

## DESCRIPTION

PRINTING CONTROLLER, GUI DISPLAY METHOD, PRINTER  
DRIVER, AND RECORDING MEDIUM

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TECHNICAL FIELD

The present invention relates generally to printing  
controllers, GUI display methods, printer drivers, and  
recording media, and more particularly to a printing  
10 controller and a GUI display method that support displaying in  
multiple languages, a printer driver that causes a computer to  
execute the GUI display method, and a recording medium that  
contains the printer driver.

15 BACKGROUND ART

Printer drivers are program modules for controlling  
a printer. In the case of causing a document to be printed  
from an application, the printer driver causes its own GUI  
(Graphical User Interface) to be displayed on a display unit.  
20 For example, in a common Windows (registered trademark)  
application, the application causes a Print dialog to be  
displayed in response to selection of the Print menu item of a  
File menu. Pressing a Property button in the Print dialog  
causes the GUI of a printer driver corresponding to a printer  
25 selected as a printing destination, that is, a Printer

Property dialog, to be displayed.

It is preferable that a character string on the GUI of a printer driver, such as a Printer Property dialog, be displayed in a language suitable for a user the same as in other common applications. For example, it is convenient for users if displaying is performed in Japanese in an environment where users are Japanese and in English in an environment where users are English-speaking people. Accordingly, so-called "multi-language support" is provided in the conventional printer driver. (See, for example, Japanese Laid-Open Patent Application No. 2000-181650.)

Conventionally, however, common printer drivers are packaged and released on a language basis. Accordingly, if users of such printer drivers wish to use a printer driver in multiple languages, there is a problem in that as many installation operations of printer drivers as the number of languages should be performed. Further, there is also a problem in that printer drivers installed separately for respective languages appear to be printer drivers for different printers to an application although the printer drivers are for the same printer.

A printer driver in support of multiple languages (hereinafter referred to as "multi-language driver") can solve such a problem. In a single installation of the multi-language driver, language-dependent files for multiple

languages are installed. When a language to be used is selected after the installation, for example, at the time of printing, the language-dependent files to be used are switched in response to the selection, so that multiple languages can  
5 be used. Here, the language-dependent files include a resource file in which a character string displayed on a GUI is stored and a Help file.

In the case of the multi-language driver, however, the language-dependent files of languages that are not usually  
10 used are also loaded in their full sizes as they are into a storage medium such as a hard disk in a single installation, thus causing the problem of unnecessarily reducing available resources such as a storage medium.

## 15 DISCLOSURE OF THE INVENTION

Embodiments of the present invention may solve or reduce one or more of the above-described problems.

According to one embodiment of the present invention, there are provided a printing controller and a GUI display  
20 method in which one or more of the above-described problems may be eliminated, a printer driver that causes a computer to execute the GUI display method, and a recording medium that stores the printer driver.

According to one embodiment of the present invention,  
25 there are provided a printing controller and a GUI display

method that can perform displaying in multiple languages in a simplified manner while reducing consumption of resources, a printer driver that causes a computer to execute the GUI display method, and a recording medium that contains the  
5 printer driver.

According to one embodiment of the present invention, there is provided a printing controller having a printer driver configured to display a GUI using language-dependent files containing display character strings of corresponding  
10 languages, the printing controller including a compressed language-dependent file into which the language-dependent files are compressed, a language selection part configured to cause one of the languages which one is used by the printer driver to be selected, and an expansion part configured to  
15 expand one of the language-dependent files related to the selected one of the languages from the compressed language-dependent file, wherein the printer driver displays the GUI using the one of the language-dependent files expanded by the expansion part.

20 According to one embodiment of the present invention, there is provided a printing controller having a printer driver configured to display a GUI based on a resource file containing temporary display character strings directly related to corresponding display components, the printing  
25 controller including a language-dependent file configured to

contain a display character string for each of a plurality of languages with respect to each of the temporary display character strings contained in the resource file, and a language selection part configured to cause one of the languages which one is used by the printer driver to be selected, wherein the printer driver obtains one or more of the display character strings related to the one of the languages selected by the language selection part based on the temporary display character strings contained in the resource file, and displays the GUI using the obtained one or more of the display character strings.

According to the above-described printing controllers, it is possible to perform displaying in multiple languages in a simplified manner while reducing consumption of resources.

According to one embodiment of the present invention, there is provided a method of displaying a GUI in a printing controller having a printer driver configured to display the GUI using language-dependent files containing display character strings of corresponding languages, the method including the steps of: (a) causing one of the languages which one is used by the printer driver to be selected; (b) expanding one of the language-dependent files related to the selected one of the languages from a compressed language-dependent file into which the language-dependent files are

compressed; and (c) displaying the GUI of the printer driver using the one of the language-dependent files expanded in step (b).

According to one embodiment of the present invention,  
5 there is provided a method of displaying a GUI in a printing controller having a printer driver configured to display the GUI based on a resource file containing temporary display character strings directly related to corresponding display components, the method including the steps of: (a) causing one  
10 of a plurality of languages which one is used by the printer driver to be selected; (b) obtaining, from a language-dependent file configured to contain a display character string for each of the languages with respect to each of the temporary display character strings contained in the resource  
15 file, one or more of the display character strings related to the one of the languages selected in step (a) based on the resource file; and (c) displaying the GUI using the obtained one or more of the display character strings in step (b).

According to one embodiment of the present invention,  
20 there is provided a printer driver for causing a computer to execute any of the above-described GUI display methods.

According to one embodiment of the present invention,  
there is provided a computer-readable recording medium on  
which a printer driver for causing a computer to execute any  
25 of the above-described GUI display methods is recorded.

Thus, according to embodiments of the present invention, it is possible to provide a printing controller and a GUI display method that can perform displaying in multiple languages in a simplified manner while reducing consumption of resources, a printer driver for causing a computer to execute the GUI display method, and a recording medium having the printer driver recorded thereon.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of the present invention will become more apparent from the following detailed description when read in conjunction with the accompanying drawings, in which:

FIG. 1 is a block diagram showing a printing system according to one embodiment of the present invention;

FIG. 2 is a block diagram showing a hardware configuration of a printing controller shown in FIG. 1 according to the present invention;

FIG. 3 is a diagram for giving an overview of processing of the printing controller according to a first embodiment of the present invention;

FIG. 4 is a flowchart for illustrating an operational procedure of a printer driver according to the first embodiment of the present invention;

FIGS. 5A through 5D are diagrams showing how the

display language of a language switching dialog switches  
according to the first embodiment of the present invention;

FIG. 6 is a diagram for giving an overview of  
processing of the printing controller according to a second  
5 embodiment of the present invention;

FIG. 7 is a diagram showing language-dependent file  
definitions according to the second embodiment of the present  
invention;

FIG. 8 is a diagram showing a language-dependent  
10 file definition according to XML according to the second  
embodiment of the present invention;

FIG. 9 is a flowchart for illustrating an  
operational procedure of a printer driver according to the  
second embodiment of the present invention;

15 FIG. 10 is a diagram showing a GUI of the printer  
driver displayed based on a form resource file according to  
the second embodiment of the present invention;

FIG. 11 is a diagram showing the case where the GUI  
of the printer driver is displayed in the Japanese language  
20 according to the second embodiment of the present invention;  
and

FIG. 12 is a diagram showing the case where the GUI  
of the printer driver is displayed in the English language  
according to the second embodiment of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

A description is given, with reference to the accompanying drawings, of embodiments of the present invention.

FIG. 1 is a block diagram showing a printing system 1 according to one embodiment of the present invention.

Referring to FIG. 1, the printing system 1 includes a printing controller 10 and a printer 20 that are connected through a network 30 (either wire or wireless) such as a LAN (Local Area Network).

The printer controller 10 instructs the printer 20 to print, for example, an electronic document using a printer driver, and is configured of, for example, a general-purpose computer such as a PC (Personal Computer). The printer 20 has a printing function, and may be configured of a common printer or a multi-function copier called "multi-function machine."

The printing system 1 may include multiple printing controllers 10 and printers 20. Further, the printing controller 10 and the printer 20 may be connected with a cable such as a USB cable.

FIG. 2 is a block diagram showing a hardware configuration of the printing controller 10 according to this embodiment. Referring to FIG. 2, the printing controller 10 includes a drive unit 100, a secondary storage unit 102, a memory unit 103, a processor 104, an interface unit 105, a display unit 106, and an input unit 107, all of which are

connected to one another through a bus B.

A program that implements processing in the printing controller 10, such as a printer driver, is provided on a recording medium 101 such as a CD-ROM. When the recording medium 101 on which a program is recorded is loaded into the drive unit 100, the program is installed in the secondary storage unit 102 from the recording medium 101 through the drive unit 100. The secondary storage unit 102 contains the installed program as well as necessary files and data.

The program is read from the secondary storage unit 102 to be stored in the memory unit 103 in response to an instruction to start the program. The processor 104 realizes functions relating to the printing controller 10 in accordance with the program contained in the memory unit 103. The interface unit 105 is used to connect to the network 30 of FIG. 1. The display unit 106 displays a GUI (Graphical User Interface) according to the program. The input unit 107 includes a keyboard and a mouse, and is used to input various operational instructions.

The program does not necessarily have to be installed from the recording medium 101, and may be downloaded from other computers through the network 30.

A description is given of an operational procedure of the printing controller 10. FIG. 3 is a diagram for giving an overview of processing of the printing controller 10

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according to a first embodiment of the present invention.

Referring to FIG. 3, the recording medium 101 contains a printer driver 11 and a compressed language-dependent file 12.

5           The printer driver 11 has logic common to multiple languages. Accordingly, the single printer driver 11 is used in common whichever language is used. The compressed language-dependent file 12 includes compressed language-dependent files of respective languages. Information  
10 dependent on a language in the printer driver 11 is contained in a language-dependent file corresponding to the language. Accordingly, each language has its corresponding language-dependent file. The language-dependent information includes a character string displayed on a GUI and Help information. For  
15 example, the character string displayed on a GUI is contained in a DLL (Dynamic Link Library) file called "resource file" in the Windows (registered trademark) environment. Accordingly, such a resource file corresponds to the language-dependent file according to this embodiment. In the resource file, (the  
20 IDs of) display components on a GUI are directly correlated with their corresponding character strings to be displayed in the display components (display character strings).

Referring to FIG. 3, at the time of installing the printer driver 11, in step S11, the printer driver 11 is  
25 copied to the secondary storage unit 102 in the printing

controller 10, and in step S12, the compressed language-dependent file 12 is copied to the secondary storage unit 102 in the printing controller 10. Then, in step S13, a language-dependent file 121 of a default language is expanded from the compressed language-dependent file 12. The expanded language-dependent file 121 is determined as the language-dependent file of a language to be displayed (display language). FIG. 3 shows the case where the language-dependent file 121 of the Japanese language is expanded. In FIG. 3, J, E, G, F, I, S, and D in the compressed language-dependent file 12 stand for the Japanese language, the English language, the German language, the French language, the Italian language, the Spanish language, and the Dutch language, respectively.

A description is given below, using a flowchart, of an operational procedure in the case of the installed printer driver 11 causing a GUI such as a Printer Property dialog to be displayed. The Printer Property dialog, which is one of the GUIs that the printer driver 11 causes to be displayed, is for causing various printing conditions to be determined. For example, common Windows (registered trademark) applications cause a Print dialog to be displayed in response to selection of the Print menu item of a File menu. A printer driver corresponding to a printer selected as a printing destination causes the Printer Property dialog to be displayed in response to the pressing of a Property button in the Print dialog.

FIG. 4 is a flowchart for illustrating an operational procedure of the printer driver 11 according to the first embodiment of the present invention. The step numbers in FIG. 4 correspond to those in FIG. 3; however, FIG. 3 does not show all the steps in FIG. 4.

Referring to FIG. 4, if a user gives an instruction to display a Printer Property dialog by clicking a Property button in a Print dialog displayed by an application in step S111, in step S112, the printer driver 11 reads the language-dependent file of a language currently determined as a language to be displayed. Accordingly, in the case of FIG. 3, the language-dependent file 121 of the Japanese language is read unless switching of languages as described below is performed after installation. Next, in step S113, the printer driver 11 causes the Printer Property dialog to be displayed using the read language-dependent file 121. Accordingly, in the case of FIG. 3, a character string on the Printer Property dialog is displayed in the Japanese language.

Next, it is assumed that the user gives an instruction to switch languages in the Printer Property dialog in step S114. The switching of languages may be performed with a GUI component for causing a language to be selected (such as a combo box) by displaying the GUI component in the Printer Property dialog. Alternatively, the switching of languages may be performed with a GUI component (such as a

combo box) on another dialog for switching languages (hereinafter referred to as "language switching dialog") by causing the language switching dialog to be displayed from the Printer Property dialog.

5           In step S115, the printer driver 11 expands the language-dependent file of a language selected in the language switching instruction from the compressed language-dependent file 12. In the case of FIG. 3, a language-dependent file 122 of the English language is expanded. Next, in step S116, the  
10 printer driver 11 deletes the language-dependent file of the language that has been a target of display (the language-dependent file 121 of the Japanese language in the case of FIG. 3). In step S117, the printer driver 11 causes character strings on GUIs such as the Printer Property dialog and the  
15 language switching dialog to be displayed using the newly expanded language-dependent file. Accordingly, in FIG. 3, a character string on the GUI is switched to being displayed in the English language.

FIGS. 5A through 5D are diagrams showing how the  
20 display language of the language switching dialog switches according to the above-described operation.

FIG. 5A shows a language switching dialog 130 in which a language-dependent file for the Japanese Language is selected. A combo box 131 is disposed in the language  
25 switching dialog 130 as a GUI component for switching

languages.

As shown in FIG. 5B, a user can switch display languages using the combo box 131. In FIG. 5B, "English" is selected. Pressing an OK button 132 with "English" being  
5 selected in FIG. 5C switches the character strings displayed in the language switching dialog to the English language through the processing of step S115 through S117 of FIG. 4 as shown in FIG. 5D.

As described above, according to the printing  
10 controller 10 according to the first embodiment, language-dependent files other than the language-dependent file of a language to be displayed are retained in a compressed state. Accordingly, it is possible to reduce consumption of resources such as the secondary storage unit 102 compared with the case  
15 of retaining each language-dependent file in the size of its expanded state.

In the Windows (registered trademark) environment, a resource file, which corresponds to a language-dependent file, is implemented as a DLL. However, since the DLL requires  
20 operations such as compiling and linking for its generation, there may be some inconvenience in handling the DLL. Therefore, a description is given of a second embodiment where handling a language-dependent file is facilitated.

FIG. 6 is a diagram for giving an overview of  
25 processing of the printing controller 10 according to the

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second embodiment. Referring to FIG. 6, the recording medium 101 contains a printer driver 21, a language-dependent file 22, and a form resource file 23.

The printer driver 21 has logic common to multiple languages. Accordingly, the single printer driver 21 is used in common whichever language is used. In the form resource file 23, (the IDs of) display components on a GUI (Graphical User Interface) are directly correlated with their corresponding character strings to be displayed in the display components (display character strings). For example, the form resource file 23 is implemented as a DLL resource file in the Windows (registered trademark) environment. In the form resource file 23 according to this embodiment, however, not a character string to be actually displayed but a character string in the form of an ID (hereinafter referred to as "temporary display character string") is correlated with its corresponding display component.

In the language-dependent file 22, display character strings to be actually displayed are contained in text format for each language. The language-dependent file 22 may be separately provided for each language or be a single file divided on a language-basis. In this embodiment, it is assumed that the language-dependent file 22 is separately provided for each language. The language-dependent file 22 defines the correspondence between the temporary display

character strings in the form resource file 23 and the display character strings.

FIG. 7 is a diagram showing language-dependent file definitions according to the second embodiment. In FIG. 7,

5 (a) indicates the contents of a definition of the language-dependent file 22 for the Japanese language, and (b) indicates the contents of a definition of the language-dependent file 22 for the English language. In each case, the display character strings for their corresponding display components are defined  
10 in text format in the form of <temporary display character string> = <display character string>. That is, for example, "STR\_OK" and "STR\_CANCEL" represent temporary display character strings. In the form resource file 23, these temporary display character strings in the form of IDs are  
15 correlated with their corresponding display components. In the language-dependent files 22 of FIG. 7, a Japanese display character string corresponding to "STR\_CANCEL" is defined as "キャンセル", and its English counterpart is defined as "Cancel."

The language-dependent file 22 may also be defined  
20 in XML (eXtensible Markup Language) format. FIG. 8 is a diagram showing a language-dependent file definition according to XML according to the second embodiment. FIG. 8 shows the case of a single language-dependent file divided on a language basis.

25 In a language-dependent file 22a of FIG. 8, for each

language, a language element is defined as the child element of a <LangList> element enclosed by <LangList> tags. A language to which each language element corresponds is identified by the name attribute of the language element. In  
5 FIG. 8, a language element 2201 corresponds to the Japanese language, and a language element 2202 corresponds to the English language.

In each language element, key elements are defined as child elements. In one key element, the correspondence  
10 between a temporary display character string and a display character string is defined. The value of the name attribute of the key element indicates a temporary display character string. The value of a word element, which is the child element of the key element, indicates a display character  
15 string. Accordingly, for example, in a key element 2201a, which is a child element of the language element 2201 corresponding to the Japanese language, "キャンセル" is defined as the display character string corresponding to "STR\_CANCEL."  
Further, in a key element 2202a, which is a child element of  
20 the language element 2202 corresponding to the English language, "Cancel" is defined as the display character string corresponding to "STR\_CANCEL."

Referring back to FIG. 6, at the time of installing the printer driver 21, the printer driver 21 is copied in step  
25 S21, the language-dependent files 22 are copied in step S22,

and the form resource file 23 is copied in step S23, to the secondary storage unit 102 in the printing controller 10. At this point, a language to be displayed is determined automatically by an installer, or by a user's selection.

5           A description is given below, using a flowchart, of an operational procedure at the time of the installed printer driver 21 causing a GUI such as a Printer Property dialog to be displayed.

FIG. 9 is a flowchart for illustrating an  
10 operational procedure of the printer driver 21 according to the second embodiment. The step numbers in FIG. 9 correspond to those in FIG. 6; however, FIG. 6 does not show all the steps in FIG. 9.

Referring to FIG. 9, if a user gives an instruction  
15 to display a Printer Property dialog in step S211, in step S212, the printer driver 21 reads the form resource file 23. Here, if the form resource file 23 is treated the same as a regular resource file, the printer driver 21 displays a GUI as shown in FIG. 10.

20           FIG. 10 is a diagram showing a GUI of the printer driver 21 displayed based on the form resource file 23. As shown in FIG. 10, a temporary display character string such as "STRXXXX" is directly displayed as a display character string in each display component on the dialog. This does not make  
25 any sense to the user as a user interface. Accordingly, the

following operation is performed.

After step S212, in step S213, the printer driver 21 reads the language-dependent file 22 of a language currently determined as a target of display, and in step S214, the  
5 printer driver 21 replaces the temporary display character strings in the form resource file 23 with corresponding display character strings in the read language-dependent file 22 based on their correspondence in the language-dependent file 22. FIG. 6 shows the case where a language-dependent  
10 file 221 of the Japanese language is read.

Next, in step S215, the printer driver 21 causes the Printer Property dialog to be displayed using the replacing display character strings. Accordingly, in the case of FIG. 6, the character strings on the Printer Property dialog are  
15 displayed in the Japanese language.

FIG. 11 is a diagram showing the case where the GUI of the printer driver 21 is displayed in the Japanese language according to the second embodiment. Unlike in FIG. 10, the display character string of each display component of the  
20 dialog in FIG. 11 is displayed in the Japanese language. This is because the temporary display character strings that are directly displayed in FIG. 10 are replaced with display character strings in the Japanese language.

Next, it is assumed that the user gives an  
25 instruction to switch languages in the Printer Property dialog

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in step S216. The switching of languages may be performed in the same manner as in the first embodiment.

In step S217, the printer driver 21 determines as a target of display and newly reads the language-dependent file 22 of the selected language. Next, in step S218, the printer driver 21 replaces the temporary display character strings with corresponding display character strings in the newly read language-dependent file 22, and causes the Printer Property dialog to be displayed using the replacing display character strings.

FIG. 6 shows the case where the language-dependent file 221 of the Japanese language is switched to a language-dependent file 222 of the English language. Accordingly, in this case, the character strings on the Printer Property dialog are displayed in the English language.

FIG. 12 is a diagram showing the case where the GUI of the printer driver 21 is displayed in the English language according to the second embodiment. Unlike in FIG. 10, the display character string of each display component of the dialog is displayed in the English language in FIG. 12. This is because the temporary display character strings that are directly displayed in FIG. 10 are replaced with display character strings in the English language.

As described above, according to the printing controller 10 according to the second embodiment, the

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language-dependent file 22 can be implemented with a file in text format. Accordingly, handling a language-dependent file is facilitated, for example, it is possible to check displaying of a GUI without performing compiling and linking after editing the language-dependent file 22. Further, since the language-dependent file 22 according to the second embodiment is in text format, it is possible to reduce consumption of resources such as the secondary storage unit 102 without compressing the language-dependent file 22.

However, the language-dependent files 22 other than that determined as a display target may be compressed the same as in the first embodiment. The operational procedure in this case is obvious from the first embodiment and the second embodiment, and a description thereof is omitted.

According to one embodiment of the present invention, there is provided a printing controller having a printer driver configured to display a GUI using language-dependent files containing the display character strings of corresponding languages, the printing controller including a compressed language-dependent file into which the language-dependent files are compressed, a language selection part configured to cause one of the languages which one is used by the printer driver to be selected, and an expansion part configured to expand one of the language-dependent files related to the selected one of the languages from the

compressed language-dependent file, wherein the printer driver displays the GUI using the one of the language-dependent files expanded by the expansion part.

According to one embodiment of the present invention,  
5 there is provided a printing controller having a printer driver configured to display a GUI based on a resource file containing temporary display character strings directly related to corresponding display components, the printing controller including a language-dependent file configured to  
10 contain a display character string for each of multiple languages with respect to each of the temporary display character strings contained in the resource file, and a language selection part configured to cause one of the languages which one is used by the printer driver to be  
15 selected, wherein the printer driver obtains one or more of the display character strings related to the one of the languages selected by the language selection part based on the temporary display character strings contained in the resource file, and displays the GUI using the obtained one or more of  
20 the display character strings.

According to the above-described printing controllers, it is possible to perform displaying in multiple languages in a simplified manner while reducing consumption of resources.

25 According to one embodiment of the present invention,

there is provided a method of displaying a GUI in a printing controller having a printer driver configured to display the GUI using language-dependent files containing the display character strings of corresponding languages, the method including the steps of: (a) causing one of the languages which one is used by the printer driver to be selected; (b) expanding one of the language-dependent files related to the selected one of the languages from a compressed language-dependent file into which the language-dependent files are compressed; and (c) displaying the GUI of the printer driver using the one of the language-dependent files expanded in step (b).

According to one embodiment of the present invention, there is provided a method of displaying a GUI in a printing controller having a printer driver configured to display the GUI based on a resource file containing temporary display character strings directly related to corresponding display components, the method including the steps of: (a) causing one of multiple languages which one is used by the printer driver to be selected; (b) obtaining, from a language-dependent file configured to contain a display character string for each of the languages with respect to each of the temporary display character strings contained in the resource file, one or more of the display character strings related to the one of the languages selected in step (a) based on the resource file; and

(c) displaying the GUI using the obtained one or more of the display character strings in step (b).

According to one embodiment of the present invention, there is provided a printer driver for causing a computer to  
5 execute any of the above-described GUI display methods.

According to one embodiment of the present invention, there is provided a computer-readable recording medium on which a printer driver for causing a computer to execute any of the above-described GUI display methods is recorded.

10 Thus, according to embodiments of the present invention, it is possible to provide a printing controller and a GUI display method that can perform displaying in multiple languages in a simplified manner while reducing consumption of resources, a printer driver for causing a computer to execute  
15 the GUI display method, and a recording medium having the printer driver recorded thereon.

The present invention is not limited to the specifically disclosed embodiments, and variations and modifications may be made without departing from the scope of  
20 the present invention.

The present application is based on Japanese Priority Patent Applications No. 2006-066269, filed on March 10, 2006, and No. 2007-014071, filed on January 24, 2007, the entire contents of which are hereby incorporated by reference.

## CLAIMS

1. A printing controller having a printer driver configured to display a GUI using language-dependent files containing display character strings of corresponding languages, the printing controller comprising:

a compressed language-dependent file into which the language-dependent files are compressed;

a language selection part configured to cause one of the languages which one is used by the printer driver to be selected; and

an expansion part configured to expand one of the language-dependent files related to the selected one of the languages from the compressed language-dependent file,

wherein the printer driver displays the GUI using the one of the language-dependent files expanded by the expansion part.

2. The printing controller as claimed in claim 1, further comprising:

a deletion part configured to delete one of the language-dependent files which one has been used by the printer driver before the language selection part causes the one of the languages to be selected.

3. A printing controller having a printer driver configured to display a GUI based on a resource file containing temporary display character strings directly related to corresponding display components, the printing  
5 controller comprising:

a language-dependent file configured to contain a display character string for each of a plurality of languages with respect to each of the temporary display character strings contained in the resource file; and

10 a language selection part configured to cause one of the languages which one is used by the printer driver to be selected,

wherein the printer driver obtains one or more of the display character strings related to the one of the  
15 languages selected by the language selection part based on the temporary display character strings contained in the resource file, and displays the GUI using the obtained one or more of the display character strings.

20 4. The printing controller as claimed in claim 3, wherein the language-dependent file contains the display character strings in text format.

5. A method of displaying a GUI in a printing  
25 controller having a printer driver configured to display the

GUI using language-dependent files containing display character strings of corresponding languages, the method comprising the steps of:

(a) causing one of the languages which one is used  
5 by the printer driver to be selected;

(b) expanding one of the language-dependent files related to the selected one of the languages from a compressed language-dependent file into which the language-dependent files are compressed; and

10 (c) displaying the GUI of the printer driver using the one of the language-dependent files expanded in said step (b).

6. The method as claimed in claim 5, further  
15 comprising the step of (d) deleting one of the language-dependent files which one has been used by the printer driver before said step (a) causes the one of the languages to be selected.

20 7. A method of displaying a GUI in a printing controller having a printer driver configured to display the GUI based on a resource file containing temporary display character strings directly related to corresponding display components, the method comprising the steps of:

25 (a) causing one of a plurality of languages which

one is used by the printer driver to be selected;

(b) obtaining, from a language-dependent file configured to contain a display character string for each of the languages with respect to each of the temporary display character strings contained in the resource file, one or more of the display character strings related to the one of the languages selected in said step (a) based on the resource file; and

(c) displaying the GUI using the obtained one or more of the display character strings in said step (b).

8. The method as claimed in claim 7, wherein the language-dependent file contains the display character strings in text format.

9. A printer driver for causing a computer to execute the method of displaying the GUI as set forth in claim 5.

10. A computer-readable recording medium on which a printer driver for causing a computer to execute the method of displaying the GUI as set forth in claim 5 is recorded.

11. A printer driver for causing a computer to execute the method of displaying the GUI as set forth in claim

7.

12. A computer-readable recording medium on which a  
printer driver for causing a computer to execute the method of  
5 displaying the GUI as set forth in claim 7 is recorded.