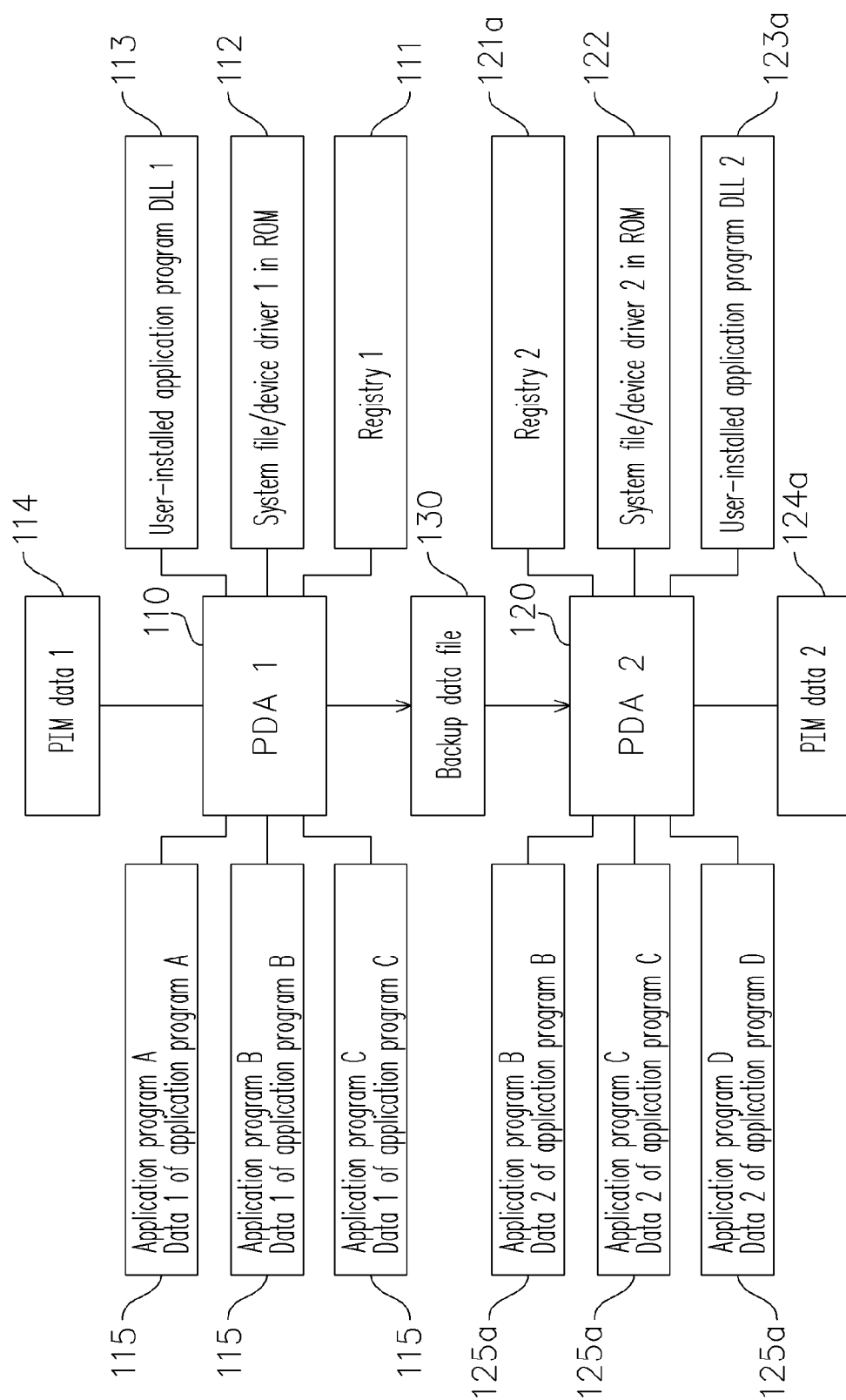


FIG. 1A (PRIOR ART)

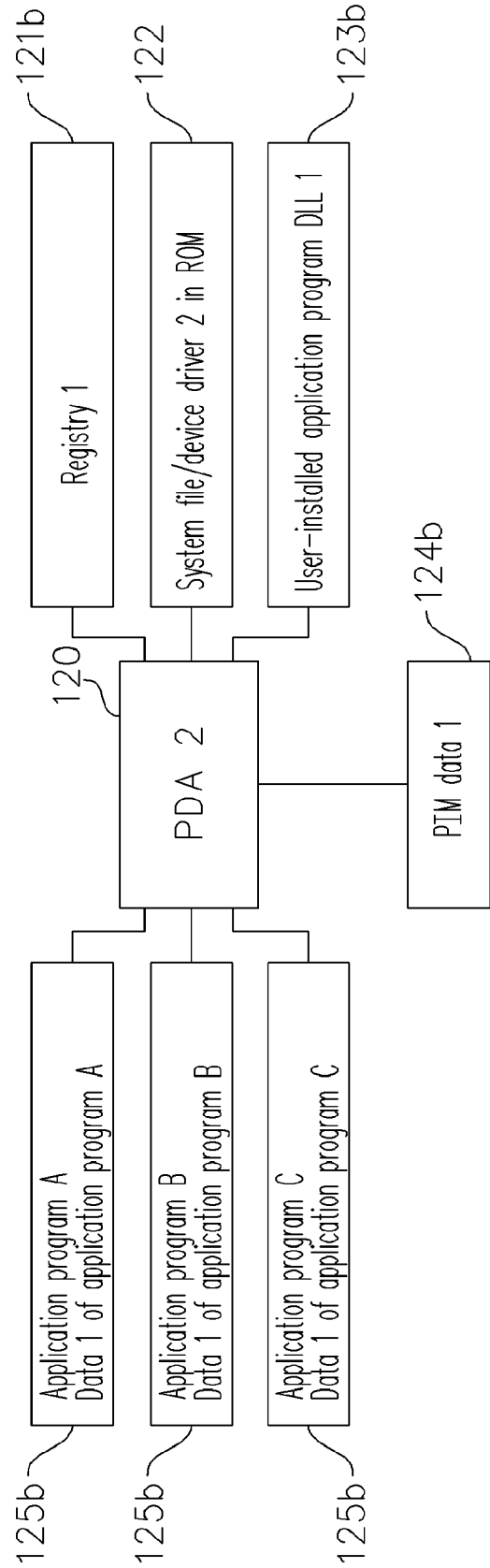


FIG. 1B (PRIOR ART)

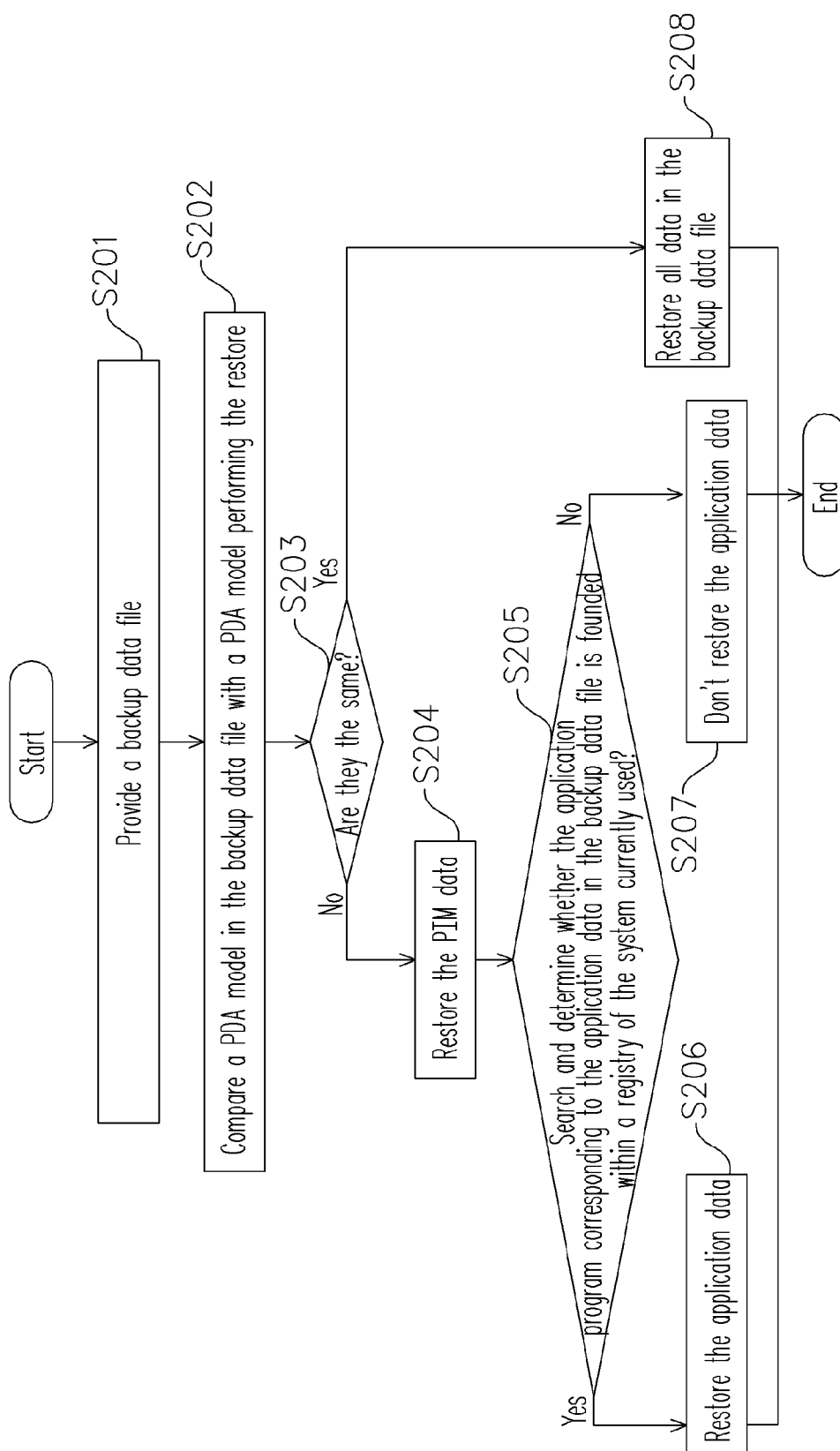


FIG. 2

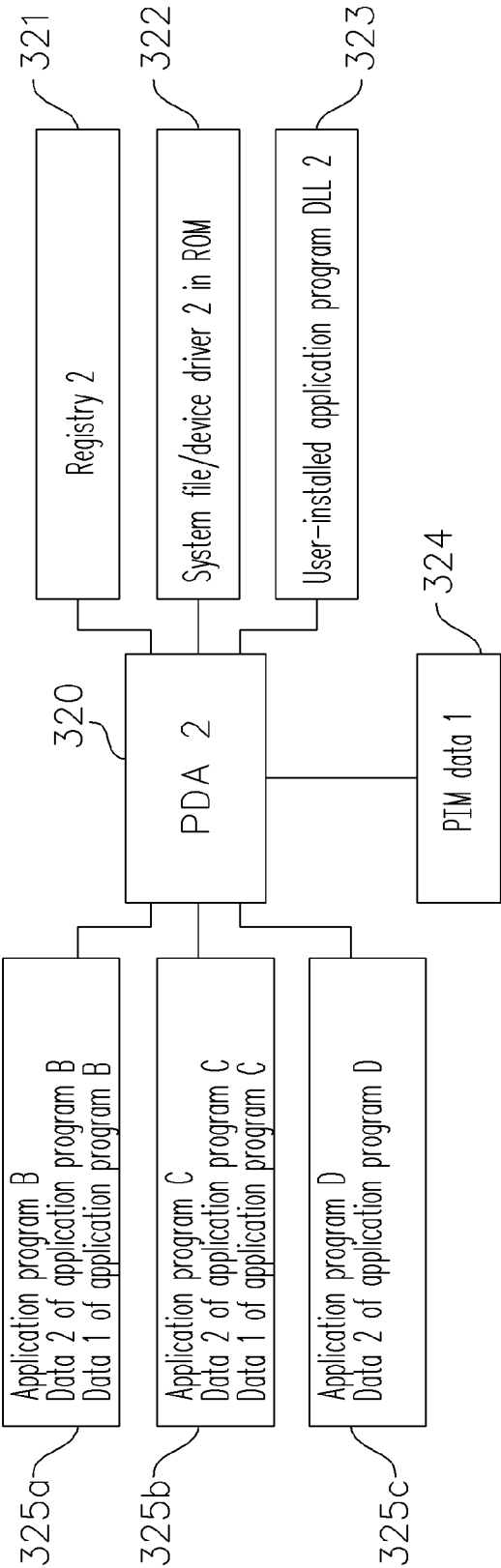


FIG. 3

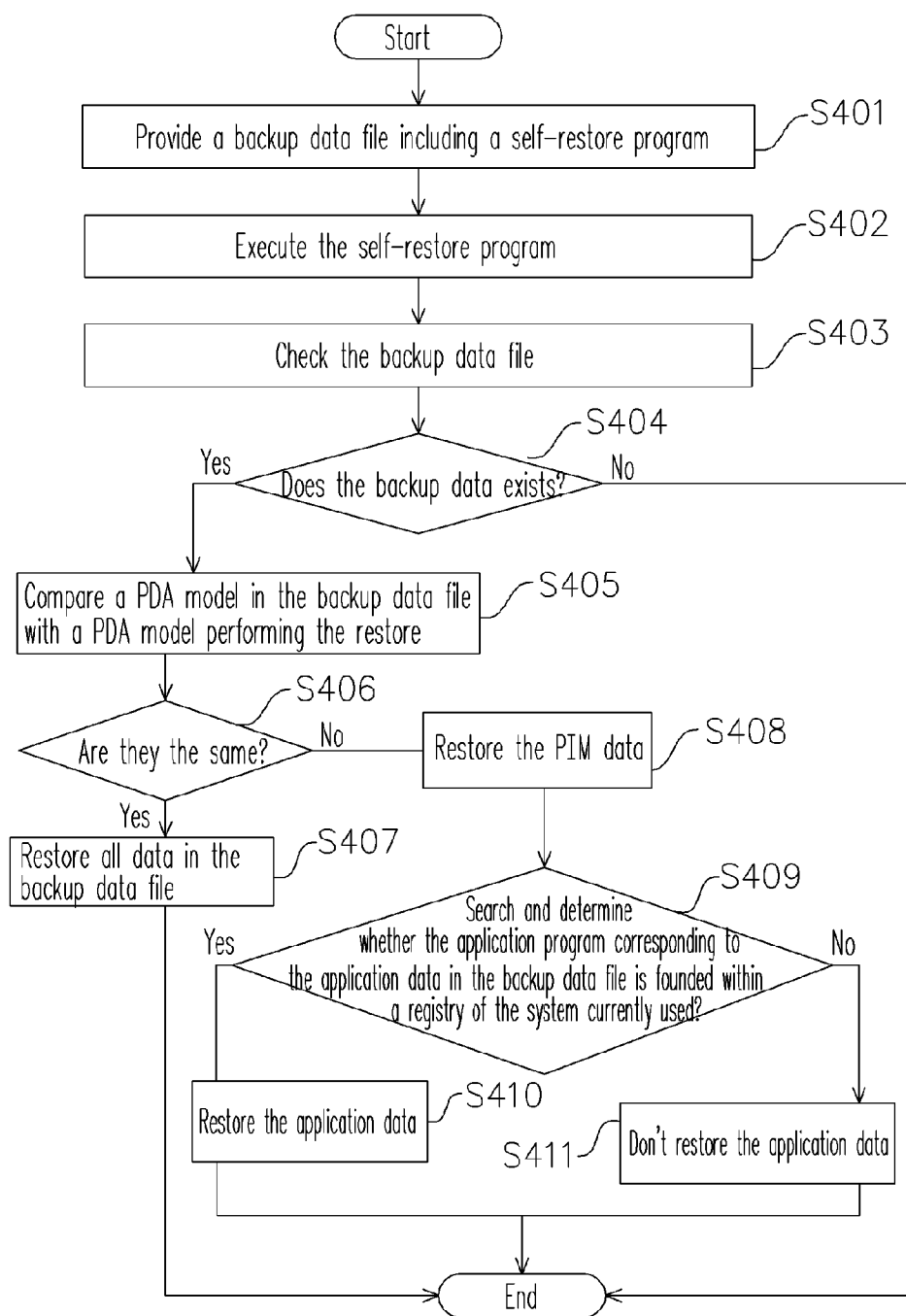


FIG. 4

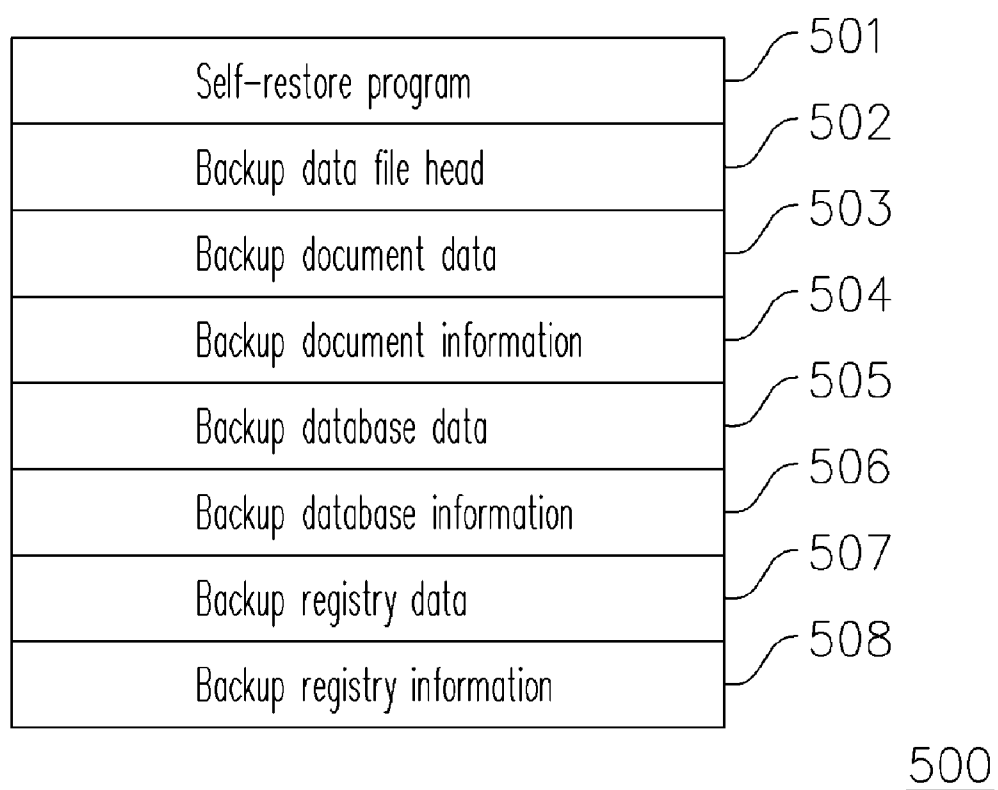


FIG. 5

[METHOD FOR RESOTORING BACKUP DATA]**CROSS REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims the priority benefit of Taiwan application serial no. 92134148, filed Dec. 4, 2003.

BACKGROUND OF INVENTION**[0002] 1. Field of the Invention**

[0003] The present invention relates to a method for restoring backup data, and more particularly, to a method for restoring backup data in a mobile device (e.g. PDA).

[0004] 2. Description of the Related Art

[0005] Various electronic apparatus are commonly used in modern life to process our daily activities, such as communication, calendar management, and document preparation. Accompanying with the technology progress, various electronic apparatus are made thinner and smaller for easy carry. The mobile device, such as the Personal Digital Assistant (PDA) and the mobile phone are the electronic apparatus that are made in consider of easy carry. Usually, the data recorded in the electronic apparatus is critical to the users, if the data recorded in the electronic apparatus is damaged due to any accident, it will be a great loss and will bring a significant inconvenience to the users. Therefore, frequently backing up data becomes a routine job for the users using the electronic apparatus.

[0006] For example, since the characteristic of smaller size and versatile functions, the PDA is gradually accepted by the users. In the PDA, the user can build up customer information, send/receive e-mail, manage calendar, roughly edit/read document, and perform like operation with the help of a Personal Information Manager (PIM). The PDA also provides a function similar to the Personal Computer (PC) for allowing user to install various application programs. The PDA can further provide multimedia functions, such as playing MP3 and movies by installing the relevant application programs. Therefore, the important PIM data and the application data generated by various application programs (e.g. Word document files and MP3 music files) are recorded in the PDA. In order to prevent the data from carelessly damaging, a backup program is commonly installed in the PDA for users to backup the important data. The backup data mentioned above is commonly saved outside the PDA, for example, it is saved in a PC which is connected to the PDA via a link.

[0007] Analyzing the data/program saved in the PDA, it is found that they can be roughly classified into following categories: the system file/device driver, the registry, the user-installed application program and its related dynamic-link library (DLL), the application data generated by the application program, and the PIM data. The user can restore the backup data to the original PDA at any time with the help of non-regularly backing up the internal data of the PDA. However, it is common that we have to load the backup data of the original PDA into another PDA and restore it therein, for example, in the case of replacing the PDA with a new one. **FIG. 1A** is a schematic block diagram illustrating the backing up data between different PDAs. **FIG. 1B** is a schematic block diagram illustrating a PDA 2 of **FIG. 1A** after the data had been restored to it using a conventional

technique. Referring to both **FIG. 1A** and **FIG. 1B**, it is assumed that the data in the PDA 110 is to be backed up and the backup data file 130 is to be obtained, the data of the PDA 110 is restored into the PDA 120 by using the backup data file 130. Wherein, the system file/device driver 112 is commonly embedded in a read only memory (ROM) inside the PDA 110, thus it is not possible to rewrite it, and it will not disappear due to the PDA hardware reset. Therefore, its backup is not required.

[0008] When performing the backup operation, the PDA 110 copies its registry 111, the PIM data 114, the user-installed application program DLL 113, and various application programs and its application data 115 into the backup data file 130. After the backup data file 130 is loaded into the PDA 120, the data in the backup data file 130 is restored, such that the registry 121a, the PIM data 124a, the application program DLL 123a, and various application programs and its application data 125a are replaced with the registry 121b, the PIM data 124b, the application program DLL 123b, and various application programs and its application data 125b.

[0009] The system setup and hardware device drivers among different PDAs are not all the same. Therefore, if the data is just roughly restored (replaced) by using the above method, the system may be crashed due to the difference among the PDA hardware, the system file/device driver, the registry, the application program as well as the difference existed in various application programs.

[0010] Further, even the system crash problem mentioned above does not exist, for example, in the case of restoring the backup data to the same PDA, in the conventional art, in order to restore the data, it is required to install a backup/restore program which is used in generating the backup data file (it is because all programs are disappeared after the hardware is reset). Therefore, it is very inconvenient to the user.

SUMMARY OF INVENTION

[0011] In the light of the above problems, it is an object of the present invention to provide a method for restoring backup data. The method detects a correlation between the system to which the data is restored and the system where the data is backed up from previously, then it is determined which backup data can be restored, so as to avoid the system crash problem due to the inconsistency between the restore data and system.

[0012] It is another object of the present invention to provide a method for restoring backup data. With such method, the mobile device can execute a self-restore program included in the backup data file and perform the data restore operation without having to install additional restore program.

[0013] The present invention provides a method for restoring backup data in an electronic system. The method comprises providing a backup data file, and the backup data file includes at least one record of application data. Then, an application program corresponding to the application data is searched within a registry of the electronic system. If it is found, the application data is restored; otherwise, the application data is not restored.

[0014] According to a method for restoring backup data described in an embodiment of the present invention, the

backup data file further comprises a Personal Information Manager (PIM) data, and the method for restoring backup data further comprises a step of reading and restoring the PIM data to the electronic system.

[0015] According to a method for restoring backup data described in an embodiment of the present invention, the backup data file further comprises an original model data, and the method for restoring backup data further comprises reading the model data of the electronic system; and comparing the model data with the original model data, if they are matched, all backup data in the backup data file are restored.

[0016] The present invention further provides a method for restoring backup data in a mobile device. The method comprises providing a backup data file, and the backup data file comprises a self-restore program. Then, the self-restore program is executed in the mobile device to restore data.

[0017] According to a method for restoring backup data described in an embodiment of the present invention, wherein the step of executing the self-restore program and performing the data restore further comprises determining whether the backup data file contains the backup data or not, if it does not, the execution of the self-restore program is terminated.

[0018] According to a method for restoring backup data described in an embodiment of the present invention, the backup data file further comprises a PIM data, and the step of executing the self-restore program and performing the data restore further comprises a step of reading and restoring the PIM data to the mobile device.

[0019] According to a method for restoring backup data described in an embodiment of the present invention, the backup data file further comprises at least one record of application data. In addition, the step of executing the self-restore program and performing the data restore further comprises searching an application program corresponding to the application data within a registry of the mobile device. If it is found, the application data is restored; otherwise, the application data is not restored.

[0020] With the present invention, since which backup data can be restored is determined by detecting the target system to which the data is restored before restoring the backup data, the present invention can prohibit the restoring (overwriting) data which is inconsistent with the target system to the target system, and further prevents the system crash problem from happening. In addition, the present invention further provides a self-restored backup data file which can restore the backup data without having to install the restore program.

BRIEF DESCRIPTION OF DRAWINGS

[0021] The accompanying drawings are included to provide a further understanding of the invention, and are incorporated in and constitute a part of this specification. The drawings illustrate embodiments of the invention, and together with the description, serve to explain the principles of the invention.

[0022] FIG. 1A is a schematic block diagram illustrating the backing up data between different PDAs.

[0023] FIG. 1B is a schematic block diagram illustrating a PDA 2 of FIG. 1A after the data had been restored to it using a conventional technique.

[0024] FIG. 2 is a flow chart illustrating a method for restoring backup data according to an embodiment of the present invention.

[0025] FIG. 3 is a schematic diagram illustrating an internal data of a PDA 2 in FIG. 1A after the data had been restored to it according to an embodiment of the present invention.

[0026] FIG. 4 is a flow chart illustrating another method for restoring backup data according to an embodiment of the present invention.

[0027] FIG. 5 is a structure diagram of a backup data file according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0028] Since the system setup and hardware device drivers among different electronic systems are not all the same. Therefore, if the data is just roughly restored by using the above method, the system may be crashed due to the existing difference. The PDA is exemplified for describing the present invention hereinafter. However, the present invention is not necessarily limited by it. The data/programs saved in the PDA are roughly classified into following categories: the system file/device driver, the registry, the user-installed application program and its related dynamic-link library (DLL), the application data generated by the application program, and the PIM data. Wherein, the system file/device driver is commonly embedded in a read only memory (ROM) inside the PDA, thus it is not possible to rewrite it, and it will not disappear due to the PDA hardware reset. Therefore, its backup is not required. The registry is a configuration data file of the entire system, and the registry is not suitable for other PDA, thus the registry cannot be just roughly restored/replaced. The application program and its related DLL may be relevant to the system, in order to avoid the system crash; it cannot be just roughly restored/replaced. These files may be restored through the re-installation. Since the application data and the PIM data are the user's specific personal data, and the lose will not be recovered once it is lost/damaged, these are the data most concerned by the user. Therefore, it is required to irregularly backup the application data and the PIM data, such that the recovering of the important data at any time is possible.

[0029] FIG. 2 is a flow chart illustrating a method for restoring backup data according to an embodiment of the present invention. FIG. 3 is a schematic diagram illustrating an internal data of a PDA 2 in FIG. 1A after the data had been restored to it according to an embodiment of the present invention. Referring to FIG. 1A, FIG. 2, and FIG. 3, at first, a backup data file is provided (step S201). The backup data file may be generated by backing up the internal data/file of the same PDA previously, or may be generated by backing up the internal data/file of another PDA. For example, the PDA 110 in FIG. 1A backs up its internal data, which comprises a registry 111, a DLL 113, a PIM data 114, and a plurality of application data 115 (wherein these application data corresponds to the application program A, B, and C, respectively), and generates a backup data file 130. Meanwhile, the data of the PDA 120 before the data is

restored to it comprises a registry **121a**, a DLL **123a**, a PIM data **124a**, and a plurality of application data **125a** (wherein these application data corresponds to the application program B, C, and D, respectively).

[0030] In step **S202** and **S203**, the PDA model data stored in the backup data file **130** is compared with the model of the PDA that performs the restore. If they are matched, the inconsistent problem of the backup data and the system does not exist, and the step **S208** is performed, in which step all backup data in the backup data file **130** are restored to the PDA that performs the restore (for example, a conventional restore method is used in this part of the work).

[0031] If the PDA model data stored in the backup data file **130** is different from the model of the PDA that performs the restore, in order to avoid the system crash, the backup data cannot be easily restored. In such case, the PIM data is restored first (step **S204**). As shown in **FIG. 3**, the backup data of the PDA **110** is restored to another PDA (a PDA **320**) according to an embodiment of the present invention. Meanwhile, the PIM data **324** is replaced with the PIM data of the PDA **110**. Since the model of the PDA **110** is different from the model of the PDA **320**, the registry **321** and the DLL **323** cannot be replaced.

[0032] The step **S205** is then performed, in which step the application program corresponding to the application data **115** stored in the backup data file **130** is searched within a registry **321** of the PDA **320**. If the application program corresponding to the application data stored in the backup data file **130** is founded in the PDA **320**, the step **S206** is performed to recover the corresponding application data. Otherwise, the application data is not restored (step **S207**). In the present embodiment, the application program B, C, and D had been installed in the PDA **320**, thus the data corresponding to the application program B, C in the application data **115** stored in the backup data file **130** is restored. It is emphasized that in the present embodiment, the application data corresponding to the application program B, C in the PDA **110** is restored. However, the original application data in the PDA **320** (e.g. the application data **325a** and the application data **325b** shown in the diagram) is not overwritten. In addition, the application data **325c**, which is an original application data in the PDA **320** is also reserved in the present embodiment.

[0033] In accordance with an aspect of the present invention, another embodiment is exemplified hereinafter. **FIG. 4** is a flow chart illustrating another method for restoring backup data according to an embodiment of the present invention. Referring to **FIG. 4**, at first, a backup data file is provided (step **S401**). Similar to the backup data file **130** in the previous embodiment, the backup data file, for example, comprises a registry, a DLL, a PIM data, and a plurality of application data. Comparing with the backup data file in the previous embodiment, the backup data file in the present embodiment further comprises a self-restore program. The backup data file of the self-restore program is such as a file complying with a Portable Executable (PE) format, and the detail information of the PE file format please referring to the related documents from Microsoft. **FIG. 5** is a structure diagram of a backup data file according to an embodiment of the present invention. Referring to **FIG. 5**, the backup data file **500** comprises a self-restore program **501**, a backup data file head **502**, a backup document data **503**, a backup

document information **504**, a backup database data **505**, a backup database information **506**, a backup registry data **507**, and a backup registry information **508**.

[0034] When it is required to restore the backup data, the self-restore program **501** in the backup data file is executed (step **S402**). The backup data file head **502** records how many records of data and the length of each record of the data in the backup data file **500**. Thus, in step **S403**, it is determined whether the backup data is existed in the backup data file **500** by checking the file head **502**. If it is determined that there is no backup data in the backup data file **500**, in step **S404**, the data backup and restore process is terminated. Otherwise, the step **S405** is performed. Since the process of steps **S405**–**S411** are the same as in the previous embodiment, its detail description is omitted here.

[0035] It is known from the above embodiments that the method provided by the present invention can dynamically query the file types supported by the object system (e.g. PDA), recover the supported relevant file and data as well as all PIM data. Therefore, the present invention can avoid the system crash due to the system hardware difference, and successfully restore the important user data back to the system.

[0036] In addition, if the backup data file does not support the self-restore function, it is required to use a restore program to restore its data. In considering the physical user environment, since the software of the mobile device is generally installed via a PC, thus once in the case that the mobile device cannot find a PC to install its software and the data has to be immediately restored, the advantages of the present invention is more obvious. Moreover, since the backup data file can be self-restored, it is no need to install the restore program, it makes the data restore more convenient.

[0037] Although the invention has been described with reference to a particular embodiment thereof, it will be apparent to one of the ordinary skill in the art that modifications to the described embodiment may be made without departing from the spirit of the invention. Accordingly, the scope of the invention will be defined by the attached claims not by the above detailed description.

1. A method suitable for an electronic system for restoring a backup data, comprising:

providing a backup data file comprising at least an application data; and

searching an application program corresponding to the application data within a registry of the electronic system,

if it is found that there is an application program corresponding to the application data, the application data is restored;

if it is found that there is no application program corresponding to the application data, the application data is not restored.

2. The method for restoring the backup data of claim 1, wherein the backup data file further comprises a Personal Information Manager (PIM) data, and the method for restoring the backup data further comprises:

reading and restoring the Personal Information Manager (PIM) data to the electronic system.

3. The method for restoring the backup data of claim 2, wherein the backup data file further comprises an original model data, and the method for restoring the backup data further comprises:

reading an current model data of the electronic system; and

comparing the current model data with the original model data, and if they are matched, all backup data in the backup data file are restored.

4. The method for restoring the backup data of claim 1, wherein the electronic system is a mobile device.

5. The method for restoring the backup data of claim 4, wherein the mobile device is a Personal Digital Assistant (PDA).

6. The method for restoring the backup data of claim 5, wherein the PDA is a Pocket PC.

7. The method for restoring the backup data of claim 4, wherein the mobile device is a Smart Phone.

8. A method used in a mobile device for restoring a backup data, comprising:

providing a backup data file comprising a self-restore program; and

executing the self-restore program and performing the data restore in the mobile device.

9. The method for restoring the backup data of claim 8, wherein the step of executing the self-restore program and performing the data restore comprises:

determining whether the backup data is existed in the backup data file, and if there is no backup data, the executing of the self-restore program is terminated.

10. The method for restoring the backup data of claim 9, wherein the backup data file further comprises an original

model data, and the step of executing the self-restore program and performing the data restore further comprises:

reading an current model data of the mobile device; and

comparing the current model data with the original model data, and if they are matched, all backup data in the backup data file are restored.

11. The method for restoring the backup data of claim 10, wherein the backup data file further comprises a Personal Information Manager (PIM) data, and the step of executing the self-restore program and performing the data restore further comprises:

reading and restoring the Personal Information Manager (PIM) data to the mobile device.

12. The method for restoring the backup data of claim 11, wherein the backup data file at least comprises an application data, and the step of executing the self-restore program and performing the data restore further comprises:

searching an application program corresponding to the application data within a registry of the mobile device, if it is found that there is an application program corresponding to the application data, the application data is restored; and

if it is found that there is no application program corresponding to the application data, the application data is not restored.

13. The method for restoring the backup data of claim 8, wherein the mobile device is a Personal Digital Assistant (PDA).

14. The method for restoring the backup data of claim 13, wherein the PDA is a Pocket PC.

15. The method for restoring the backup data of claim 8, wherein the mobile device is a Smart Phone.

* * * * *