

Apple v Samsung – Declaration

Highly Confidential-Attorneys Eyes Only

APPLE INC., a California corporation,

Plaintiff,

vs.

SAMSUNG ELECTRONICS CO., LTD., a
Korean business entity; SAMSUNG
ELECTRONICS AMERICA, INC., a New
York corporation; SAMSUNG
TELECOMMUNICATIONS AMERICA,
LLC, a Delaware limited liability company,

Defendants.

CASE NO. 11-cv-01846-LHK

**DECLARATION OF JOE TIPTON COLE IN SUPPORT OF SAMSUNG'S
PROPOSED CLAIM CONSTRUCTION FOR U.S. PATENT NO. 7,698,711**

I. ENGAGEMENT AND QUALIFICATIONS

A. Engagement

1. I, Joe Tipton Cole, have been engaged by Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, (collectively “Samsung”) in connection with the captioned lawsuit to provide my analyses and opinions regarding the interpretation of the term “applet” as used in the claims of U.S. Patent No. 7,698,711 (“the ‘711 patent”).
2. The statements made herein are based on my own knowledge and opinion. I can and will testify to these matters if called at trial.

B. Qualifications

3. I have been actively engaged as a computer software professional since 1977. I am currently the owner and proprietor of Tipton Cole + Co., a professional practice of technical consulting services. The focus of the practice is litigation support for cases involving computer software and associated devices. From 1983-2008, I was President of Tipton Cole + Co., Inc., a software development and consulting company. That company prepared commercial database applications and provided both technical and management consulting services to large and small businesses. From 1977-1983, I was the co-owner of software development and consulting business, Cole & Van Sickle, which we founded in 1977.
4. I began studying computer science in 1968 as a student in National Science Foundation mathematics programs at Southern Methodist University and Texas A&M University. I continued those studies at Washington University in St. Louis and at the University of Texas at Austin, with a focus in the field of Artificial Intelligence.
5. I received a B.A. in Mathematics from the University of Texas in 1974, an M.A. in Computer Science from the University of Texas in 1976, and a Juris Doctorate from the University of Texas in 1978. I am currently licensed by the State Bar of Texas. My license status is “inactive.”
6. I have taught a Data Structure course at the University of Texas and a senior-level Database Management Systems Course at St. Edwards University in Austin.

7. I am being compensated for my time spent on the case at a rate of \$675/hour.

8. My current CV is attached to this report as Exhibit 1.

C. Person of Ordinary Skill in the Art

9. I understand that to determine the ordinary and customary meaning of a claim term, one looks to the meaning that a person of ordinary skill in the art would have given the term at the time of the invention, which in this case is at least as early as August 30, 2005. Based on my experiences and the materials I have reviewed, it is my opinion that one of ordinary skill in the field of the '711 patent is a person in the field of computer science/engineering with either a Bachelor's degree and several years of relevant experience, or a Master's degree with less relevant experience, or a person with equivalent industry experience.

D. Background

10. Plaintiff and Defendant propose different constructions for the term *applet* used in claims 1, 9 and 17 of the '711 patent. The parties' constructions of the term *applet* are as follows:

| <u>Samsung's Proposed Construction</u> | <u>Apple's Proposed Construction</u> |
|---|--|
| A small application designed to run within another program. | An operating system-independent computer program that runs within an application module. |

11. The parties agree that an applet runs "within" another piece of software ("another program" or "an application module," respectively.) Given this

agreement, I focus my analysis on the question whether the term *applet* as used in the patent necessarily includes the limitation that the applet is “operating system-independent.”

E. Exhibits

12. Exhibit 1 is my CV.

13. Exhibit 2 is U.S. Patent No. 7,123,945, issued to Takeshi Kokubo, titled “Task Display Switching Method, Portable Apparatus and Portable Communications Apparatus.”

14. Exhibit 3 contains relevant portions of the deposition transcript (rough) of Mr. Moon Sang Jeong, taken on November 17, 2011.

15. Exhibit 4 is a page from Mr. Jeong's notes with bates label SAMNDCA00139800.

16. Exhibit 5 contains relevant portions of *Wiley's Electrical and Electronics Engineering Dictionary* (2004).

17. Exhibit 6 is a copy of the complete web page from <http://www.memidex.com/applet> as of 2011 Nov 24, discussing the use of applet in various contexts.

18. Exhibit 7 is a compilation of documents that discuss the use of *applets* in the Microsoft Control Panel tools and Microsoft environment more generally.

These documents include the following web pages:

<http://www.techimo.com/forum/applications-operating-systems/123490-windows-9x-question-about-32-bit-16-bit-software-installation.html> (1998);

<http://www.codeproject.com/KB/winsdk/cjbcontrolpanelapplet.aspx> (2000);

<http://forums.windrivers.com/archive/index.php/t-16754.html> (2001);
<http://www.pctools.com/guides/registry/detail/522/> (2002);
<http://www.realgeek.com/forums/control-panel-applet-missing-299659.html>
(2003); http://www.geekgirls.com/windowsxp_controlpanel.htm (2004);
http://www.freewarefiles.com/Microsoft-Color-Control-Panel-Applet_program_16303.html (2005).

19. Exhibit 8 is a compilation of documents that discuss the use of *applets* in the context of AppleScript; a system of scripting language for the Macintosh OS X operating system. These documents include the following web pages:

<http://managingosx.wordpress.com/2006/03/23/universal-applescript-applets/>
(2006); <http://fm.geckotribe.com/applescript/savenonpopup.php3> (2001);
<http://www.applefritter.com/node/15241> (2006);
<http://macscripter.net/viewtopic.php?id=24382> (2002); and
<http://www.mactipsandtricks.com/articles/BAS1.lasso> (2004).

20. Exhibit 9 is a compilation of documents that discuss the use of *applets* in the Linux environment. These documents include the following web pages:

<http://linux.softpedia.com/get/Desktop-Environment/Tools/GetCodecs-5182.shtml>
(2005); http://www.pygtk.org/articles/applets_arturogf/ (2004);
<http://ubuntuforums.org/showthread.php?t=909404>.

21. Exhibit 10 is a webpage that discuss the use of *applets* in the Ruby programming language for Windows-specific environments. The webpage can be found at: <http://www.justskins.com/forums/anyone-using-registerclass-from-33437.html>.

22. Exhibit 11 is a webpage that discuss the use of *applets* in the Flash programming language. The webpage can be found at:

<http://scripts.top4download.com/stock-applets-script/eflow.html>.

23. Exhibit 12 is a webpage discussing the ability of programmers to overcome the default restrictions in Java, thereby gaining access to the operating system of that particular machine. The webpage can be found at: <http://www-personal.umich.edu/~lsiden/tutorials/signed-applet/signed-applet.html>. (The copyright date on the document at the “jarsigner” link is 1994-2004.)

II. THE MEANING OF “APPLET”

A. Intrinsic Evidence

24. There is limited discussion in both the specification and claims of the ‘711 patent, as well as the prosecution history, as to the definition of the term “applet.”

25. While the discussion of “applet” is limited, Samsung’s proposed claim construction is fully supported by the intrinsic evidence. The intrinsic evidence makes clear that the term “applet” is not limited to an “operating system-independent computer program that runs within an application module” as proposed by Apple and its expert, Dr. Givargis. Apple’s reliance on the use of the term “applet” in the Java language is wholly unsupported by the ‘711 patent claim language and specification, as well as the entirety of the ‘711 patent’s prosecution history.

1. The ‘711 Patent Disclosure

26. The ‘711 patent describes an “apparatus and method capable of performing multiple tasks in a portable terminal...in which the menu functions of

the portable terminal can be implemented while continuing to play the music.”
(‘711 Patent Abstract).

27. The apparatus and method of the ‘711 patent were invented to deal with the problem that portable terminals had with allowing users to multi-task while listening to music in the background. As embodied in the prior art, users could not “simultaneously work on several menus of the portable terminal while listening to the music using the conventional MP3 music function.” (‘711 Patent at Col. 1:39-41). The ‘711 patent solved this problem by disclosing an apparatus and method by which “menu functions of the portable terminal can be implemented while continuing to play a music file.” (‘711 Patent at Col. 1:58-61).

28. When discussing the types of multi-tasking the ‘711 invention could perform while listening to an MP3 file, the specification lists, as examples, many different types of applications, including messaging, phone book, scheduling, games, and picture searching. (‘711 Patent at Col. 4:43-49). Additionally, dependent claims 7-8 and 15-16 specifically mention utilizing messaging and phone-book functions while continuing to play MP3 files in the background. (‘711 Patent at Claims 7-8 and 15-16).

29. The wide variety of applications that can be implemented while playing an MP3 file contradicts Apple’s narrow construction of *applet* as only referring to a Java applet being solely utilized in a web browser environment. There is no evidence that any of the disclosed functionalities in the ‘711 patent use the Java programming language or have any relation to a web browser.

2. Specification and Claims

30. The term “applet” appears in the three independent claims of the ‘711 patent, claims 1, 9 and 17. In all three claims, “applet” appears in the same context, namely:

“a music background play object, wherein the music background play object includes an application module including at least one applet.”

31. As used in claims 1, 9 and 17, the term “applet” is never once qualified with the notion that the “applet” is Java based, nor that the “applet” is operating system independent.

32. In fact, the only instance where the term “applet” is discussed in the specification also fails to qualify the term with any requirement that the “applet” be written in Java or be operating system independent. This portion of the specification states:

“FIG.1 is a block diagram of a portable terminal according to an exemplary embodiment of the present invention, in which an MP3 music control processor is not included. Application modules of the portable terminal include at least one applet and each of the application modules, that is each menu of the portable terminal, independently performs multi-tasking.”

(‘711 patent at Col. 3:8-14)

Neither the language quoted here, nor FIG. 1 of the ‘711 patent, even mention much less require the “applet” to be operating system independent as Apple and Dr. Givargis propose.

3. File History

33. The claim language that includes the term “applet” was added at the request of the patent examiner. As detailed in an interview summary, the “[e]xaminer suggested to further include the definition ‘a music background play object’ as ‘wherein the music background play objects including an application module includes at least one applet’ as argued during the interview to distinct [sic] from the icon as taught by KOKUBO.” (U.S. Patent Application No. 11/778,466, Examiner’s Interview Summary of December 16, 2009).

34. As a result of this request, the claims were amended to include the language suggest by the patent examiner. The language added to claims 1, 9 and 17 was “wherein the music background play object includes an application module including at least one applet.”(U.S. Patent Application No. 11/778,466, Applicant’s December 8, 2009 Arguments/Remarks Made in an Amendment at pp. 2-4).

35. While Dr. Givargis is correct when it states that there was no definition of *applet* proposed either by the examiner or the Applicant, Dr. Givargis fails to analyze the one piece of prior art that this amendment was aimed at distinguishing. This piece of prior art is U.S. Patent No. 7,123,945, titled “Task Display Switching Method, Portable Apparatus and Portable Communications Apparatus (the “Kokubo patent” attached hereto as Exhibit 2). Generally speaking, the Kokubo patent was aimed at allowing the “processing of a plurality of tasks in parallel and of displaying a plurality of display regions for displaying data.” (Kokubo patent at Abstract). The Kokubo patent does not deal with the use of Java or applets in order to achieve multi-tasking.

36. The Kokubo patent discloses an apparatus and method that solved the problem of multi-tasking by using icons to switch between applications faster than simply closing out of an application to perform another function. (See Figs. 3-9, Col. 2:29-62). The icons would also correspond to a “predetermined state” of the corresponding application, such as a “suspended or stopped state,” which would further increase the speed of switching between operations. (*Id.* At Col. 3:33-41).

37. The Kokubo patent did not disclose, or even discuss, operating system independence, or dependence, of any of the applications or programs run with the disclosed multi-tasking method. Given that Kokubo is silent on the use of operating system dependent or operating system independent, it is not reasonable to argue that the addition of *applet* to the claims of the '711 patent somehow requires an “applet” as used in the claims of the '711 patent to be an operating system independent piece of software.

4. Conclusion

38. Given the limited amount of intrinsic evidence to construe the term *applet*, I have examined extrinsic evidence to determine the general meaning of *applet* at the time of the invention. In my opinion, the proper construction of the term *applet* in the context of the '711 is “a small application designed to run within another program.” “Applet,” as used in the '711 patent, should not include the limitation “operating system-independent.” My opinion is based on the extrinsic evidence that I present below and is consistent with the intrinsic evidence. This evidence consists of various uses of the term “applet” during the time period

leading up to the '711 patent's priority date of August 30, 2005, as well as the testimony and contemporaneous documentation of the sole inventor of the '711 patent, Mr. Moon-Sang Jeong. This evidence shows that to one of ordinary skill in the art the term *applet* was not limited to "operating system-independent" programs.

B. Extrinsic Evidence

39. Before discussing the evidence that one of ordinary skill in the art would not consider all uses of the term "applet" to be operating system independent, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

40. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

41. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

42. Mr. Jeong's contemporaneous documentation supports his testimony, as does the large quantity of extrinsic evidence which shows that "applet" does not require operating system independence.

43. *Wiley's Electrical and Electronics Engineering Dictionary* (2004) defined "applet" as a "[a] small application designed to run within another program." This definition comports with Samsung's definition of *applet* and makes no mention of the requirement that *applet* be an operating system independent computer program.

44. In addition to this dictionary definition, Apple and Dr. Givargis cite another dictionary that supports Samsung's construction of the term *applet*. Dr. Givargis cites the *McGraw-Hill Dictionary of Scientific and Technical Terms* (6th Ed., 2003) at page 124, which defines *applet* as "a small program, typically written in

Java.” (Givargis Decl. at ¶ 42). Even though this definition refers to Java, it does not require that the *applet* actually be written in Java, or that the applet be operating system independent. Given Apple’s and Dr. Givargis’ absolute position that an *applet* must be operating system independent, Apple’s and Dr. Givargis’ cited definition directly contradicts such an absolute position, and supports Samsung’s construction that *applet* does not require operating system independence.

45. Exhibit 6 illustrates the challenge of presenting a precise, authoritative definition of the term *applet*. Various of the dictionary sources shown in the “Definition references” section of that page limit the term *applet* with the qualification: 1) small; 2) simple; 3) automatically copied; 4) run from a webpage; and 5) **usually** portable between operating systems. Four of the nine include a notion of *inclusion* similar to the “application module including at least one applet” phrase that appears in the claims, the specification and the file history of the ‘711 patent. As a point of interest, however, none of the definitions limits the term *applet* to the realm of *Java applets*.

46. The “Etymological references” section of Exhibit 6 offers to definitive dates, 1990 and 1995, as the date of first use. The 1990 date given by Merriam-Webster matches the date attributed to the Oxford English Dictionary at the Wikipedia page <http://en.wikipedia.org/wiki/Applet>. The date has some significance because Java was unknown in 1990, so that the term *applet* would have a meaning independent of the phrase *Java applet*.

1. As Used in the ‘711 Patent, *Applet* Does Not Refer to a Java Applet

47. Dr. Givargis focuses on definitions of *applet* that are somehow related to the Java programming language. The only evidence Dr. Givargis presents to support this logical leap is that “[l]eading up to 2005, mobile phone manufacturers increasingly produced Java-enabled devices.” (Givargis Decl. at ¶ 22). Under Dr. Givargis’ analysis, the mere fact that some mobile phones were Java-enabled at the time of the invention would require that any mention of *applet* in a patent for mobile devices must refer to a Java applet. The logical fallacy of this conclusion is obvious.

48. Neither the patent nor the file history invoke a Java-based environment as a necessary element of the ‘711 patent. In fact, the word “java” never occurs in the patent itself.

49. Those of skill in the art would not make this logical leap. For those of skill in the art, there is a more expansive view of the term *applet*, one that encompasses more than just *Java applets*.

50. In addition to Java applets, *applet* was used to refer many different programming languages and functionalities. Some of these non-Java related references to an *applet* include:

a. Desktop Applets

51. Use of the term *applet* to describe what Microsoft sometimes calls “Control Panel Tools” was current for some time before and after the filing of the ‘711 patent. (See Exhibit 7)

b. AppleScript Applet

52. AppleScript is a system scripting language used for the Macintosh OS X operating system. AppleScript uses *applets* in its programming language. (See Exhibit 8)

c. Linux Applets

53. The Linux operating system also used the term *applet* extensively in its environment.

54. *Applet* is a term that is also used in the Python programming language for the Linux operating system. An example of one such applet is the GetCodecs applet (See Exhibit 9) Another example of Python *applets* is a collection of Gnome (Linux-specific) applets written in Python. (*Id.*)

55. Not only did Linux use the term *applet*, there were uses of *applet* in reference to specific versions of Linux, such as Ubuntu. (*Id.*)

d. Ruby Applet

56. In addition to the earlier referenced Microsoft desktop applets, another example of a Windows-specific *applet* is an *applet* written in Ruby for the Windows operating system. (See Exhibit 10)

e. Additional Applets

57. Additional uses of the term *applet* can be found in the Visual Basic programming language as well as Flash. (See Exhibit 11).

58. It is my opinion that given the wide ranging use of the term *applet* in the field of the '711 invention, one of skill in the art would not limit the term *applet* to refer solely to a Java applet. Add to this simple fact, the silence of the '711

patent and file history as to any use of Java, it is not correct to equate the term *applet* to the more restrictive *Java applet*.

2. *Applet* Does Not Have to be Operating System Independent

59. As discussed in the previous section, the term “applet,” unadorned with any qualifiers, is subject to many “definitions.” Taken in isolation the vast majority of the definitions do not address the issue of operating system dependence or independence.

60. Dr. Givargis cites no evidence from the intrinsic record that would support limiting the term *applet* to require operating system independence. Dr. Givargis quotes extensively from the file history of the ‘711 patent and asserts that the many passages support his opinion, but he never explains why that is so. In my opinion, taken individually, as a whole, or in any combination, the passages on which Dr. Givargis relies offer no support for his conclusion. In the context of the ‘711 patent, because these references are utterly silent on the question of operating system independence, they contradict Dr. Givargis’ stated opinion.

61. Apple’s own extrinsic evidence also contradicts the conclusion that as used in the ‘711 patent, *applet* means an “operating system independent computer program.” Dr. Givargis places a large emphasis on the *Java’s Developer’s Resource* (1997) by Eliotte Harold (“the Harold reference”). While the selection of a reference that deals specifically with Java is inherently flawed when there is no indication that *applet* as used in the ‘711 patent refers to a Java specific applet, even this Java specific handbook recognizes that an *applet* can be operating system dependent. According to Apple, Harold explains “how

applets can be independent of the host platform.” (Givargis Decl. at ¶ 45). As stated, this conclusion falls short of Apple’s proposed construction in which applets must be independent of the host platform.

62. Furthermore, the Harold excerpt does not say that Java applets running within “Web browsers” are operating system independent. Neither does this excerpt support the conclusions that the web browsers are operating system independent or that web browsers, even if operating system independent, impose that condition on the applets that execute within them. Apple and Dr. Givargis fail to take any possibilities into account.

63. While Java applets may in practice be operating system independent, it takes particular skill and commitment to do so. The Java sandbox in which Java applets run protects the software author from many actions that deal directly with the host operating system – but operating system independence is not automatic. For example, the programmer must refrain from taking advantage of actions or data that are available only on one operating system. Some actions or data may be available on multiple operating systems but under different names or with different details of definition such as signatures of system procedures or data types of system variable or system constants.

64. Additionally not all Java applets are necessarily prohibited from exploiting the peculiar capabilities of their host operating system. A brief exposition of a mechanism to overcome the default sandbox restrictions imposed on Java was readily available to one of ordinary skill in the art. (See Exhibit 12).

65. As discussed previously, the term *applet* is used in conjunction with many different programming languages, and some of those applets are operating system dependent. There are specific *applets* for the Windows operating system, as well as *applets* for different versions of the Linux operating system. As these applets are used specifically with one operating system, they are the essence of operating dependent *applets*. Apple should be well aware of the operating system dependent nature of the term *applet* as it uses *applets* specific to its own operating system.

66. In conclusion, Apple's requirement that an *applet* be operating system independent contradicts the plain language of the '711 patent and the file history, as well as Apple's own extrinsic evidence. At best it can be said that Java *applets* can be operating system independent, but there are instances where that is not the case. There are also many other *applets* that are used for specific operating systems and therefore by definition are not operating system independent. One skilled in the art would not so limit the term *applet* as to **require** operating system independence.

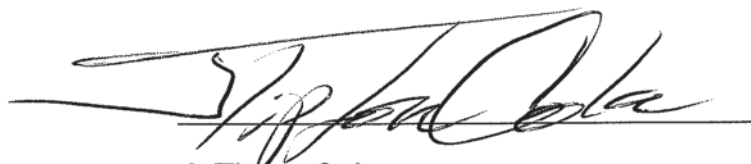
C. Opinion

67. In the Java-free context presented by the '711 patent, one of ordinary skill in the art at the time of the invention would not include the limitation "operating system-independent" as part of the definition of the term *applet*.

68. Based on the above intrinsic and extrinsic evidence, it is my opinion that one of ordinary skill in the art at the time of the invention would have interpreted the term *applet* as "a small application designed to run within another program."

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on November 28, 2011, at Redwood Shores, California.



J. Tipton Cole

EXHIBIT 1

J. TIPTON COLE RESUME

Proprietor, Tipton Cole + Company 2008—Present

Tipton Cole + Company provides technical consulting and expert witness services for clients engaged in IP litigation that involves computer software.

President, Tipton Cole + Company 1983—2007

Tipton Cole + Company is a software development and consulting company. We write commercial database applications and provide both technical and management consulting services to large and small businesses throughout North America and in the UK.

Representative Clients:

Exxon Company USA
Exxon Chemical Americas
Exxon Company International
Wells Fargo
Cigna
IBM
Pacific Bell
Medical Innovations
Dun & Bradstreet
Logistics Data Systems
GTE
Akin, Gump, Strauss, Hauer & Feld

Chairman and Vice President, Cole + Van Sickle 1977 – 1983

- Custom software development for HP3000 MPE systems
- Co-author of PROTOS 4GL product for HP3000
- Developed Step-by-Step implementation methodology

Representative Clients:

Coca-Cola
Texas Mill Supply
Karl Rove + Company
Weyerhaeuser
Hewlett-Packard

Certifications:

ETI*EXTRACT Level III Master User
SAP ABAP/4

Programming Languages:

ABAP/4, Access Basic, ASP.Net, ALGOL, Basic, C, C++, C#, COBOL, Compass, DataEase, FORTRAN, HTML, Java, JavaScript, JSP, LISP, PAL, Pascal, Perl, PL/1, PROTOs, Ruby, Snobol, SPL, SQL, Tcl, VB.NET, Visual Basic, xBase, XML-XSL, Various Assemblers

Operating Systems:

AIX, Apple OS X, CP/M, HPUX, Linux, MPE II - MPE IV, MSDOS 2.0 - 6.0, MVS, Novell 2.12 - 4.1, OS/360, UNIX, UT2D, Windows XP, Windows NT 3.0 – 4.0, Windows 3.0 - 7

Education:

Juris Doctorate, University of Texas at Austin School of Law
Master of Arts in Computer Science, University of Texas at Austin
Bachelor of Arts in Mathematics, University of Texas at Austin

Teaching:

Adjunct Faculty, St. Edwards University, Austin, Texas, 1998,
Instructor in senior-level Database Management Systems course.
University of Texas at Austin, 1982, Instructor in Data Structures.

Deposition Testimony:

BCE Emergis Corporation v. Community Health Solutions of America, et al.
United States District Court, Western District of Texas, Austin Division,
Case No. A-02-CA-741-JN, January, 2004.

Kermit Aguayo and Khan N. Tran v. Universal Instruments Corporation
United States District Court, Southern District of Texas, Houston Division
C.A. NO. H-02-1747, April, 2004.

The Chamberlain Group, Inc. and Johnson Controls Interiors, LLC v. Lear Corporation and Ford Motor Company United States District Court, Northern District of Illinois, Eastern Division, Civil Action No. 1:05-CV-3449, January, 2006.

b-50.com, LLC v. Xformity, Inc. United States District Court, Northern District of Texas, Dallas Division, Civil Action No. 3:04-CV-0542-B, March, 2006.

Hyperion Solutions Corporation v. OutlookSoft Corporation United States District Court, Eastern District of Texas, Marshall Division, Case No. 2:04-CV-436 (TJW), June, 2006.

Spreadsheet Automation Corporation v. Microsoft Corporation, United States District Court, Eastern District of Texas, Marshall Division, Civil Action No. 2:05-CV-000127-TJW, February, 2007.

TV Guide Online, Inc. and TV Guide Online, LLC v. Tribune Media Services, Inc. United States District Court for the District of Delaware, Civil Action No. 05-725 (KAJ), June, 2007.

Taurus IP, LLC, et al. v. Toyota Motor North America, Inc., et al. United States District Court for the Western District of Wisconsin No. 057-C-0158-C, December, 2007.

Taurus IP, LLC, et al. v. Toyota Motor North America, Inc., et al. United States District Court for the Western District of Wisconsin No. 057-C-0158-C, January, 2008.

Grantley Patent Holding, Ltd. v. Clear Channel Communications, Inc., et al. United States District Court, Eastern District of Texas, Lufkin Division, Civil Action No. 9:06c259-RHC, February, 2008.

Visto Corporation v. Research In Motion, Ltd., et al. United States District Court, Eastern District of Texas, Marshall Division, Case No. 2:06-CV-181, July, 2008.

SFA Systems, LLC v. Infor Global Solutions (Michigan), Inc., et al. United States District Court, Eastern District of Texas, Tyler Division, Case No. 6:07-CV-067, July, 2009.

The Chamberlain Group, Inc. and Johnson Controls Interiors, LLC v. Lear Corporation United States District Court, Northern District of Illinois, Eastern Division, Civil Action No. 1:05-CV-3449, March, 2010.

The Chamberlain Group, Inc. and Johnson Controls Interiors, LLC v. Lear Corporation United States District Court, Northern District of Illinois, Eastern Division, Civil Action No. 1:05-CV-3449, August, 2010.

American Imaging Services, Inc. v. Autodesk, Inc. United States District Court, Northern District of Texas, Dallas Division, Civil Action No. 3:09-CV-733-M, July, 2011.

Trial Testimony:

BCE Emergis Corporation v. Community Health Solutions of America, et al.
United States District Court, Western District of Texas, Austin Division,
Case No. A-02-CA-741-JN, February, 2004.

Kermit Aguayo and Khan N. Tran v. Universal Instruments Corporation
United States District Court, Southern District of Texas, Houston Division
C.A. NO. H-02-1747, August, 2004.

Grantley Patent Holding, Ltd. v. Clear Channel Communications, Inc., et al.
United States District Court, Eastern District of Texas, Lufkin Division, Civil
Action No. 9:06c259-RHC, April, 2008.

EXHIBIT 2



US007123945B2

(12) **United States Patent**
Kokubo

(10) **Patent No.:** **US 7,123,945 B2**

(45) **Date of Patent:** **Oct. 17, 2006**

(54) **TASK DISPLAY SWITCHING METHOD,
PORTABLE APPARATUS AND PORTABLE
COMMUNICATIONS APPARATUS**

(75) Inventor: **Takeshi Kokubo**, Kanagawa (JP)

(73) Assignee: **Sony Corporation**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 427 days.

(21) Appl. No.: **10/301,598**

(22) Filed: **Nov. 22, 2002**

(65) **Prior Publication Data**

US 2003/0119562 A1 Jun. 26, 2003

(30) **Foreign Application Priority Data**

Nov. 26, 2001 (JP) 2001-359284

(51) **Int. Cl.**

H04B 1/38 (2006.01)

H04M 1/00 (2006.01)

(52) **U.S. Cl.** **455/566**; 345/169; 715/790

(58) **Field of Classification Search** 345/169;
455/566, 556.1; 715/790

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,651,146 A * 3/1987 Lucash et al. 715/806

5,482,050 A * 1/1996 Smokoff et al. 600/523

6,298,422 B1 * 10/2001 Spilo et al. 711/154

6,304,763 B1 * 10/2001 Jahagirdar et al. 455/566

6,549,302 B1 * 4/2003 Takeda et al. 358/1.9

2001/0016508 A1 * 8/2001 Kido et al. 455/575

2002/0002060 A1 * 1/2002 Singh et al. 455/556

2002/0077156 A1 * 6/2002 Smethers 455/566

2003/0013483 A1 * 1/2003 Ausems et al. 455/556

2003/0045315 A1 * 3/2003 Vasa 455/517

2003/0232628 A1 * 12/2003 Fehrm 455/550.1

* cited by examiner

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(57) **ABSTRACT**

There are provided a task display switching method, a portable apparatus and a portable communications apparatus which, when a plurality of application software are activated and processed in parallel, make it possible to switch a display between each of the application software with ease. According to the task display switching method, the portable apparatus and the portable communications apparatus of the present invention, in a portable apparatus capable of processing a plurality of tasks in parallel and of displaying a plurality of display regions for displaying data, an icon associated with a task displayed on a first display region is generated automatically or manually, and the generated icon is displayed in a second display region. When any icon thus generated is selected from a plurality of icons displayed on the second display region, the task associated with the selected icon is restored and displayed in the first display region.

21 Claims, 14 Drawing Sheets

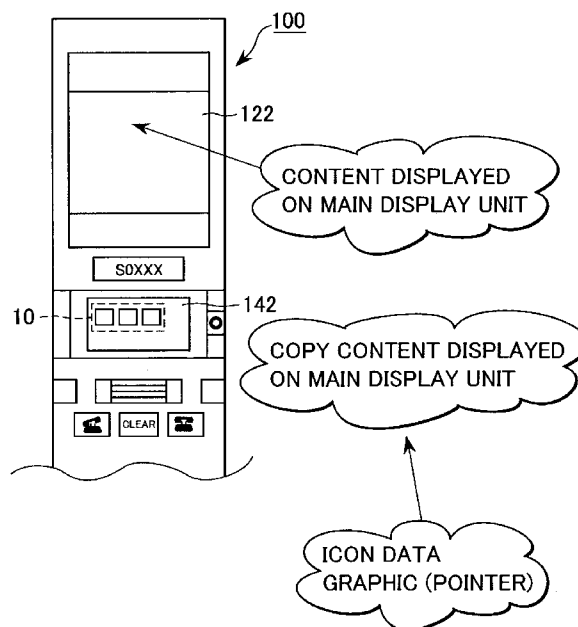


FIG. 1C

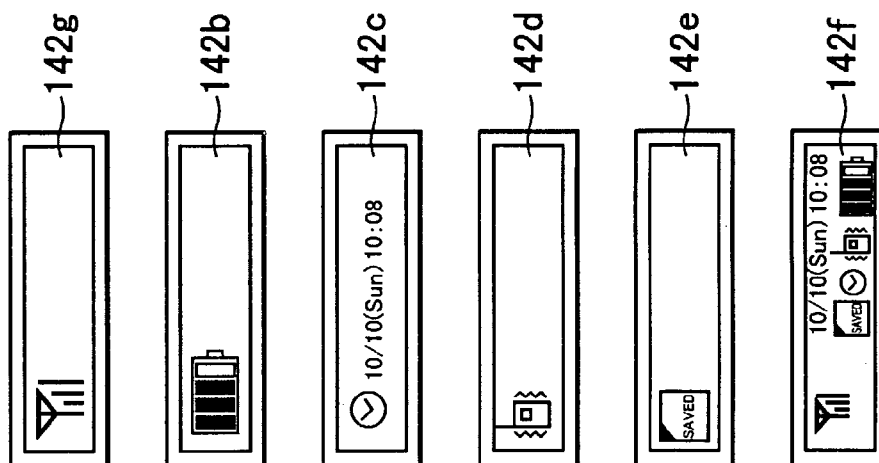


FIG. 1B

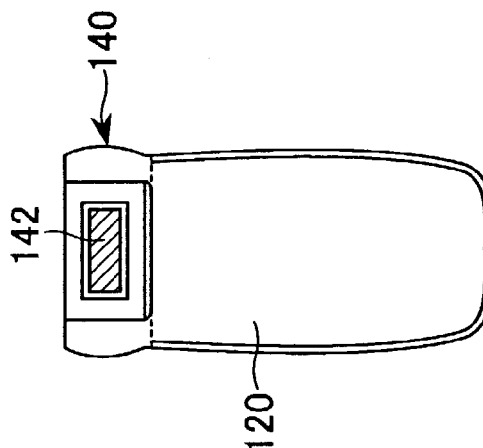


FIG. 1A

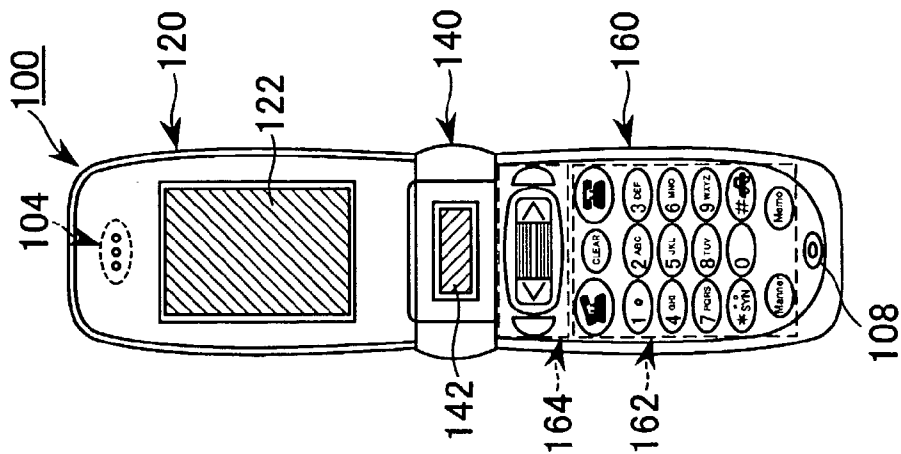


FIG. 2

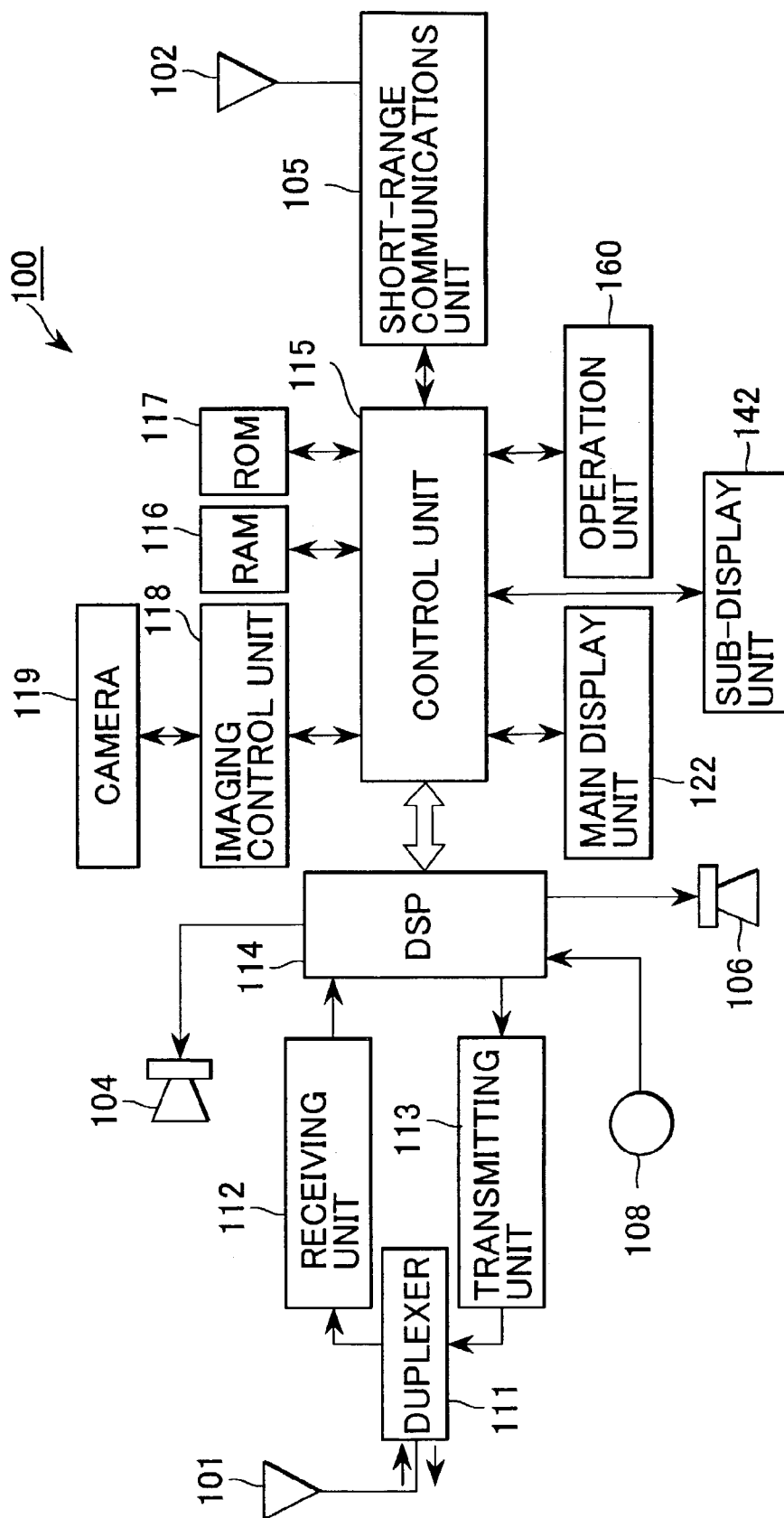
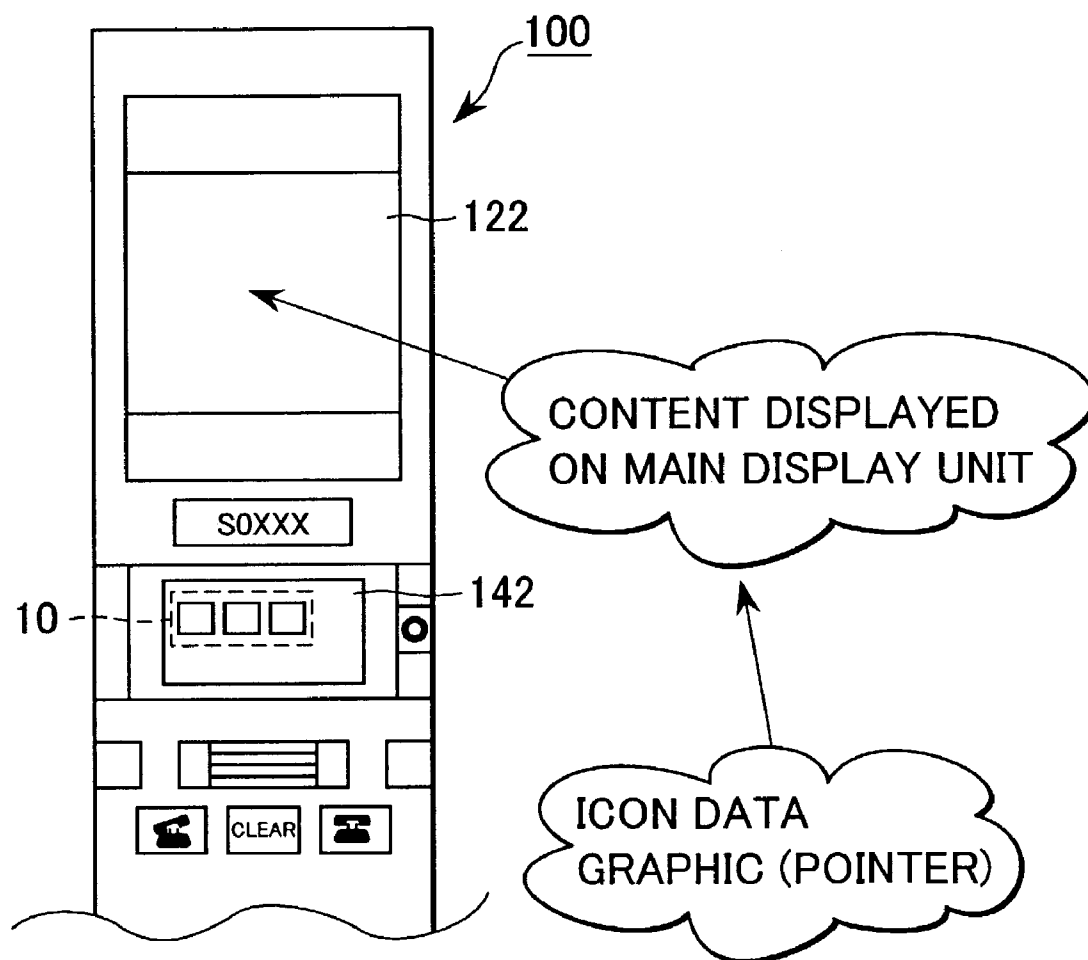


FIG. 3



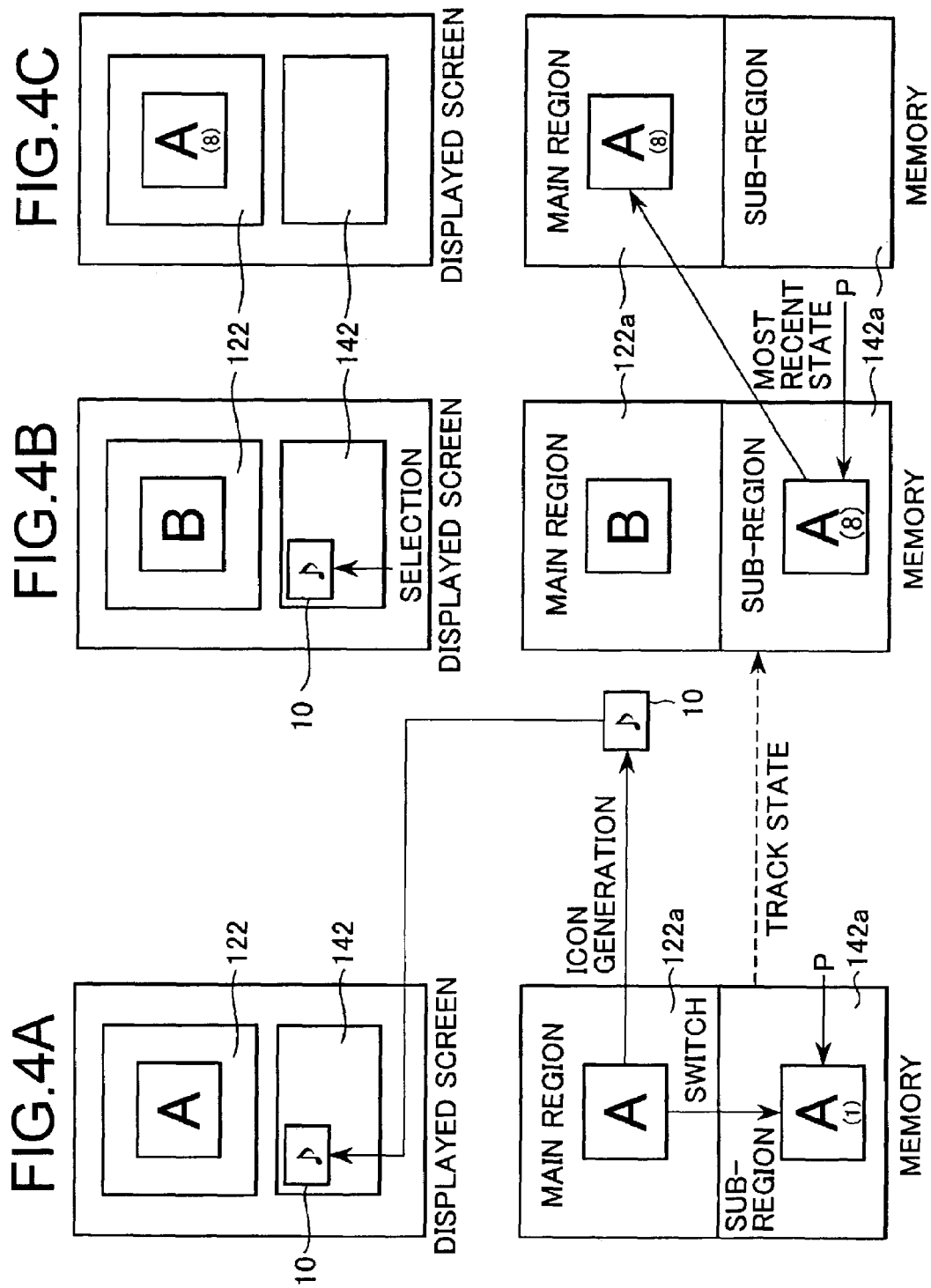
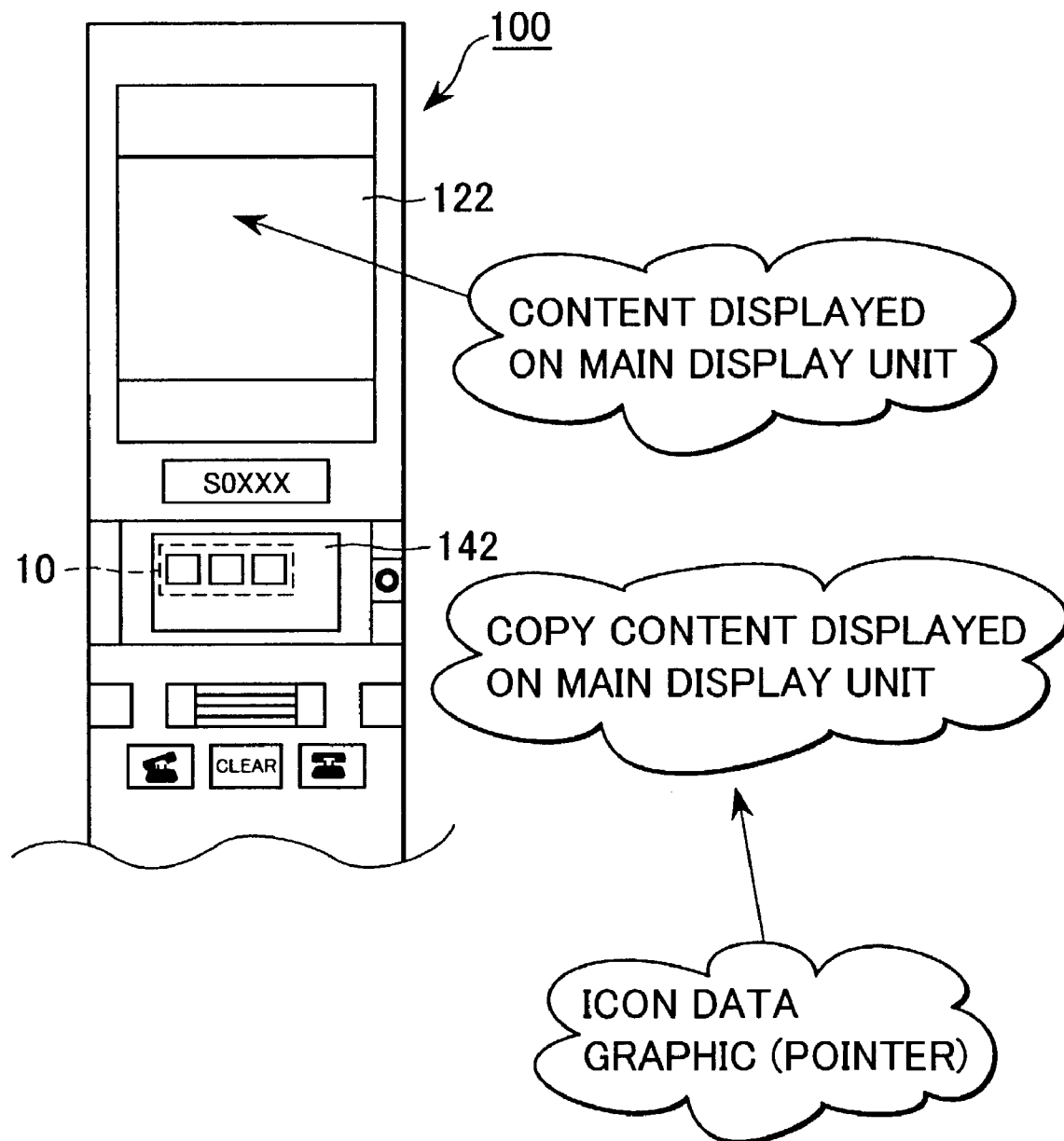


FIG. 5



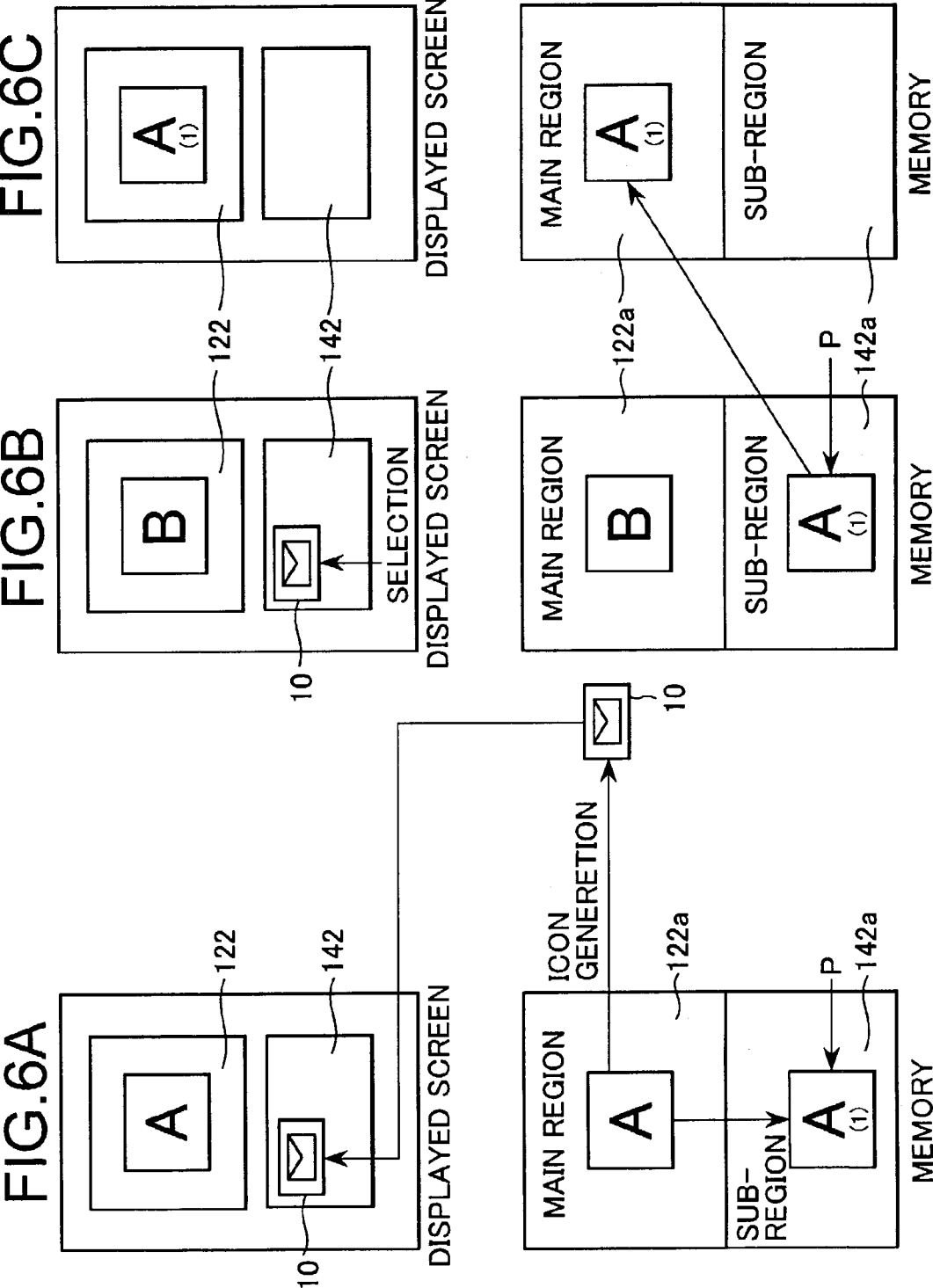
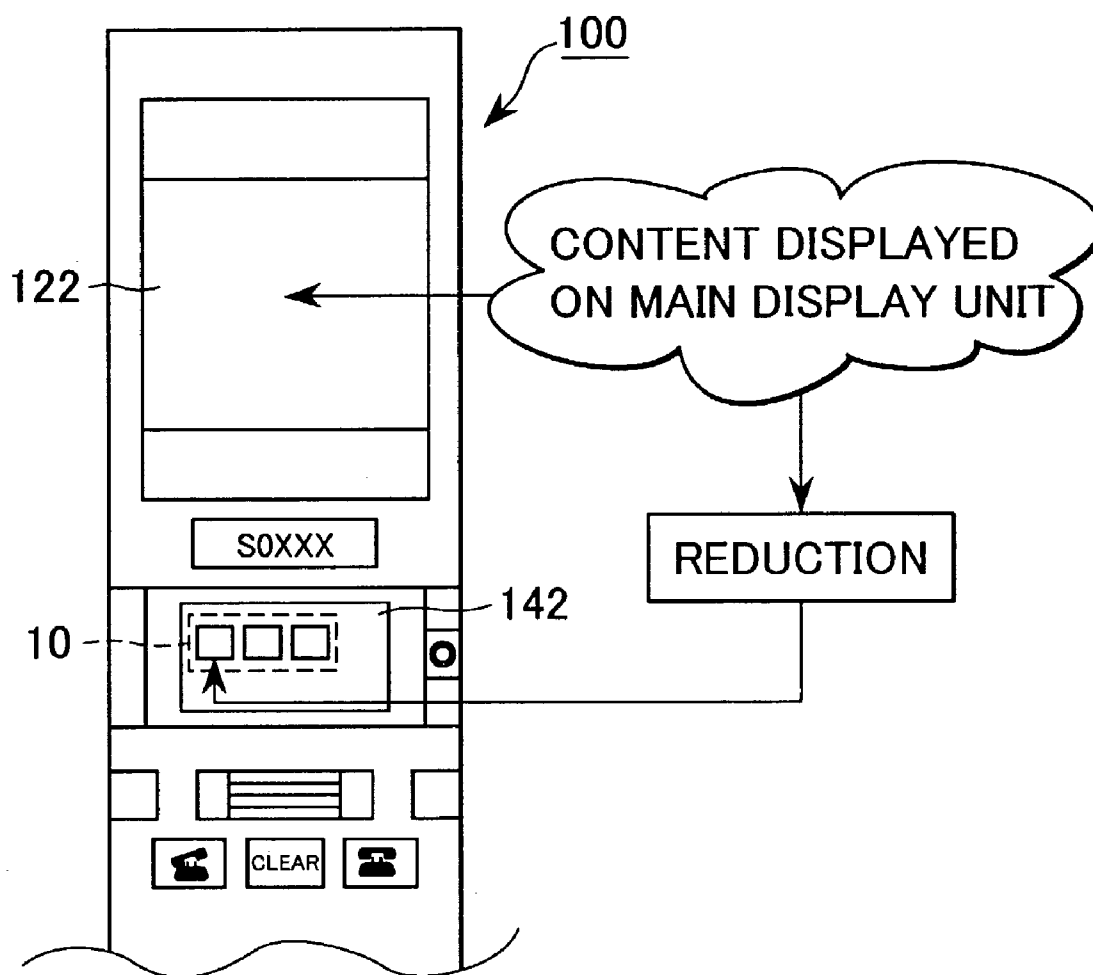


FIG. 7



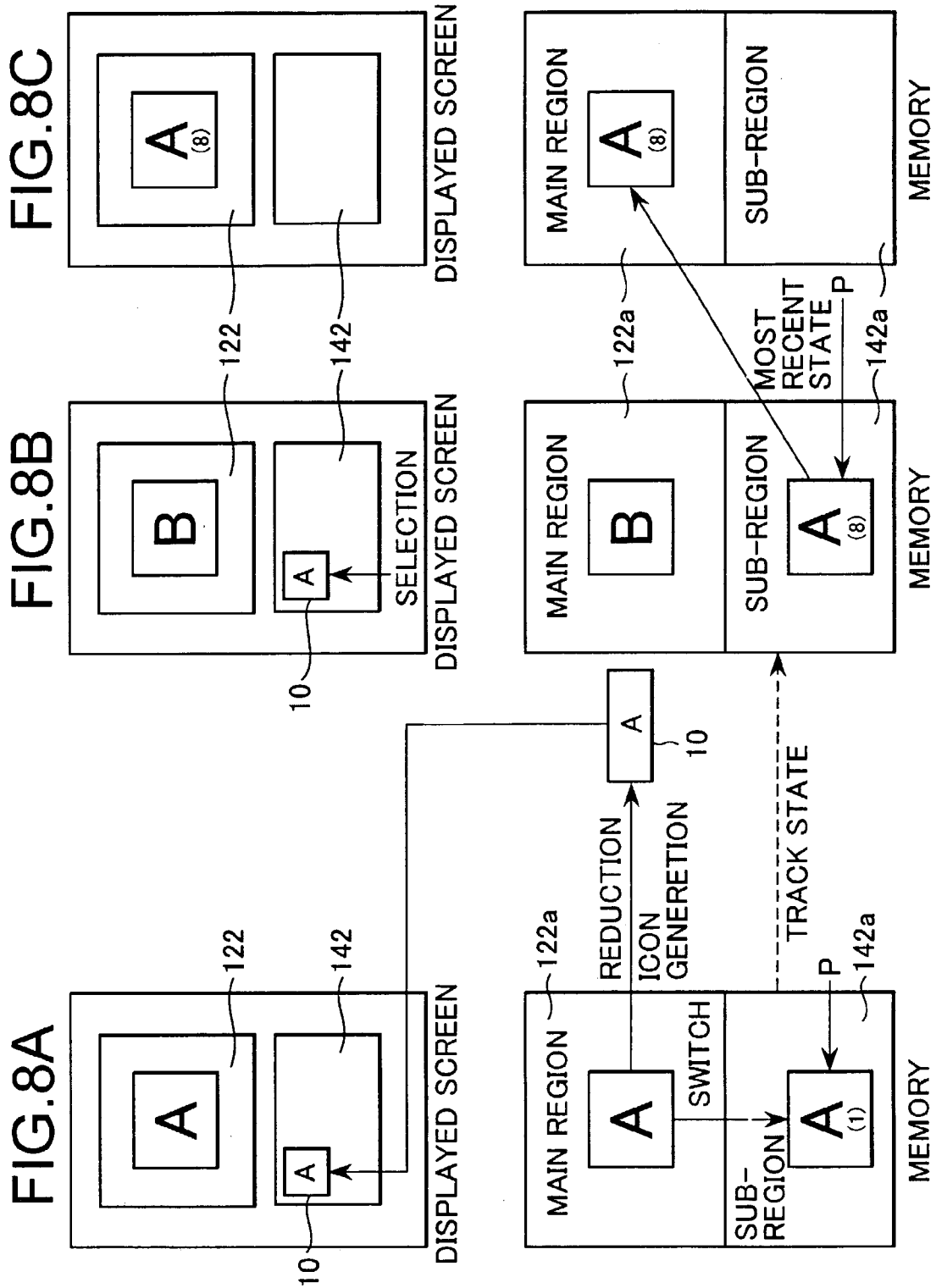


FIG. 9

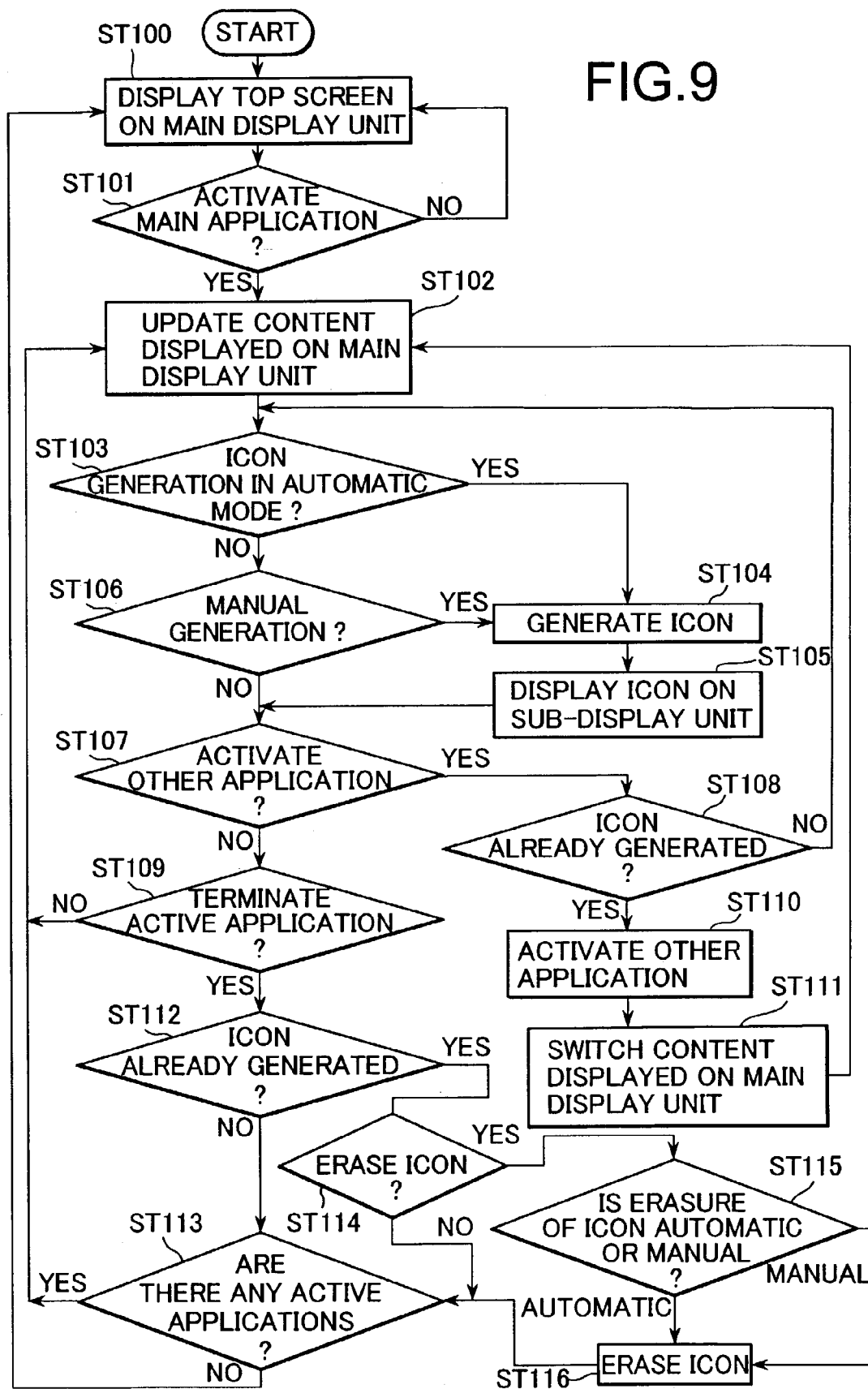


FIG. 10

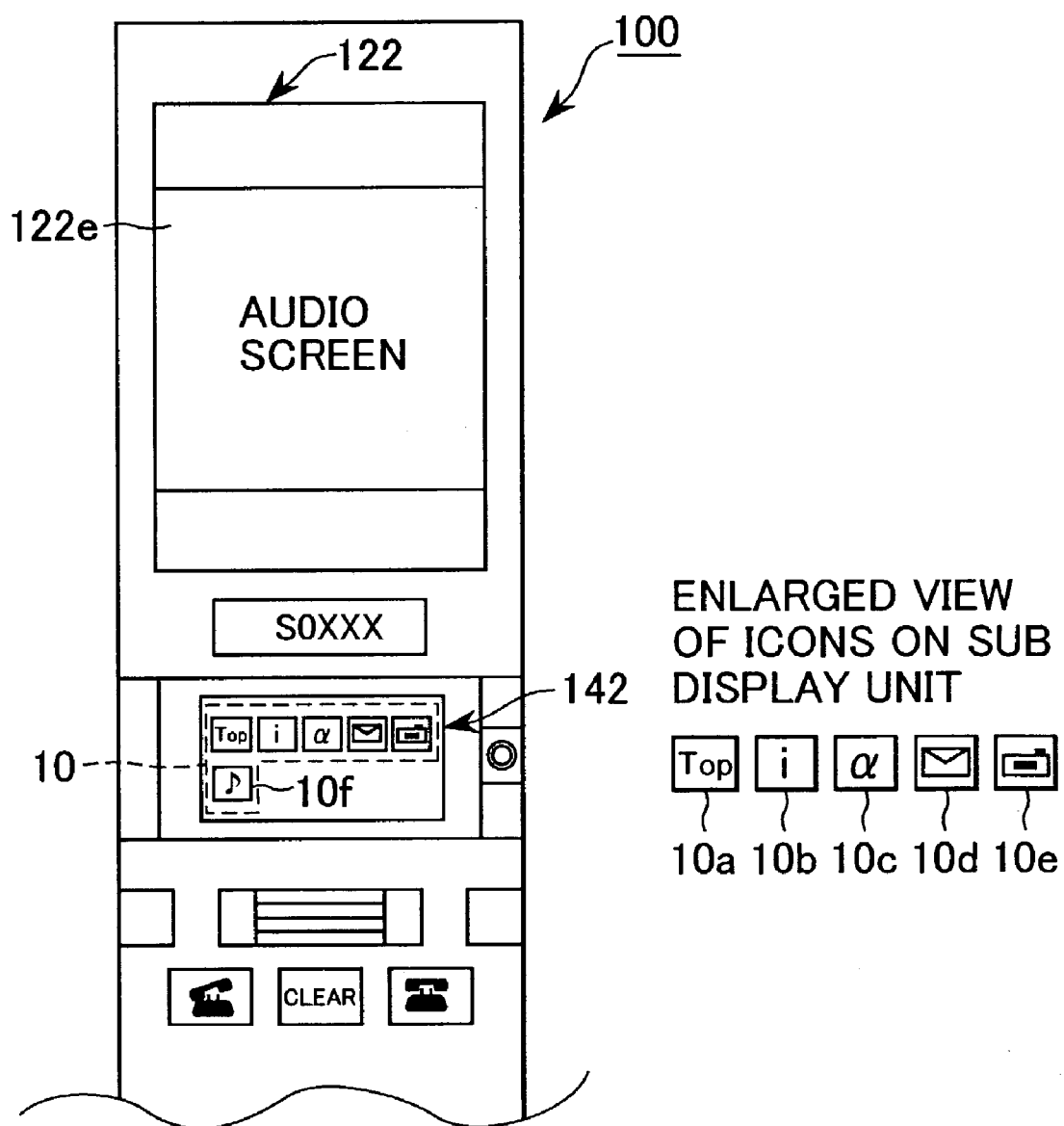


FIG. 11

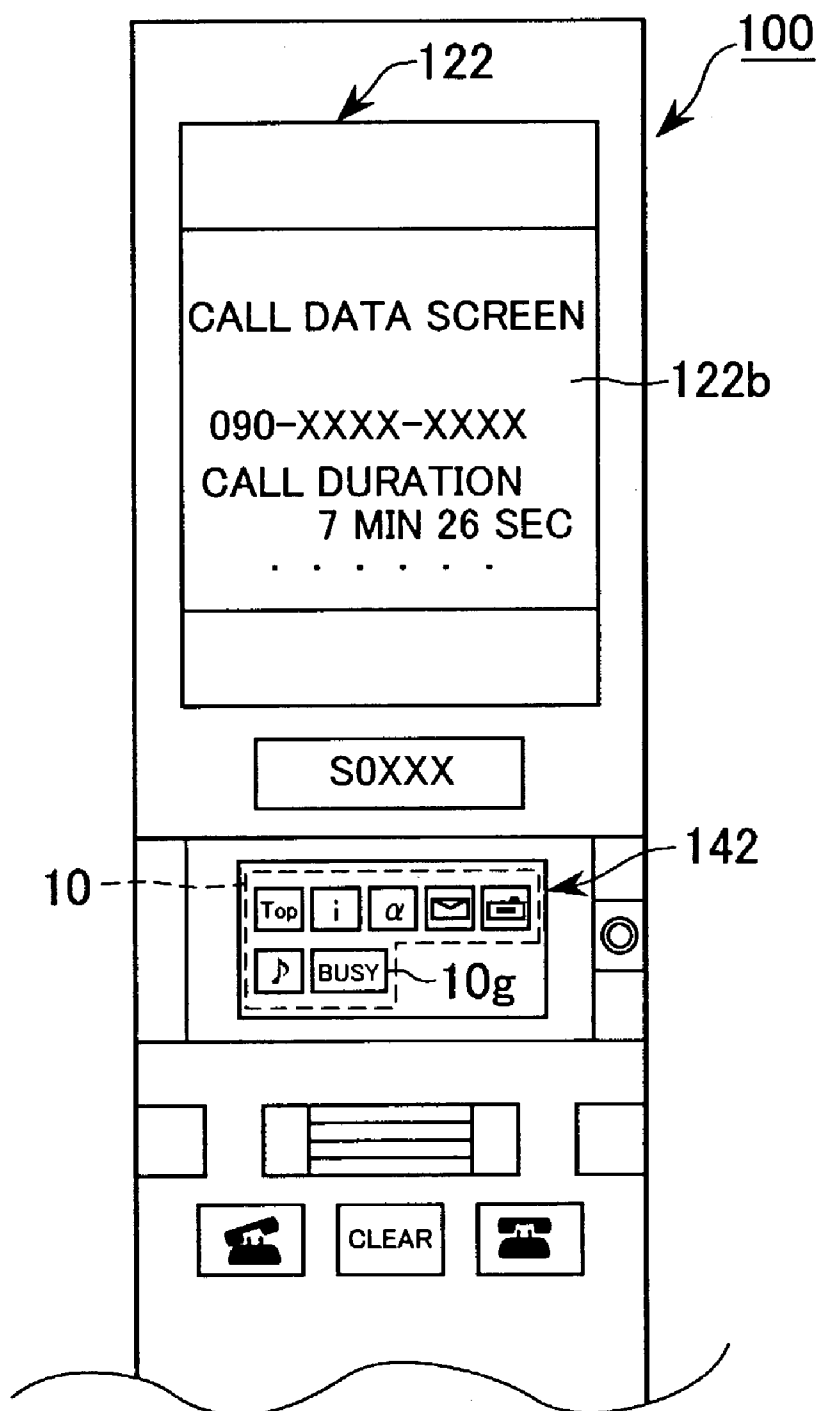


FIG. 12

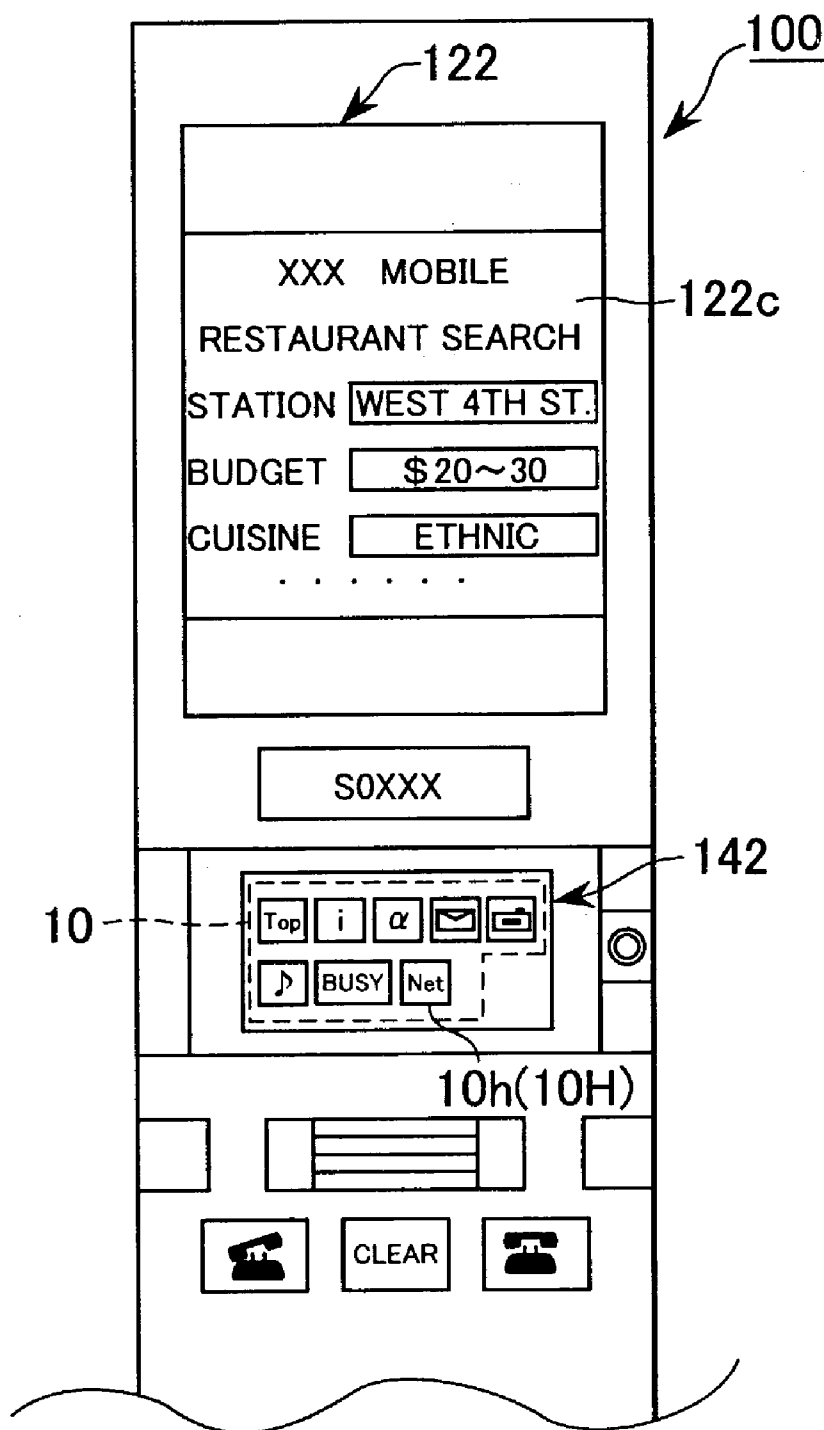


FIG. 13

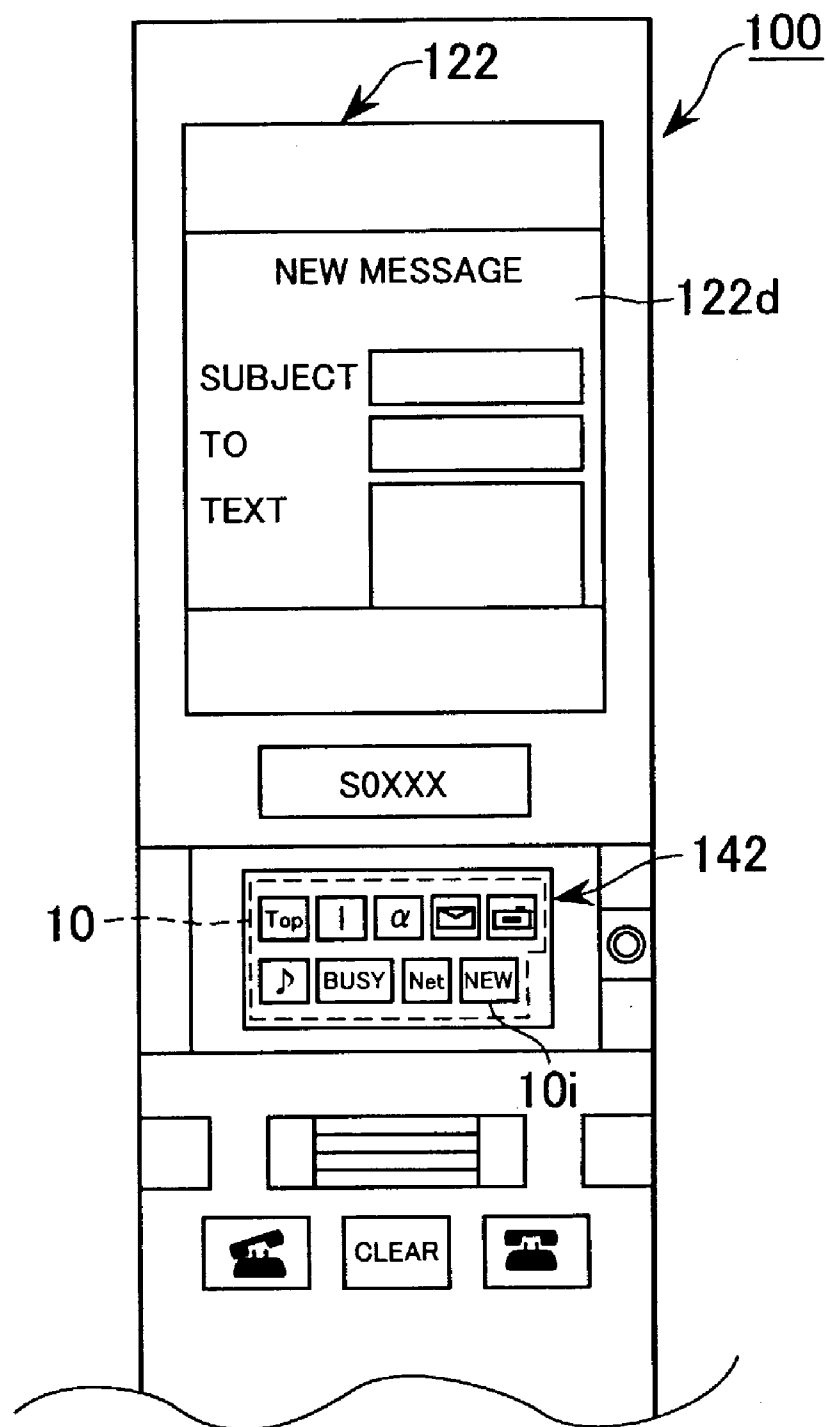
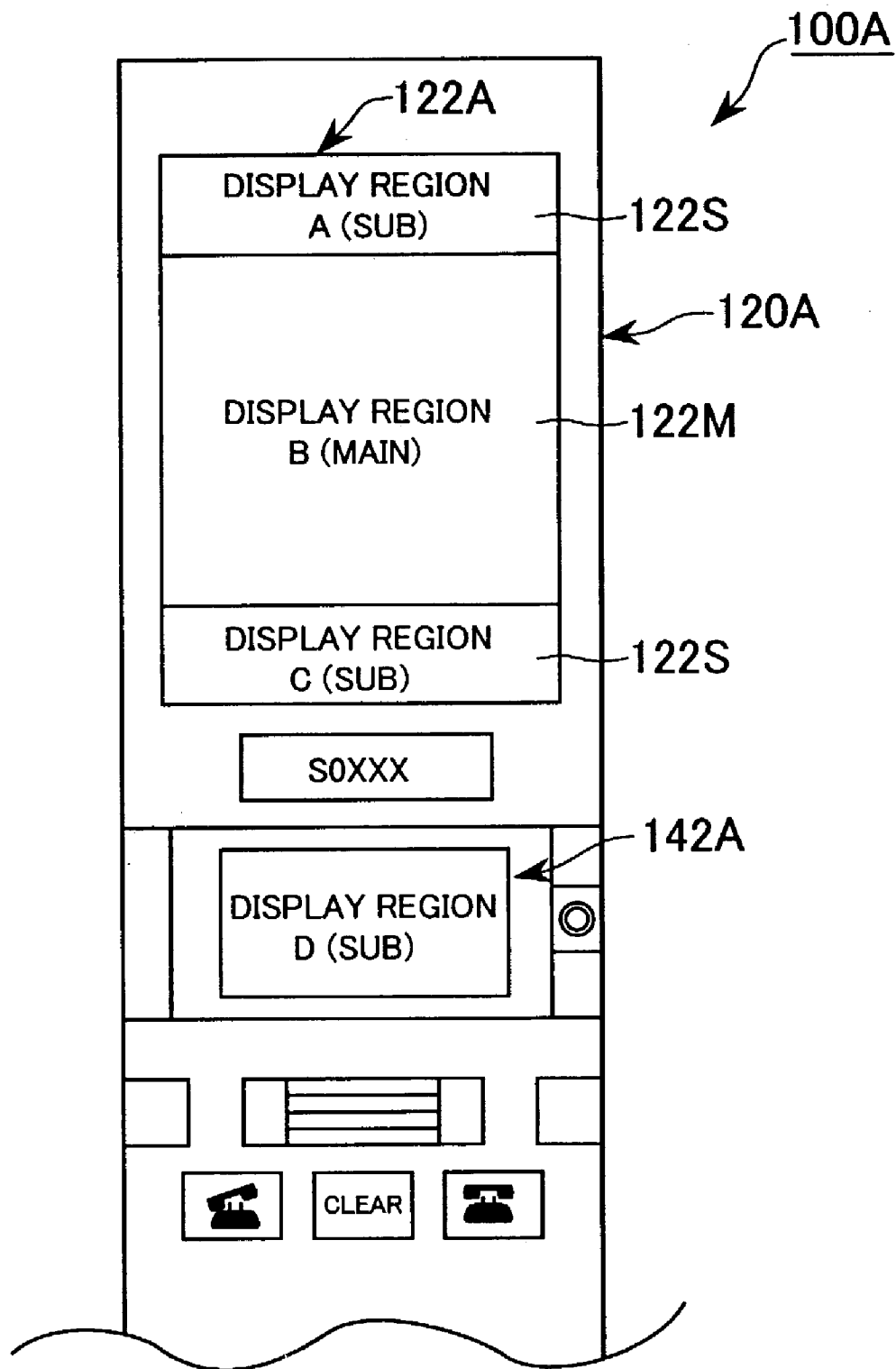


FIG. 14



1

TASK DISPLAY SWITCHING METHOD, PORTABLE APPARATUS AND PORTABLE COMMUNICATIONS APPARATUS

CROSS REFERENCE TO RELATED APPLICATIONS

The present document claims priority to Japanese Priority Document JP 2001-359284, filed in the Japanese Patent Office on Nov. 26, 2001, the entire contents of which are incorporated herein by reference to the extent permitted by law.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a task display switching method, a portable apparatus and a portable communications apparatus. More specifically, the present invention relates to a task display switching method, a portable apparatus and a portable communications apparatus, which, in a case where a plurality of application software are run and processed in parallel in a portable phone apparatus or the like, may easily carry out a switching operation to switch the display to each application software.

2. Description of the Related Art

Technological advances in portable information apparatuses, such as a portable telephone and the like, have been remarkable, and functions such as gaming, digital camera, audio reproduction and communications such as internet connection have been added, thereby improving their multi-functionality. Such advances may be expected to be further fueled with the introduction of the next generation of portable information apparatuses. Also, new technology and new ideas are introduced with respect to the display monitors for these apparatuses, such as color displays, liquid crystal sub-displays and the like.

SUMMARY OF THE INVENTION

However, although the multi-functionality and the introduction of new technology are being advanced as mentioned above, conventional portable information apparatuses have a problem in that in activating and using an additional application software while using some other application software, it is difficult to instantly switch the display between the applications.

Specifically, in portable telephones and the like, in order to access the Internet while writing an e-mail, a user has to save the e-mail and close the e-mail screen. Once the e-mail screen is closed, a top screen is displayed (a screen displayed when the power is turned on). The user selects, for example, "selection menu" from the top screen so that task items are displayed. If the user selects "Internet Connection," for example, from the items, a browser is activated and displayed on the display. Thus, the user can access a desired web site. However, if the user wishes to resume writing an e-mail while browsing a web site, the user must perform a tedious operation, where the user must close the browser to get to the top screen, again select the selection menu from the top screen so that the task items are displayed, select "Create Electronic Mail," for example, and select the previously saved e-mail so that it is displayed on the display.

There also are portable information apparatuses having a screen memo function for storing a displayed screen. However, this function cannot be applied to all displayed screens. Further, in order to display the content of the screen memo,

2

the user must, much like what is described above, get to the selection menu from the top screen and then select, for example, the item "Screen Memo." Thus, in terms of the effort on the part of the user, there is not much of a difference.

On the other hand, in the next generation of portable telephones which will be more multi-functional than those presently available, it may be anticipated that there will arise a need for carrying out a plurality of processes at the same time (parallel processing), such as browsing a web site and listening to music at the same time, while writing an e-mail every now and then. However, with what is available, an operation in which the top screen is displayed, a selection menu is selected, the task items are displayed, and the desired item is selected to activate the desired application software so that it is displayed on the screen becomes an operation sequence for using an application software. And in order to activate and display a different application software, this sequence must be repeated. Hence, there lies a problem in that the switching operation for switching between a plurality of application software processed simultaneously, and having the screen of the desired application software displayed becomes further tedious.

The present invention provides a task display switching method, which can easily carry out a display switching operation to switch between a plurality of application software when they are activated and processed in parallel in a portable information apparatus, and the like.

In order to solve or alleviate the above-mentioned problems, the task display switching method, the portable apparatus and the portable communications apparatus according to the present invention are designed so as to have the following configuration (steps).

In a portable apparatus capable of processing a plurality of tasks (application software) in parallel and of displaying a plurality of display regions which display data, an icon corresponding to a task (application software) displayed in a first display region serving as a main display region is generated automatically or manually, the generated icon is displayed in a second display region serving as a sub-display region. When an icon is selected from the icons displayed in the second display region, the task (application software) corresponding to the selected icon is restored and displayed in the first display region automatically or manually. Consequently, when a plurality of tasks (application software) are processed in parallel, a switching operation for switching between the tasks (application software) may be performed smoothly.

In addition, by automatically or manually generating an icon such that it corresponds to the most recent state of the task, to a state in which the task is suspended or stopped, or to an initial state of the task, and such that the icon is generated by reducing the image displayed in the first display region, and that they are automatically or manually erased from the second display region when restoration is performed, because the icons may be appropriately generated so as to correspond with a predetermined state from among a most recent state, a suspended state and an initial state of the task (application software), the task (application software) may be started in a desired state when resuming the task (application software) in the first (main) display region.

The portable communications apparatus according to the present invention is capable of processing a plurality of tasks in parallel, and comprises a display unit having a first display region for displaying data, a hinge unit having a second display region for displaying data, an operation unit

3

having operating means for receiving commands and input from a user, and an icon generating means for generating icons corresponding to the tasks. The display unit and the operation unit are joined via the hinge unit, and the portable communications apparatus may be opened/closed with the hinge unit as a shaft. The second display region is provided such that it may be viewed when the display unit and the operation unit are rotated and are thereby placed in a closed state, and is designed so as to be able to indicate the status of the apparatus. As such, when the apparatus is in use (opened), it is possible to switch smoothly between multiple tasks (application software) processed in parallel, and even when folded and not in use (closed), data which indicate communication conditions (signal field strength and the like), and the apparatus status such as remaining battery capacity, the time, presence of stored data and the like. Thus, a small display region may be utilized efficiently.

As mentioned above, in multi-functional and downsized (in terms of length, size, weight and thickness) portable apparatuses, such as portable telephones, PDAs and the like, by generating an icon corresponding to the application software (tasks) displayed in the first display region serving as the main display region, displaying the generated icon in the second display region serving as the sub-display region, and selecting the desired icon from the icons displayed in the second display region, the desired application software (task) may be restored and displayed in the first display region. Thus, when a plurality of application software (tasks) are processed in parallel, the switching operation for switching between these application software (tasks) may be performed smoothly, and the ease and speed of the switching operation are improved.

Further, by generating the icons such that they correspond to a predetermined state from among a most recent state, a suspended or stopped state and an initial state of the application software, the application software may be started at the desired state when it is restored and displayed on the main display unit to resume the application software. Thus, the ease and speed of the application software resuming procedure are improved.

In, for example, downloading data, if the downloading screen is continuously displayed on the main display unit (the first display region), the content displayed on the display is frequently updated. However, if an icon is displayed on the sub-display unit (the second display region), there no longer is any need to update the screen. Thus, an embodiment of the present invention also has an advantage in that the power consumed in updating the screen is saved, which leads to lower power consumption.

Further, in a foldable portable communications apparatus, such as a portable telephone, PDA and the like, in which the display unit and the operation unit may be rotated and opened/closed with the hinge unit as a shaft, by providing the second (sub) display region in the hinge unit, and in a position such that the second display region may be viewed when the apparatus is folded (closed), switching operations for switching between a plurality of application software processed in parallel may be performed smoothly while the apparatus is in use (opened), as described above, and, further, even when the apparatus is folded and not in use (closed), the second display region may be utilized effectively by displaying data indicating communication conditions such as the signal field strength, and apparatus conditions such as remaining battery capacity, the time, presence of stored data and the like. Hence, there is an advantage in that the second display region may be used effectively

4

without affecting the size of the apparatus, while at the same time improving the ease and speed of operation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A and 1B are external views of a foldable portable telephone according to the present invention;

FIG. 1C is an explanatory view illustrating display examples for a display unit;

FIG. 2 is a block diagram schematically showing the inner configuration of the portable telephone shown in FIGS. 1A and 1B;

FIG. 3 is an explanatory view schematically showing the relationship between a main display unit and a pointer type icon in the portable telephone shown in FIGS. 1A and 1B;

FIGS. 4A through 4C are explanatory views schematically showing the relationship between the internal state of a memory and the main and sub-display units in a case where the pointer type icon is used in the portable telephone shown in FIGS. 1A and 1B;

FIG. 5 is an explanatory view schematically showing the relationship between the main display unit and a copy type icon in the portable telephone shown in FIGS. 1A and 1B;

FIGS. 6A through 6C are explanatory views schematically showing the relationship between the internal state of the memory and the main and sub-display units in a case where the copy type icon is used in the portable telephone shown in FIGS. 1A and 1B;

FIG. 7 is an explanatory view schematically showing the relationship between the main display unit and a reduction type icon in the portable telephone shown in FIGS. 1A and 1B;

FIGS. 8A through 8C are explanatory views schematically showing the relationship between the internal state of the memory and the main and sub-display units in a case where the reduction type icon is used in the portable telephone shown in FIGS. 1A and 1B;

FIG. 9 is a flowchart showing an example of a task display switching method in the portable telephone shown in FIGS. 1A and 1B;

FIG. 10 is an explanatory view showing an example of a specific operation of the portable telephone shown in FIGS. 1A and 1B;

FIG. 11 is an explanatory view showing an example of a specific operation of the portable telephone shown in FIGS. 1A and 1B;

FIG. 12 is an explanatory view showing an example of a specific operation of the portable telephone shown in FIGS. 1A and 1B;

FIG. 13 is an explanatory view showing an example of a specific operation of the portable telephone shown in FIGS. 1A and 1B; and

FIG. 14 is an explanatory view showing an example of display positions for the main display unit and the sub-display unit of the portable apparatus and the portable communications apparatus according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of a task display switching method, a portable apparatus and a portable communications apparatus according to the present invention will be described below with reference to the attached drawings. However, the

drawings are presented for purposes of explanation only, and the technical scope of the present invention is not limited thereto.

The portable telephone shown in FIGS. 1A and 1B is an example of an embodiment of the portable apparatus and portable communications apparatus according to the present invention. What is shown is a foldable portable telephone 100, which is equipped with functions such as accessing the Internet or the like to browse websites, and creating, transmitting and receiving e-mail and the like.

FIG. 1A is an external view of the portable telephone 100 in use, and there are shown a display unit 120 having a main display unit 122, a hinge unit 140 on which a sub-display unit 142 is provided, and an operation unit 160 for performing operations with, such as inputting data.

The display unit 120 and the operation unit 160 are connected via the hinge unit 140, and are rotatable with the hinge unit 140 serving as a shaft so as to be opened/closed. FIG. 1B shows the portable telephone 100 at rest (closed and not in use), and the display unit 120 and the operation unit 160 are folded with the hinge unit 140 as a shaft so as to overlap.

The display unit 120 has the main display unit 122 as a first display region for displaying, for example, an e-mail screen or a web browser, and a speaker 104 for telephone calls and the like. The display unit 120 is rotatably connected to the operation unit 160 via the hinge unit 140.

The hinge unit 140 is provided with the sub-display unit 142 for displaying one or more icons each corresponding to an application software (task) and so forth, or data and the like. The hinge unit 140 rotatably connects the display unit 120 and the operation unit 160. In addition, the sub-display unit 142 is provided in a position such that the displayed content may be viewed from outside even when the portable telephone is not in use (i.e. when the display unit 120 and the operation unit 160 are folded such that they overlap) (refer to FIG. 1B).

The operation unit 160 may have: input/call keys 162, such as numerical keys, a manner button, a memo button, a call button, a clear button, an end button and the like; operation keys 164 for moving a cursor up, down, right or left in the screen on the main display unit 122 and/or sub-display unit 142, scrolling, confirming and executing an operation, specifying a data range and the like; a microphone 108 for use during a telephone conversation and the like, and the operation unit 160 is rotatably connected to the display unit 120 via the hinge unit 140.

In FIG. 2, the portable telephone 100 of FIGS. 1A and 1B is shown to have an inner configuration as illustrated. In FIG. 2, there are shown an antenna 101, the speaker 104 for use during, for example, a telephone conversation, an apparatus speaker 106, the microphone 108 for use during a telephone conversation, a duplexer 111, a receiving unit (RX) 112, a transmitting unit (TX) 113, a DSP (Digital Signal Processor) 114, a control section 115, a RAM (Random Access Memory) 116, a ROM (Read Only Memory) 117, the operation unit 160, the main display unit 122 and the sub-display unit 142. Moreover, there are shown an imaging control unit 118, a camera 119, an antenna 102 and a short-range wireless communications unit 105.

The antenna 101 is connected to the duplexer 111. During a receiving operation, a signal received by the antenna 101 is sent to the duplexer 111. During a transmitting operation, a transmission signal from the duplexer 111 is sent to the antenna 101, and a radio signal is radiated from the antenna 101.

The duplexer 111 is connected to the antenna 101, the receiving unit (RX) 112 and the transmitting unit (TX) 113. During the receiving operation, the signal received by the antenna 101 is sent to the receiving unit (RX) 112 through the duplexer 111. During the transmitting operation, the transmission signal from the transmitting unit (TX) 113 is sent to the antenna 101 through the duplexer 111.

The receiving unit (RX) 112 is connected to the duplexer 111 on one end, and to the DSP 114 on the other end. The receiving unit (RX) 112 demodulates the reception signal from the duplexer 111 and sends the demodulated signal to the DSP 114. The transmitting unit (TX) 113 is connected to the duplexer 111 on one end, and to the DSP 114 on the other end. The transmitting unit (TX) 113 modulates the transmission signal from the DSP 114, and sends the modulated signal to the duplexer 111.

The speaker 104 and the apparatus speaker 106 are connected to the DSP 114, and they output audio signals processed by the DSP 114. Also, the microphone 108 is connected to the DSP 114, and sends inputted audio to the DSP 114 for processing.

The DSP (Digital Signal Processor) 114 is connected to the transmitting unit (TX) 113, the receiving unit (RX) 112, the speaker 104 for use during a telephone conversation, the apparatus speaker 106, the microphone 108 and the control unit 115. Under the control of the control unit 115, the DSP 114 processes audio input from the microphone 108 or reception signals from the receiving unit (RX) 112, and outputs the processed signals to the speaker 104, or processes data and the like from the control unit 115, and outputs the processed data to the transmitting unit (TX) 113 or the apparatus speaker 106.

The control unit 115 is connected to the DSP 114, the operation unit 160, the RAM 116, the ROM 117, the main display unit 122, the sub-display unit 142, the imaging control unit 118 and the short-range wireless communications unit 105. The control unit 115 controls the respective connected units in accordance with a control program in the ROM 117 (or the RAM 116).

The RAM (Random Access Memory) 116 is connected to the control unit 115, and is capable of performing parallel processing of a plurality of application software (tasks). The RAM 116 performs data processing in accordance with the control unit 115, and, for example, switching processes for switching between application software (tasks) to be displayed on the main display unit 122 or the sub-display unit 142 are executed. The tasks mentioned above are not limited to application software, and may include, for example, phone call information (such as cumulative call time), a transmission log, and an icon corresponding to a screen for showing such information may be generated.

The ROM (Read Only Memory) 117 is connected to the control unit 115, and stores a control program (an operating system) for controlling the apparatus, identification information (telephone number, apparatus number and the like), a plurality of application software (tasks), image data of one or more icons, and the like. Under the control of the control unit 115, required information (data) and programs are sent to the RAM 116 and the like as needed.

The operation unit 160 is connected to the control unit 115, and, via the control unit 115, gives operation instructions, such as inputting text, placing a phone call, display switching and the like by way of the input/call keys 162 or the operation keys 164 (refer to FIG. 1A).

The main display unit 122 is connected to the control unit 115. As the first display region, the main display unit 122 follows instructions from the control unit 115, and displays

application software (tasks) in the form of, for example, an e-mail screen, a web browser or the like.

The sub-display unit **142** is connected to the control unit **115**. As a second display region, the sub-display unit **142** follows instructions from the control unit **115**, and displays one or more icons each generated in correspondence with an application software (task) displayed on the main display unit **122**, data and the like. If the apparatus is not in use (closed), the sub-display unit **142** displays, as shown in FIG. **1C**, apparatus statuses, such as signal field strength (**142g**), remaining battery capacity (**142b**), the time (**142c**), information on apparatus settings, such as whether manner mode is on or off, for example) (**142d**), presence of stored data (stack) (**142e**) and the like, through icons and the like. Moreover, it is naturally possible to display these icons indicating the respective apparatus statuses in combination as in **142f**.

The antenna **102** is connected to the short-range wireless communications unit **105**, and transmits and receives radio waves for short-range wireless communications such as infrared communications (IrDA) or Bluetooth.

The short-range wireless communications unit **105** is connected to the antenna **102** on one end, and is connected to the control unit **115** on the other end. The short-range wireless communications unit **105** establishes a connection with, for example, a laptop personal computer complying with the blue-tooth specification, a PDA (Personal Digital Assistant), another portable telephone or the like without a cable, and transmits and receives voice or data.

The imaging control unit **118** is connected to the camera **119** on one end, and to the control unit **115** on the other end. The imaging control unit **118** imports a captured image data from the camera **119**, and performs image data processing such as displaying the captured image on the main display unit **122** (or the sub-display unit **142**) via the control unit **115**, or storing the captured image in the RAM **116** and the like.

The camera **119** is connected to the imaging control unit **118**, and sends an image which has been shot to the imaging control unit **118**.

The relationship between the icon displayed on the sub-display unit **142** and the screen displayed on the main display unit **122** in the portable telephone **100** shown in FIGS. **1A** and **1B** and FIG. **2** will be described below.

The icon displayed on the sub-display unit **142** is classified broadly into (1) a pointer type, (2) a copy type and (3) a reduction type.

[1] Pointer Type Icon

As shown schematically in FIG. **3**, the pointer type icon is an icon which is generated in correspondence with the processing of the task displayed on the main display unit **122** while the task is active. When the pointer type icon is selected, the most recent state of the task corresponding to this icon is restored and displayed on the main display unit **122**.

FIGS. **4A** through **4C** are diagrams schematically showing the relationship between the internal state of the memory and the main and sub-display units **122** and **142**. The task displayed on the main display unit **122** is executed in a main region **122a** in the memory, and a different task of which processing is continuing is stored in a sub-region **142a**, and the task is displayed as a pointer type icon on the sub-display unit **142**.

In FIG. **4A**, task (A) is currently executed, and the task (A) is displayed on the main display unit **122**. It is assumed that nothing is displayed on the sub-display unit **142**.

In order to switch to a different task (B) while the processing of the task (A) is continued, if the operation keys **164** and the like are used to start the task (B), a pointer type icon **10** corresponding to the task (A) is automatically or manually generated, and the icon **10** is displayed on the sub-display unit **142**. At this point, in the memory, the task (A) processed in the main region **122a** corresponding to the main display unit **122** is switched to the sub-region **142a**, and the task (A) is monitored by a pointer P.

On the other hand, as shown in FIG. **4B**, the task (B) begins processing in the main region **122a**, and the task (B) is displayed on the main display unit **122**. At this point, processing of the task (A) is continued in the sub-region **142a** in the memory, and the most recent states (A(1)) . . . (A(n)) thereof are monitored by the pointer P.

If the task (B) is terminated, stopped or suspended as shown in FIG. **4C**, the task executed in the main region **122a** is automatically switched from the task (B), currently under execution, to the task (A). The most recent state (A(8)) , for example, of the task (A) monitored by the pointer P is restored in the main region **122a**, and the most recent state (A(8)) of the task (A) is displayed on the main display unit **122**. At the same time, the icon **10** (corresponding to task (A)) is erased from the sub-display unit **142** (and the sub-region **142a**). However, it is also possible to keep the icon **10**.

The automatic task switching operation may be such that switching to a task that was activated immediately before as described above, or to a predefined or arbitrarily specified task is performed.

Alternatively, when terminating, stopping or suspending the task (B), switching from the task (B) to the task (A) may be done by performing a predetermined operation with the operation keys **164** and the like to switch from the main display unit **122** to the sub-display unit **142**, and then selecting the icon **10** corresponding to the task (A).

[2] Copy Type Icon

The copy type icon, as shown schematically in FIG. **5**, is an icon generated in correspondence with the task displayed on the main display unit **122** in a suspended or stopped state, or in a state in which the initial state is maintained (copied). When the copy type icon is selected, the task corresponding to this icon is restored and displayed on the main display unit **122** in a state at which the task was suspended or stopped, or in its initial state.

FIGS. **6A** through **6C** are diagrams schematically showing the relationship between the internal state of the memory and what is displayed on the main and sub-display units **122** and **142** when the copy type icon is used. The task displayed on the main display unit **122** is executed in the main region **122a** in the memory, and a different task in its initial state or in a state in which processing is suspended (stopped) is stored in the sub-region **142a**, and is displayed as the copy type icon on the sub-display unit **142**.

In FIG. **6A**, the task (A) is being executed, and the task (A) is displayed on the main display unit **122**. It is assumed that nothing is displayed on the sub-display unit **142**.

In suspending (stopping) a task (A) and switching to a different task (B), if the task (B) is activated through a predetermined operation using the operation keys **164** and the like, a copy type icon **10** corresponding to the task (A) is automatically or manually generated, and the icon **10** is displayed on the sub-display unit **142**. At this point, in the memory, processing of the task (A) which is undergoing processing in the main region **122a** corresponding to the main display unit **122** is switched to the sub-region **142a** in a state in which the processing of the task (A) is suspended

(stopped) or in its initial state, and the task (A) is monitored by the pointer P such that it is activated in the suspended (or stopped) state or in its initial state.

On the other hand, as shown in FIG. 6B, the activated task (B) begins processing in the main region 122a, and the task (B) is displayed on the main display unit 122. At this point, in the sub-region 142a of the memory, the task (A) is still in the suspended (stopped) or initial state (A(1)).

If the task (B) is terminated, stopped or suspended, as shown in FIG. 6C, automatic switching from the task (B) under execution in the main region 122a to the task (A) is performed. The task (A) monitored by the pointer P is restored in the main region 122a in the state (A(1)) at which processing thereof was previously suspended (stopped), and the task (A) in the state (A(1)) is displayed on the main display unit 122. The icon 10 is erased from the sub-display unit 142 (and the sub-region 142a). However, it is also possible to keep the icon 10.

The automatic task switching operation may be such that switching to an immediately preceding task, or to a predefined or arbitrarily defined task is performed.

Moreover, in terminating, stopping, or suspending the task (B), a predetermined operation using the operation keys 164 and the like may be carried out to switch from the main display unit 122 to the sub-display unit 142, and the icon 10 of the task (A) may be selected to thereby switch from the task (B) to the task (A).

[3] Reduction Type Icon

The reduction type icon, as shown schematically in FIG. 7, is an icon generated by reducing the screen of the task displayed on the main display unit 122 as it is. Much like the pointer type icon mentioned above, the reduction type icon may restore and display the most recent state of a task on the main display unit 122 (reduction pointer type). Alternatively, the reduction type icon may also restore a task in the state in which it was suspended (or stopped) or in its initial state, and display the task on the main display unit 122, as in the case of the copy type icon, (reduction copy type).

Further, if the icon displayed on the sub-display unit 142 is capable of tracking changes in the state of the task and of changing itself in accordance therewith, much like a sub-window in a television with PinP (Picture-in-Picture) functions, checking the state of the task with the icon itself may be made possible.

FIGS. 8A through 8C are diagrams schematically showing the relationship between the internal state of the memory and what is displayed on the main and sub-display units 122 and 142 when the reduction type icon is used. The task displayed on the main display unit 122 is executed in the main region 122a in the memory, and a different task in a state in which processing is ongoing or suspended (stopped), or in an initial state is stored in the sub-region 142a, and the task is displayed as a copy type icon on the sub-display unit 142.

In FIG. 8A, a task (A) is executing, and the task (A) is displayed on the main display unit 122. It is assumed that nothing is displayed on the sub-display unit 142.

In switching to a different task (B) while the processing of the task (A) is continued, if the task (B) is activated through a predetermined operation with the operation keys 164, a reduction type icon 10, which corresponds to the task (A) and in which the displayed screen is reduced in scale by lowering the resolution thereof, is automatically or manually generated, and the icon 10 is displayed on the sub-display unit 142. At this point, in the memory, the task (A) processed

in the main region 122a corresponding to the main display unit 122 is switched to the sub-region 142a, and the task (A) is monitored by a pointer P.

On the other hand, as shown in FIG. 8B, processing of the activated task (B) is started in the main region 122a, and the task (B) is displayed on the main display unit 122. At the same time, processing of the task (A) is continued in the sub-region 142a in the memory, and the most recent states (A(1)) . . . (A(n)) thereof are monitored by the pointer p.

When the task (B) is terminated, stopped or suspended the task executed in the main region 122a is automatically switched, as shown in FIG. 8C, from the task (B) to the task (A). The most recent state (A(8)) of the task (A) monitored by the pointer P is restored in the main region 122a, and the most recent state (A(8)) of the task (A) is displayed on the main display unit 122. At the same time, the icon 10 (task (A)) is erased from the sub-display unit 142 (and the sub-region 142a). However, it is also possible to keep the icon 10.

In the automatic task switching operation, it is possible to switch to the immediately preceding task as described above, or it is also possible to switch to a predefined or arbitrarily defined task.

Moreover, in terminating, stopping or suspending the task (B), switching from the task (B) to the task (A) may be performed by switching from the main display unit 122 to the sub-display unit 142 through a predetermined operation with the operation keys 164 or the like, and then selecting the icon 10 of the task (A).

Alternatively, without switching from the main display unit 122 to the sub-display unit 142, the icon 10 of the sub-display unit 142 may be selected by, for example, a special operation such as pushing the jog dial (scroll key) of the operation keys 164 and "*" of the input/call keys 162 at the same time.

The description of the reduction type icon above is given with respect to a reduction pointer type icon in which the most recent state of the task corresponding to the icon is displayed (restored) on the main display unit 122 in a fashion similar to the pointer type icon. However, it is also possible to generate a reduction copy type icon which performs an operation similar to the copy type icon in which a task corresponding to the icon is displayed (restored) on the main display unit 122 in the state at which the task was suspended or stopped, or in its initial state.

A specific example of the operations of the portable telephone 100 as it is used while switching between a plurality of application software (tasks) using the pointer type/copy type/reduction type icons mentioned above will be described below with reference to a flowchart shown in FIG. 9.

The operation of the portable telephone 100 is started when the portable telephone 100 is turned on, and it is ended unconditionally when the power is turned off. The portable telephone 100 is, for example, equipped with functions such as creation, transmission and reception of e-mail, accessing and browsing the Internet, gaming, taking pictures, placing phone calls, music reproduction and the like as application software (tasks). The portable telephone 100 is capable of processing a plurality of application software (tasks) in parallel, and of generating icons for each of the application software (tasks) and switching between the tasks.

First, when the portable telephone 100, of which the display unit 120 and the operation unit 160 are folded together in a closed position, is opened so as to be operable, the main display unit 122 and the sub-display unit 142 become viewable (refer to FIG. 1A), and a preset top screen

11

is displayed (ST100). Then, when a predetermined operation is performed with the input/call keys 162 or the operation keys 164 of the operation unit 160, and an application software, for example, a web browser if accessing the Internet, is activated, the web browser is displayed on the main display unit 122, and the content displayed on the main display unit 122 is updated in accordance with processings and operations performed (ST101, 102).

When an application software such as the web browser or the like is activated, it is judged whether or not icon generation is in automatic generation mode (ST103).

If icon generation is in automatic generation mode, a predetermined data is retrieved from the RAM 116 or the ROM 117 to generate the icon 10 (for the web browser, in this case), or the icon 10 (for the web browser) in which the screen on the main display unit 122 is reduced is generated, and the generated icon 10 is displayed on the sub-display unit 142 (ST104, 105).

If, on the other hand, icon generation is not automatic, it is then selected whether or not the icon is to be generated manually (ST106).

In order to generate an icon manually, a predetermined operation is performed with the operation keys 164 and the like, and, as in the case above, a predetermined data is retrieved from the RAM 116 or the ROM 117, thereby generating the icon 10 (for the web browser), or alternatively, the icon 10 (for the web browser) may be generated by reducing the content displayed on the main display unit 122 (ST104). The icon 10 (for the web browser) thus generated is displayed on the sub-display unit 142 (ST105). If the icon is not to be generated manually, the operational flow proceeds to the processing of the application software (in this case, the web browser).

Subsequently, if a different application software, for example, an application software for writing e-mail, is activated, it is judged whether or not an icon 10 for this application software is already generated and displayed on the sub-display unit 142 (ST108). In this case, it is judged whether or not the icon for the e-mail application software is displayed (present) on the sub-display unit 142.

If the icon 10 (for the e-mail application) is displayed (generated) on the sub-display unit 142 (i.e. if the application is active), switching to the application software corresponding to the icon 10, in this case, the e-mail software, is performed, and the e-mail screen is displayed on the main display unit 122, and the content displayed is updated regularly in accordance with processings and operations performed (ST108→ST110→ST111→ST102 . . .).

If the icon (for the e-mail application) is not displayed (generated) on the sub-display unit 142, it is judged whether or not the application software (the e-mail application), whose activation is requested, is in automatic icon generation mode (ST103).

In automatically generating the icon, a predetermined data is retrieved from the RAM 116 or the ROM 117 to generate the icon 10 (for the e-mail application), or, alternatively, the icon 10 (for the e-mail application) may be generated by reducing the content displayed on the main display unit 122. The icon 10 thus generated is displayed on the sub-display unit 142 (ST103, ST104, ST105).

If icon generation is not automatic, it is then selected whether or not the icon is to be generated manually (ST106).

In the case of manual generation, a predetermined operation is performed with the operation keys 164 and the like, and, as in the case above, predetermined data is retrieved from the RAM 116 or the ROM 117 and the icon 10 (for the e-mail application) is generated, or the icon 10 (for the

12

e-mail application) in which the content displayed on the main display unit 122 is reduced is generated. The icon 10 thus generated is displayed on the sub-display unit 142 (ST104, 105). If the icon is not to be generated manually, the operational flow proceeds to the processing of the application software (in this case, the e-mail application).

Desired processing is performed with the application software (the e-mail application) currently displayed on the main display unit 122, and it is then selected whether or not processing of the application software (the e-mail application) is to be terminated (ST109).

If the processing is not terminated, operation of the application software (the e-mail application) is continued (ST109→ST102 . . .).

If processing is terminated, it is judged whether or not the icon 10 of the application software (the e-mail application) is present (displayed) on the sub-display unit 142 (ST109→ST112).

If the icon is present on the sub-display unit 142, it is then selected whether or not the icon is to be erased from the sub-display unit 142 (ST114).

In erasing the icon, it is judged whether the icon is to be erased automatically or manually (ST115). The icon 10 (and the data in the memory) is then erased from the sub-display unit 142 (and the sub-region 142a of the memory) automatically or through a predetermined operation of the keys or the like (ST116). If the icon is not to be erased, the icon 10 (for the e-mail application) is kept on the sub-display unit 142 (and the sub-region 142a of the memory).

If the icon is not present on the sub-display unit 142, it is judged whether or not there are any other active application software (ST112→ST113).

If there is another active application software, it is switched to this application software, which is displayed on the main display unit 122. The process is then continued (ST113→ST102→. . .).

On the other hand, if there are no other active application software, the pre-set top screen is displayed (ST115→ST113→ST100).

Specific examples of the mobile phone 100 in use will be described below with reference to FIGS. 10 through 13, based on the operation flow shown in FIG. 9.

In the portable telephone 100 shown in FIG. 10, an audio screen 122e is displayed on the main display unit 122, reproduction processing of audio data is carried out, and a plurality of the icons 10 are displayed on the sub-display unit 142.

For the icons 10 displayed on the sub-display unit 142, there are pre-set, in the upper row from the left, a top (initial) screen icon 10a, an icon 10b for connecting to the Internet, an icon 10c for executing a Java (R) program, an icon 10d for e-mail and an icon 10e for operating the camera 119. In this example, these icons 10 are always displayed on the sub-display unit 142 in the upper row. In the bottom row, an icon for an active application software under processing or displayed on the main display unit 122 is displayed. In FIG. 10, an icon 10f for audio is displayed.

The always-displayed icons 10a to 10e displayed on the upper row of the sub-display unit 142 are copy type icons. When these icons are selected, a preset screen for each application software is displayed on the main display unit 122.

On the other hand, as for the icon displayed on the lower row of the sub-display unit 142, if it is a copy type (or a reduction copy type), display/erasure thereof is selected manually, and if it is a pointer type (or a reduction pointer

13

type), it is automatically displayed/erased in accordance with the activation/termination of the corresponding application software.

For example, if, as shown in FIG. 10, the portable telephone 100 is used for listening to music, the audio player software is active, and the audio screen 122e is displayed on the main display unit 122, and a manually or automatically generated "J" icon 10f is displayed on the sub-display unit 142.

If under such circumstances, a telephone call is received, it is automatically switched from the audio player software to a telephone call software (or by operating the input/call keys 162). As shown in FIG. 11, the main display unit 122 switches to a call data screen 122b which displays the telephone number of the person on the line, the duration of the call and the like. The audio player software in the main region in the memory is shifted to the sub-region, and reproduction of music is continued or temporally stopped. Also, with the activation of the telephone call software, a busy icon 10g (pointer type) indicating that a user is in the middle of a phone call is automatically generated on the sub-display unit 142.

In addition, it is also possible to connect to the Internet during a phone call. For example, if the user wishes to access a web site to search for a restaurant, a predetermined operation is performed with the input/call keys 162 or the operation keys 164 of the operation unit 160 to thereby switch from the main display unit 122 to the sub-display unit 142. Then, the "i" icon 10b on the upper row of the sub-display unit 142 is selected.

When the "i" icon 10b is selected, a net connection software is activated, and a web browser is displayed on the main display unit 122. Then, a desired web site is found and accessed via the Internet, and a restaurant search screen is displayed on the main display unit 122 as shown in FIG. 12. At this point, the call software processed in the main region of the memory is shifted to the sub-region, and processing of the phone call is continued. In addition, with the activation of the net connection software, a "Net" icon 10h (pointer type) is automatically generated on the sub-display unit 142.

Then, in the restaurant search screen 122c, station name, budget, kind of cuisine and the like, for example, are inputted, and information on restaurants (such as telephone number and a map) which match the search conditions is displayed on the main display unit 122.

At this point, a copy type (reduction copy type) icon 10H for the displayed screen may be generated and displayed on the sub-display unit 142 through a predetermined operation with the input/call keys 162 of the operation unit 160 or the operation keys 164, or the displayed screen may be saved as a copy type (reduction copy type) icon to replace the "Net" icon 10h (pointer type) when the net connection software is terminated. The icon 10h for the net connection software may also be erased automatically after a predetermined period has elapsed.

Moreover, if it is desired that the information (the displayed screen) retrieved in the restaurant search screen 122c of FIG. 12 be sent via e-mail, it is switched from the main display unit 122 to the sub-display unit 142 through a predetermined operation of the input/call keys 162 or the operation keys 164, and the mail icon 10d (illustrated with a drawing of an envelope in the diagram) on the top row of the sub-display unit 142 is selected.

When the mail icon 10d is selected, the e-mail software is activated, and a screen for creating a new message 122d

14

shown in FIG. 13 is displayed on the main display unit 122. At the same time, a "New" icon 10i (pointer type) is automatically generated on the sub-display unit 142.

Then, items such as title, addressee, main text or the like may be inputted through the input/call keys 162 or the operation keys 164 of the operation unit 160, and the icon 10H is attached. When the thus generated message is transmitted or saved, the "New" icon 10i of the sub-display unit 142 is automatically erased (returns to the state shown in FIG. 12).

Subsequently, when Internet connection is terminated (refer to FIG. 11) and the phone connection is cut, the "Net" icon 10h and the "busy" icon 10g of the sub-display unit 142 are automatically erased, and music reproduction is resumed automatically or manually (returns to the state shown in FIG. 10).

At this point, if the "J" icon 10f is a pointer type icon, music reproduction has been ongoing, and thus when the music reproduction software is automatically or manually reactivated after the phone call is terminated, music reproduction is resumed in a condition where a certain period of time has elapsed. If, on the other hand, the "J" icon 10f is a copy type icon, music reproduction is in a state in which it is temporarily stopped. When the audio player software is automatically or manually reactivated after the call is terminated, music is reproduced from the point at which it was stopped. Regardless of whether the icon is of a pointer type or a copy type, when the audio player software is reactivated, the main display unit 122 displays the audio screen 122e.

When each of the application software is successively terminated, according to the operational flow of FIG. 9, the top (initial) screen is displayed on the main display unit 122. However, if, as in the case above, a process in which the application software used most recently is displayed is adopted, the restaurant search screen 122c (refer to FIG. 12), for example, is displayed on the main display unit 122. If, on the other hand, a process in which the application software whose data is updated most frequently is displayed is adopted, the call data screen 122b (refer to FIG. 11). However, it is assumed here that the call data is updated most frequently, for example, is displayed on the main display unit 122.

In addition, for the icons illustrated in FIGS. 10 through 13, "J" for example, is used for music reproduction, and "busy" is used for the call mode, and the icons are automatically selected in accordance with the application software. However, it is naturally possible to use other methods, such as making a selection each time an icon is generated, or assigning an icon by order, or the like.

Further, the main display unit 122 (one display screen) provided on the display unit 120 may be divided into a main display area and a sub-display area. For example, as shown in FIG. 14, in a display unit 120A, if the main display area is set to be a display region (B) 122M, the sub-display area may be displayed in an upper portion of a display unit 122A as a display region (A) 122S, or it may be displayed in the lower portion of the display unit 122A as a display region C (sub) 122S. Moreover, it is naturally possible to place one of the main display area and the sub-display area on the right and the other on the left, or to alternate between the main and the sub-display areas as required, or place the main and sub-display areas in positions other than those described above. Still further, the sizes of the display regions of the main display area and the sub-display area may be set arbitrarily.

15

Thus, in a portable telephone, other than the foldable portable telephone **100** equipped with the main display unit **122** and the sub-display unit **142** as separate display screens as mentioned above, in which only one display unit is provided, similar functionality is still achievable if the one display unit is divided, as shown in FIG. **14**, into a main display area and a sub-display area. Therefore, functionality similar to those described herein may naturally be attained in apparatuses other than a portable telephone apparatus regardless of whether or not they are of a foldable type and of whether or not they are equipped with a plurality of display units.

Thus, since the invention disclosed herein may be embodied in other specific forms without departing from the spirit or general characteristics thereof, some of which forms have been indicated, the embodiments described herein are to be considered in all respects illustrative and not restrictive. The scope of the invention is to be indicated by the appended claims, rather than by the foregoing description, and all changes which come within the meaning and range of equivalents of the claims are intended to be embraced therein.

What is claimed is:

1. A task display switching method in a portable apparatus capable of processing a plurality of tasks in parallel and of displaying a plurality of display regions for displaying data, comprising:

generating a first icon associated with a first task when a second icon associated with a second task is selected from icons displayed in a second display region, said first task being displayed in a first display region that displays a selected task;

removing the display of the first task from the first display region without ending the first task;

displaying said first icon in said second display region that displays icons, said first icon graphically depicting one of a plurality of processing states of said first task associated with said first icon; and

restoring said first task associated with said first icon to the first display region when said first icon is selected from icons displayed in said second display region.

2. The task display switching method according to claim **1**, wherein said first icon graphically depicts a most recent processing state of said first task.

3. The task display switching method according to claim **1**, wherein said first icon graphically depicts a processing state at which said first task is suspended or stopped.

4. The task display switching method according to claim **1**, wherein said first icon graphically depicts an initial processing state of said first task.

5. The task display switching method according to claim **1**, wherein said first icon graphically depicts one of a plurality of processing states of said first task is generated by reducing an image displayed on said first display region.

6. The task display switching method according to claim **1**, wherein said first icon associated with said first task is erased from said second display region when said restoring is carried out.

7. A portable apparatus capable of processing a plurality of tasks in parallel and of displaying a plurality of display regions for displaying data, comprising:

icon generation means for generating an icon associated with one of said tasks;

a first display region that displays a selected task; and a second display region that displays icons; wherein said icon generating means generates a first icon associated with the a first task displayed on said first display

16

region when a second icon associated with a second task is selected from icons displayed in said second display region, said first icon graphically depicting one of a plurality of processing states of said first task associated with said first icon,

the first display region removes display of the first task from the first display region without ending the first task,

said first icon associated with said first task is displayed in said second display region, and

when said first icon associated with said task is selected from icons displayed in said second display region, said first task associated with said first icon is restored and displayed in said first display region.

8. The portable apparatus according to claim **7**, wherein said first icon graphically depicts a most recent processing state of said first task.

9. The portable apparatus according to claim **7**, wherein said first icon graphically depicts a processing state at which said first task is suspended or stopped.

10. The portable apparatus according to claim **7**, wherein said first icon graphically depicts an initial processing state of said first task.

11. The portable apparatus according to claim **7**, wherein said first icon graphically depicting one of a plurality of processing states of said first task is generated by reducing an image displayed in said first display region.

12. The portable apparatus according to claim **7**, wherein said first icon associated with said first task is erased from said second display region when said first task is restored.

13. A portable communications apparatus, capable of processing a plurality of tasks in parallel, comprising:

a display unit;

a first display region for displaying a selected task provided in said display unit;

a hinge unit;

a second display region for displaying icons provided in said hinge unit;

an operation unit having operating means; and

icon generating means for generating an icon associated with one of said tasks, wherein said display unit and said operation unit are joined via said hinge unit,

said display unit and said operation unit are rotatable so as to be opened/closed with said hinge unit as a shaft, said first display region and said second display region become viewable when said display unit and said operation unit are rotated to an opened position,

a first icon associated with a first task displayed in said first display region is generated with said icon generating means when a second icon associated with a second task is selected from icons displayed in said second display region, said first icon graphically depicting one of a plurality of processing states of said first task associated with said first icon,

the first task is removed from the first display region without ending the first task;

said first icon associated with said first task is displayed in said second display region, and

when said first icon associated with said first task is selected from a plurality of icons displayed in said second display region, said first task associated with said first icon is restored and displayed in said first display region.

14. The portable communications apparatus according to claim **13**, wherein said first icon graphically depicts a most recent processing state of said first task.

17

15. The portable communications apparatus according to claim 13, wherein said icon graphically depicts a processing state at which said first task is suspended or stopped.

16. The portable communications apparatus according to claim 13, wherein said first icon graphically depicts an initial processing state of said first task.

17. The portable communications apparatus according to claim 13, wherein said first icon graphically depicting one of a plurality of processing states of said first task is generated by reducing an image displayed in said first display region.

18. The portable communications apparatus according to claim 13, wherein said first icon associated with said first task is erased from said second display region when said first task is restored.

18

19. The portable communications apparatus according to claim 13, wherein said second display region is provided so as to be viewable when said display unit and said operation unit are rotated to a closed position.

20. The portable communications apparatus according to claim 13, wherein said second display region displays data indicating a status of said portable communications apparatus.

21. A portable communications apparatus according to claim 20, wherein said data indicating said status of said portable communications apparatus is one of a communication condition, remaining battery capacity, the time and presence of stored data.

* * * * *

EXHIBIT 3
FILED UNDER SEAL

EXHIBIT 4
FILED UNDER SEAL

EXHIBIT 5

WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY

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Lexicographer



IEEE PRESS



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Library of Congress Cataloging-in-Publication Data is available.

Kaplan, Steven M.

Wiley Electrical and Electronics Engineering Dictionary

ISBN 0-471-40224-9

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

aperture distortion A type of distortion that is caused by the size and shape of the scanning aperture. In a TV, for example, it is due to the size of the electron scanning beam. This may distort the image or diminish resolution.

aperture grill picture tube In a picture tube with a three-color gun, a grill with vertical wires that is placed behind the screen to make sure that each color beam strikes the correct phosphor dot on the screen. It insures, for instance, that the electron beam intended for the blue phosphor dots only hits those. Such a grill provides an image with better clarity and sharpness.

aperture illumination The field-intensity distribution of an electromagnetic wave over an aperture. Used especially in the context of the aperture of an antenna.

aperture mask In a picture tube with a three-color gun, a grill with round holes that is placed behind the screen to make sure that each color beam strikes the correct phosphor dot on the screen. It insures, for instance, that the electron beam intended for the red phosphor dots only hits those. Also called **shadow mask**, or **mask** (3).

aperture pitch On the display screen of a picture tube with an aperture mask, the distance between phosphor dots of like color between one phosphor stripe and the next. Usually expressed in millimeters, and the lower the number, the crisper the image. Also called **stripe pitch**.

aperture synthesis telescope A computer-controlled telescope which utilizes two or more pairs of antennas which sequentially cover sections of the total aperture, in order to gather the information equivalent to that obtained by a much larger single telescope. Also called **synthesis telescope**.

aperture time 1. The time interval during which a measuring instrument acquires a sample of a signal. 2. The time interval necessary for a measuring instrument to acquire a sample of a signal.

API 1. Abbreviation of **air-position indicator**. 2. Abbreviation of **application program interface**.

APL Abbreviation of **A Programming Language**. A concise high-level programming language especially suited for generating matrices.

app Abbreviation of **application**.

apparatus A device or integrated group of devices utilized for a given purpose.

apparent horizon As seen from a given location, the junction at which the earth, or the sea, appears to meet the sky. Also called **horizon** (1), or **visible horizon**.

apparent power In an AC circuit, the product of the RMS current and the RMS voltage. This value does not take into account the phase angle between the voltage and current. Expressed in volt-amperes.

appearance potential In a mass spectrometer, the minimum potential required to provide an electron beam with the minimum energy necessary to produce fragmentation ions of a particular species.

Applegate diagram For velocity-modulation tubes, a diagram which plots the flow of electron groups as a function of time.

applet A small application designed to run within another program. Frequently, it is downloaded over a network to be launched on a user's computer. On a Web page, for example, it can provide video and/or audio effects, or perform calculations.

AppleTalk A popular LAN protocol or architecture.

Appleton layer The highest layer in the ionosphere, spanning an altitude of about 200 to 400 kilometers. Although this layer is influenced by factors such as time of day, season, and sunspot activity, it exists at all times, and at night it is the only component of the F region. It is useful for long-

distance propagation of high-frequency radio waves day or night. Also known as **F₁ layer**.

appliance A powered device designed to help do work, perform tasks, or to assist in providing comfort or convenience. These usually use electrical energy, and include dryers, lamps, refrigerators, and microwave ovens. Precision electronics, such as high-fidelity components and computers are sometimes not included in this group.

appliance server A self-contained server which incorporates both hardware and software, and which is designed to be installed and maintained with a minimum of effort and support. Such a server is usually plugged into an existing network, with all supported applications preinstalled, and is used, for instance, as a Web server, mail server, or file server. Appliance servers are configured and accessed via Web browsers. Also called **server appliance**.

application 1. A specific use for a device. 2. A computer program designed to enable end users to perform specific tasks, such as word processing or communications. Its abbreviation is **app**. Also called **application program**.

application binary interface A set of instructions that determine how a computer application interacts with the operating system and the hardware. This contrasts with an **application program interface**, which only interacts with the operating system. Its abbreviation is **ABI**.

application-centric Pertaining to an operating system in which the application is the starting point of a task. For example, to work on a document, first the word-processing program is opened, and then the document is retrieved. This contrasts with **document-centric**, where the document is the starting point of a task.

application development The work involved in creating and improving computer programs intended for end users.

application development environment The suite of programs that software developers use to develop applications. These programs may include debuggers and compilers.

application development language A computer language, such as COBOL, that facilitates the development of applications.

application development system A coordinated set of tools that enable the development of applications.

application framework 1. The basic conceptual structure of an application. 2. In object-oriented programming, the set of classes that provide the structure for building an application. Also called **framework**.

application gateway 1. In a network, a computer or program that links one application to another by performing the necessary protocol conversions. 2. A computer or program that allows only certain application traffic to cross between a private network and all other networks.

application generator Computer software that enables the generation of applications based on a description of the task or problem to be addressed. These applications may be tailored to specific needs, and as such tend to be limited in scope.

application layer Within the OSI Reference Model for the implementation of communications protocols, the highest level, located directly above the presentation layer. This layer takes care of the exchange of information between applications, including tasks such as file transfers, email, and access to a remote computer. Also called **level 7**.

application level gateway A server, application, or system that serves as an intermediary between a private network, such as a LAN, and all other networks. Its two main functions are to provide document caching and access control. When caching, an application level gateway first attempts to access data which it has cached, and if not present there, it fetches it from a remote server where said data resides.

EXHIBIT 6

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[\[cite\]](#)

applet

Definition:

a small computer program, especially one written in Java, that performs a specific task, sometimes within the context a larger program

Class:

communication noun (communicative processes and contents)

Plural:

applets

Topic:

[information technology](#) » [engineering science](#) » [discipline](#) » [knowledge domain](#)

Type of:

[application program](#) » [program](#) » [software package](#) » [computer code](#)

Original source:

[Princeton WordNet](#)

Etymology:

app + *-let*, but perhaps also influenced by *Apple* (the term originated in...

(Source: Wiktionary) [\[more\]](#)

Definition references

Wikipedia:

Applet

any small application that performs one specific task that runs within the scope of a larger program, often as a plug-in. An applet typically also refers to Java applets, i.e., programs written in the Java programming language that are included in a... (42 of 912 words)

en.wikipedia.org/wiki/Applet [\[cite\]](#)

Encarta Dictionary:

applet | applets [plural]

a simple computer program that performs a single task, run from within a larger application | a small piece of computer code, often embedded in a Web ... (26 of 63 words, 2 definitions, pronunciation)

encarta.msn.com/dictionary/1861586376/definition.html [\[cite\]](#)

Cambridge Dictionary:

applet [specialized]

a small computer program that is automatically copied onto a computer when you look at a document that needs this program to make it work (25 of 48 words, 1 usage example, pronunciation)

dictionary.cambridge.org/dictionary/british/applet [\[cite\]](#)

Oxford Dictionary:

applet [computing] | computer program [type of]

a very small application, especially a utility program performing one or a few simple functions (15 of 37 words, pronunciation)

oxforddictionaries.com/definition/applet [cite]

Macmillan British Dictionary:

applet [countable, computing] | applets [plural]

a simple computer program designed to run from a webpage (10 of 36 words, pronunciation)

www.macmillandictionary.com/dictionary/british/applet [cite]

Merriam-Webster:

applet

a short computer "application" especially for performing a simple specific task (11 of 30 words, pronunciation)

www.merriam-webster.com/dictionary/applet [cite]

American Heritage Dictionary:

applet [computer science]

An application that has limited features, requires limited memory resources, and is usually portable between operating systems. (17 of 24 words)

www.yourdictionary.com/applet [cite]

Random House Dictionary:

applet [computers]

a small application program that can be called up for use while working in another application. (16 of 21 words, pronunciation)

dictionary.infoplease.com/applet [cite]

Wiktionary:

applet [computing] | applets [plural]

a small program module that runs under the control of a larger application, typically a web browser (17 of 19 words)

en.wiktionary.org/wiki/applet [cite]

New World Dictionary:

app

appendix | applied | appointed | apprentice | approved (5 of 5 words, 5 definitions)

www.yourdictionary.com/app [cite]

Etymology references

Wiktionary:

applet [computing]

Origin: app + -let, but perhaps also influenced by Apple (the term originated in AppleScript)

Origin: *app* + *-let*, but perhaps also influenced by *Apple* (the term originated in Applescript).

en.wiktionary.org/wiki/applet [\[cite\]](#)

Online Etymology:

applet

First use: by 1995

Origin: a diminutive formation from "application".

www.etymonline.com/index.php?term=applet [\[cite\]](#)

Oxford Dictionary:

applet [computing]

First use: 1990s

Origin: blend of "application" and "-let"

oxforddictionaries.com/definition/applet [\[cite\]](#)

Encarta Dictionary:

applet | applets [plural]

First use: Late 20th century

Origin: application + -let

encarta.msn.com/dictionary/1861586376/definition.html [\[cite\]](#)

Merriam-Webster:

applet

First use: 1990

Origin: *application* + *-et*

www.merriam-webster.com/dictionary/applet [\[cite\]](#)

-et [entry 1, affix, suffix, noun suffix]

Origin: Middle English, from Anglo-French *-et*, masculine, and *-ete*, feminine, from Late Latin *-itus* and *-ita*

www.merriam-webster.com/dictionary/-et [\[cite\]](#)

American Heritage Dictionary:

applet [computer science]

Origin: "application" + "-et".

www.yourdictionary.com/applet [\[cite\]](#)

application

Origin: Middle English *applicacion*, from Old French, from Latin *applicātiō*, *applicātiōn-*, from *applicātus*, past participle of ... (15 of 20 etymology words)

www.yourdictionary.com/application [\[cite\]](#)

-et

Origin: Middle English, from Old French, from Vulgar Latin **-ittum*.

www.yourdictionary.com/et-suffix [\[cite\]](#)

Audio references

Cambridge Dictionary:

Cambridge Dictionary:

applet [specialized]

Audio 1: British English pronunciation of "applet"



Play Once

Audio 2: North American English pronunciation of "applet"



Play Once

dictionary.cambridge.org/dictionary/british/applet [cite]

Macmillan British Dictionary:

applet [countable, computing] | applets [plural]

Audio: British English pronunciation of "applet"



Play Once

www.macmillandictionary.com/dictionary/british/applet [cite]

Macmillan American Dictionary:

applet [countable, computing] | applets [plural]

Audio: North American pronunciation of "applet"



Play Once

www.macmillandictionary.com/dictionary/american/applet [cite]

the Free Dictionary:

applet

Audio 1: North American English pronunciation of "applet"



Play Once

Audio 2: British English pronunciation of "applet"



Play Once

Audio 3: North American English pronunciation of "applet" by speech synthesizer



Play Once

www.thefreedictionary.com/applet [cite]

Google Dictionary:

applet | applets [plural]

Audio: English pronunciation of "applet"



Play Once

www.google.com/#hl=en&tbs=dfn:1&fp=1&q=applet [cite]

Merriam-Webster Pronunciation:

applet

Audio: North American pronunciation of "applet"



Play Once

www.merriam-webster.com/audio.php?file=apple05c&word=applet [cite]

applet

Audio: North American pronunciation of "applet"



Play Once

www.merriam-webster.com/audio.php?file=apple06c&word=applet [cite]

YourDictionary Audio:

applet

Audio: North American English pronunciation of "applet"



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www.yourdictionary.com/applet [cite]

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EXHIBIT 7A

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October 10th, 2004, 11:00 PM

#1 (permalink)

Nancy P.

Member

Join Date: Mar 2004
 Posts: 67

Windows 9x question about 32-bit and 16-bit software installation

Hello again,
 It's week #5 and I need help with another question in my A+ Operating Systems class. You all have been great in helping me to find the answers to these testy questions...I think I may have the answer in this one, but I am not thoroughly convinced, so here goes.

Google Offers in San Fran www.google.com/offers
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Use the _____ applet in the Control Panel when installing 32-bit software designed for Windows 9x. Use the _____ option on the Start menu when installing older 16-bit software.

I think that the answers might be Add/Remove Programs and then the second one might be Drive Converter?

Thanks for your help!

AdChoices Nancy

Ads by Google

[Windows XP Driver](#)
[Windows XP Service Pack 3](#)
[Menu Software](#)

Last edited by Nancy P. : October 10th, 2004 at 11:02 PM. Reason: I want to add my answers

Quote

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October 10th, 2004, 11:32 PM

#2 (permalink)

Siliconjunkie

Did you try Google yet?



Join Date: Feb 2003
 Location: Buckhannon, WV
 Posts: 3,468



Microsoft® Private Cloud
 Go Beyond Virtualization And See Inside Your Apps. Learn More Today!
Microsoft.com/readynow

Well, to be honest it sounds like a BS question. There is no answer AFAIK.

I would go with your answer for the first part, but not the second.

But, it has been many years since I have run 98. At this point I would refuse to work with it. If they are still running 98, they need to upgrade.

AdChoices

Ask a Tech Question (free)!

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 GTS250 driver upgrade (5)
 alternative solution for dead wirel.. (7)
 Which graphics card is best suited .. (57)
 Thinking of new build..wanna make s.. (6)
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It doesn't specify an OS, but I assume it is 98.

My computer is bigger than yours!

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[Install Software](#)



October 10th, 2004, 11:40 PM

#3 (permalink)

PresterJohn

the *Voice* in your Head



Join Date: Dec 2001
Location: NY
Posts: 4,519



nancy,

you are correct on #1...the answer would be add/remove programs

for #2 the answer would be the Run option



October 10th, 2004, 11:43 PM

#4 (permalink)

Siliconjunkie

Did you try Google yet?



Join Date: Feb 2003
Location: Buckhannon, WV
Posts: 3,468



Not to threadcrap, but this is the problem with all the "+" exams. They want ONE answer on how to do something.

This could be done several ways. You dont HAVE to use add/remove or Run to do either. You could just browse to the installer, let the autorun do it, or just run it from the desktop if it is a single executable.



October 10th, 2004, 11:45 PM

#5 (permalink)

Nancy P.

Member

Join Date: Mar 2004
Posts: 67



Thanks for your help. Just to let you know... this is an OS class, but the book discusses 9x to start and we will end up in XP.

Nancy



October 10th, 2004, 11:47 PM

#6 (permalink)

PresterJohn

the *Voice* in your Head



Join Date: Dec 2001
Location: NY
Posts: 4,519

Quote:

Originally Posted by **Siliconjunkie**
Not to threadcrap, but this is the problem with all the "+" exams. They want ONE answer on how to do something.

This could be done several ways. You dont HAVE to use add/remove or Run to do either. You could just browse to the installer, let the autorun do it, or just run it from the desktop if it is a single executable.

this is true...there are several ways to do it. however, in the question context she posed then the range of 'possible' answers are rather limited.


the 'problem' as you state it also occurs on many of the mcse exams. oftentimes, there are more than one possible answer (depending on

dell windows 7 wont start power butto.. (2)
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alternative solution for dead wireles.. (7)
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DIMO Login/Logout (18)
System Recovery's trouble on Gateway .. (0)
Droid vs Iphone (34)
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Software Audio Amplifier for a laptop.. (33)
[F@H SPAM November 2011] Its Been 3 .. (89)
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GTS250 driver upgrade (5)
Compatibility in a new build. (3)
Laptop Will NOT turn on (0)
MSi N550GTX-Ti Cyclone II 1GD5 (4)
2 wireless laptops (2)
BurnAware Free 4.2 error (2)
Resolution too big too small through .. (4)
WinRAR (4)
entropy and bits (4)


Your IP is 12.108.179.4! Your ISP is AT&T WorldNet Services!
You are running Windows XP and using IE 7!
IE is for weenies.
danasoft.com





one's interpretation) but you need to find the 'best' answer.







October 10th, 2004, 11:57 PM

#7 (permalink)

Siliconjunkie
Did you try Google yet?




Join Date: Feb 2003
Location: Buckhannon, WV
Posts: 3,468



AKA the MS answer.

Well, the 98/ME portion of the test is easy. The answer is always to upgrade to XP.





October 12th, 2004, 12:46 PM

#8 (permalink)

Regulus
Banned



Join Date: Sep 2004
Location: California
Posts: 241



answer



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[16 Bit](#)


PresterJohn has it right, 32 bit-add/remove, 16 bit installs from "run".

Regulus







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EXHIBIT 7B

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Control Panel Applet Framework

By [Len Holgate](#) | 24 Feb 2000[VC6](#) [MFC](#) [Dev](#) [Intermediate](#)Licence [CPOL](#)
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A mini framework for writing Control Panel applets. Just fill in the blanks!.

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The problem

The Windows Control Panel is the ideal way to allow a user to alter settings for an application that runs in the background, or automatically. When I was exploring NT Services it seemed like a good idea to control my service using a control panel applet. But what *are* control panel applets and how do you write one? Well, after some exploring in the MSDN I discovered that control panel applets are just standard DLLs with a particular set of entry points and a .cpl extension. Place such a file in the Windows System directory and the next time you start up control panel your applet will be there. Having discovered what I needed to know I set about writing a control panel applet and once I'd done that, I turned the bulk of the code into a mini applet framework so I wouldn't have to write it ever again!

Anatomy of a control panel applet

Control panel applets are pretty old now, and no doubt some day soon they will be replaced by fully fledged COM objects. In the mean time they're a reasonable first attempt at component based programming. A control panel applet is a DLL that presents a standard interface to the Control Panel application. When Control Panel starts it locates all the .cpl files in the Windows System directory and tries to load them as DLLs. If this works then it tries to locate a function called `CPlApplet()` in the newly loaded DLL. If the DLL has the function entry point then it's a control panel applet! But there's more, a single DLL can contain multiple applets and they each appear as a separate icon in Control Panel.

`CPlApplet()` is a relatively simple function taking a window handle, a message and a couple of message specific parameters. Writing one is similar to writing a normal window proc and is reasonably well documented in MSDN and the VC++ online help. The framework that I produced provides an implementation of `CPlApplet()`, along with a `DllMain()` and wires these DLL entry points up to a class designed to be a base class for your applets. Simply derive from `CJBControlPanelApplet`, build a DLL with a .cpl extension and with the link with framework and you're done!

What does CJBControlPanelApplet give you?

To be a control panel applet your `CPlApplet()` entry point has to respond appropriately to messages from the Control Panel application. Most of these messages are mundane, housekeeping. `CJBControlPanelApplet` handles all of this for you and provides virtual functions that you can override if you want a little more control. If you wish, you only need handle one message, by providing an `OnDoubleClick()` handler for when your applet is activated and should do its stuff. Each of the standard CPL_ messages has a corresponding virtual message handler (except `CPL_GETCOUNT` which is handled entirely by the framework).







Your derived class

To implement your control panel applet you need to do the following:

- include "ControlApplet.hpp" and publicly derive a class from `CJBControlPanelApplet`.
- call the `CJBControlPanelApplet` constructor and pass resource IDs for the applet's icon, name and description.
- implement the pure virtual function `OnDoubleClick()` - this is where your applet becomes live and can display a dialog or whatever.
- create an instance of your applet class at global scope.
- link with ControlApplet.cpp and include ControlApplet.def in your project. ControlApplet.cpp gives you the implementation of `CJBControlPanelApplet` and suitable `DllMain()` and `CPlApplet`

() DLL entry point functions.

If you wish you can also:

-  handle `OnInit()` - for resource acquisition, or start up code.
-  handle `OnStop()` - for resource release and shutdown code.
-  handle `OnExit()` - for last minute shut down code that wasn't put into `OnStop()` for some reason...
-  handle `OnInquire()` - if you really want to take over the filling in of the `LPCPLINFO` structure... Or perhaps you want to use the standard `OnNewInquire()` functionality so you might want to return FALSE from here!
-  handle `OnNewInquire()` - if my handling of it doesn't suit you. For dynamic icons or descriptions perhaps?
-  handle `OnStartWithParams()` - if you want to do clever things when started with command line parameters by `rundll`.

Note the handling of the poorly documented `CPL_STARTWPARAMS` has not been tested since I don't have access to Windows 95 and `rundll` doesn't seem to exist on NT4.

Multiple applets in one DLL

`CJBControlPanelApplet` implements a linked list of all active object instances. Every time the constructor is called it links the current object into the static list of all `CJBControlPanelApplet` objects. Whenever the DLL entry point processes a message it walks the static list of applets and passes the message to each in turn. All you need to do is declare an object of a type derived from `CJBControlPanelApplet` at global scope and as soon as the applet is loaded your object will be created and automatically wired up to the list and begin receiving messages.

If you want to develop multiple applets as separate DLLs that's fine, if you change your mind and want to have them all in the same DLL then just link all the files together in one project and the framework does the rest for you. No code changes!

See the [article](#) on Len's homepage for the latest updates.

License

This article, along with any associated source code and files, is licensed under [The Code Project Open License \(CPOL\)](#)

About the Author

Len Holgate

Software Developer (Senior)
JetByte Limited
 United Kingdom

Member

Len has been programming for over 30 years, having first started with a [Sinclair ZX-80](#). Now he runs his own consulting company, [JetByte Limited](#) and has a technical blog [here](#).

JetByte provides contract programming and consultancy services. We can provide experience in COM, Corba, C++, Windows NT and UNIX. Our speciality is the design and implementation of systems but we are happy to work with you throughout the entire project life-cycle. We are happy to quote for fixed price work, or, if required, can work for an hourly rate.

We are based in London, England, but, thanks to the Internet, we can work 'virtually' anywhere...

Please note that many of the articles here may have updated code available on Len's [blog](#) and that the IOCP socket server framework is also available in a licensed, much improved and fully supported version, see [here](#) for details.



EXHIBIT 7C

[WinDrivers Computer Tech Support Forums](#) > [For Techs Only](#) > [Tech Tips](#) > Run control panel applets directly at command level !

[PDA](#)

Click to See Complete Forum and Search --> : [Run control panel applets directly at command level !](#)

Tushar

May 11th, 2001, 09:00 AM

here is how to run control panel applets at the Run command level...
Just type the correct syntax and you don't need to open the control panel from Start > Settings > Control panel.

Control panel tool Command-----
Accessibility Options control access.cpl
Add New Hardware control sysdm.cpl add new hardware
Add/Remove Programs control appwiz.cpl
Date/Time Properties control timedate.cpl
Display Properties control desk.cpl
FindFast control findfast.cpl
Fonts Folder control fonts
Internet Properties control inetctl.cpl
Joystick Properties control joy.cpl
Keyboard Properties control main.cpl keyboard
Microsoft Exchange control mlcfg32.cpl
(or Windows Messaging)
MS Mail Post Office control wgpocpl.cpl
Modem Properties control modem.cpl
Mouse Properties control main.cpl
Multimedia Properties control mmsys.cpl
Network Properties control netctl.cpl
NOTE: In WinNT 4.0, Network properties is Ncpa.cpl, not Netctl.cpl
Password Properties control password.cpl
PC Card control main.cpl pc card (PCMCIA)
Power Mgmt (Win95) control main.cpl power
Power Mgmt (Win98) control powercfg.cpl
Printers Folder control printers
Region Settings control intl.cpl
Scanners & Cameras control sticpl.cpl
Sound Properties control mmsys.cpl sounds
System Properties control sysdm.cpl
(Not for WinME, It has been replaced by the Scanners and Cameras Folder, which is similar to folders like Printers and Dial-up Networking for earlier Win9Xs)

LagMonster

May 11th, 2001, 09:04 AM

Thats cool, where did you pick that up? Don't tell me you tried all the combinations to get them either :)

Tushar

May 11th, 2001, 09:40 AM

I found them on the MS Knowledge base page
Q192806 is the article no.

lysergic

May 11th, 2001, 06:00 PM

That trick is very useful if you have an occsion where you can not open the control panel and need to track down which one of the modules is causing it to error out.

You can also use explorer to browse to the windows/system32 directory and launch the different modules from there.

Basically anything with a .cpl extension is a control panel module.

Deity

May 11th, 2001, 07:01 PM

I love that trick. I lost count of the times I had systems that were so messed up that they couldn't access the Control Panel.

Radical Dreamer

May 11th, 2001, 11:14 PM

Originally posted by Deity:

I love that trick. I lost count of the times I had systems that were so messed up that they couldn't access the Control Panel.

That's when format C: kicks in. I don't mess around unless the pay is right.

<http://forums.windrivers.com/cgi-bin/forum1/noncgi>

May 15th, 2001, 12:52 AM

Tiu... most of them doesn't work with Win2000.

Who Me

May 15th, 2001, 10:22 AM

Originally posted by Radical Dreamer:

That's when format C: kicks in. I don't mess around unless the pay is right.

I agree, but it's good to know them though.

lysergic

May 15th, 2001, 10:53 AM

Originally posted by Malaysia_Sucks:

Tiu... most of them doesn't work with Win2000.

You need to be logged on as an admin

GOVTECH

May 15th, 2001, 12:12 PM

Pretty neat wish more worked in Win2K.

Thanks

xigxag

January 19th, 2006, 11:45 PM

I had to register just to say thanks for that list, it proved very helpful to me and I couldn't find one elsewhere in my searching.

These commands are very useful for troubleshooting a 98 machine in Progman when Explorer.exe isn't working. I could get to all of the control panel applets from Progman, great!

Platypus

January 20th, 2006, 08:27 AM

Thanks for making the comment xigxag, and welcome to WinDrivers.

We hope we can be of further help to you sometime.

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EXHIBIT 7D



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 Registry Home > Security > Control Panel

Hide Control Panel Applets (Windows NT/2000/XP) Popular

This tweak allows you to show or hide specific applets found in the Windows Control Panel.



This tweak can be easily applied using WinGuides Tweak Manager.
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Open your registry and find the key below.

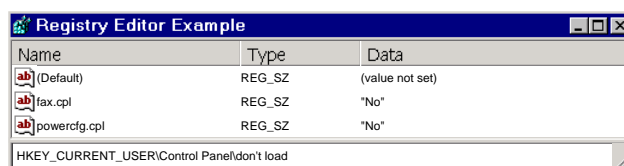
For each applet you want to hide create a new string value and call it the filename of the applet to be hidden (for example 'fax.cpl'). Set the value to equal 'No' to hide the applet or delete the value to display it.

Common Control Panel Applets:

- **access.cpl** - Accessibility Applet
- **appwiz.cpl** - Add/Remove Programs Applet
- **console.cpl** - Console Applet
- **timedate.cpl** - Date and Time Applet
- **desk.cpl** - Display Applet
- **fax.cpl** - Fax Applet
- **hdwwiz.cpl** - Hardware Wizard Applet
- **irprops.cpl** - Infrared Port Applet
- **intl.cpl** - International and Regional Applet
- **inetcpl.cpl** - Internet Settings Applet
- **joy.cpl** - Joystick Applet
- **liccpa.cpl** - Licensing Applet
- **main.cpl** - Mouse and Keyboard Applet
- **mlcfg32.cpl** - Mail Applet
- **mmsys.cpl** - Sound and Multimedia Applet
- **modem.cpl** - Modem and Phone Applet
- **ncpa.cpl** - Network and connectivity Applet
- **netcpl.cpl** - Network and Dial-up Connectivity Applet
- **nwc.cpl** - Netware Client Applet
- **odbccp32.cpl** - ODBC Applet

- **devapps.cpl** - PC Card Applet
- **ports.cpl** - Ports Applet
- **powercfg.cpl** - Power Management Applet
- **sticpl.cpl** - Scanner and Camera Applet
- **srvmgr.cpl** - Server Manager Applet
- **sapi.cpl** - Speech Properties Applet
- **sysdm.cpl** - System Applet
- **telephon.cpl** - Telephony Applet
- **tweakui.cpl** - TweakUI Applet
- **nusrmgr.cpl** - User Manager Applet
- **wspcpl32.cpl** - WSP Client Applet
- **quicktime.cpl** - QuickTime Applet
- **S32LUCP1.cpl** - Norton Live Update Applet
- **cpqmgmt.cpl** - Compaq Insight Agents Applet

Exit the registry and either logout or restart Windows.



Registry Settings

User Key: [HKEY_CURRENT_USER\Control Panel\don't load]

Data Type: REG_SZ (String Value)

Value Data: Yes or No

Related Tweaks

- Hide Control Panel Applets (*Windows 95/98/Me*) Popular

>> **Recommended Download** - check, repair and optimize your registry now with Registry Mechanic <<

Disclaimer: Modifying the registry can cause serious problems that may require you to reinstall your operating system. We cannot guarantee that problems resulting from modifications to the registry can be solved. Use the information provided at your own risk.

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Control Panel Applet Missing

Posted: 11-17-2003, 04:40 PM

Recommended Solution:

1. Read the posts below from help and instructions from other users.
2. **Before and after** making any changes to your system or installing any software, we strongly recommend you to [check Windows for Registry errors](#).

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When trying to adjust folder options, I could not find the Control Panel Applet "Folder Options". I tried running "control folders" from the Run command and received a message that, "This operation has been cancelled due to restrictions in effect on this computer". I know of no changes made. I am the computer administrator here. Any help would be greatly appreciated.

Jack

Jack

Guest

Posts: n/a

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AdChoices



lexplore.exe?



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Responses to "Control Panel Applet Missing"

Doug Knox MS-MVP

Guest
Posts: n/a

Re: Control Panel Applet Missing

Posted: 11-17-2003, 05:23 PM

See [www.dougknox.com](#), Win XP Utilities, Windows XP Security Console. You can control this restriction, and more, with this utility.

--

Doug Knox, MS-MVP Windows XP/ Windows Smart Display

Win 95/98/Me/XP Tweaks and Fixes
<http://www.dougnox.com>

Associate Expert
ExpertZone - <http://www.microsoft.com/windowsxp/expertzone>

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"Jack" <anonymous@discussions.microsoft.com> wrote in message
news:007201c3ad29\$73788b10\$a301280a@phx.gbl...

> When trying to adjust folder options, I could not find
> the Control Panel Applet "Folder Options". I tried
> running "control folders" from the Run command and
> received a message that, "This operation has ben
> cancelled due to restrictions in effect on this
> computer". I know of no changes made. I am the computer
> administrator here. Any help would be greatly appreciated.
>
> Jack

Curtis Clay III
[MSFT]

Guest
Posts: n/a

RE: Control Panel Applet Missing

Posted: 11-18-2003, 07:29 PM

Hello Jack,
You can check the local group policy on your workstation to confirm that
this option is not configured.

1. Start\Run\gpedit.msc
2. User Configuration\Administrative Templates\Control Panel

Confirm whether either of the Show or Hide options is in use.

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EXHIBIT 7F

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Control Panel Shortcuts

Use Windows' Control Panel more efficiently.

Topic links:

[control panel categories](#)[quick access](#)[tab hopping](#)[tab shortcuts](#)[roll your own control panel](#)

The Control Panel centralises access to Windows' multitudinous settings. From the Control Panel you can adjust and tweak Windows' appearance, performance, network connections, hardware settings and a whole lot more.

While many of the settings in the Control Panel are also accessible in other ways – for instance, you can change the desktop appearance by right-clicking the desktop and choosing Properties from the pop-up menu *or* by opening the Display applet in the Control Panel – the Control Panel makes it easy to keep tabs on *all* your Windows settings.

Control Panel categories

In Windows XP, the Control Panel has two modes. The default mode, in the Home Edition, is the colourful and friendly Category View, which divvies up the Control Panel applets into nine categories: Appearance and Themes; Network and Internet Connections; Add or Remove Programs; Sounds, Speech, And Audio Devices; Performance and Maintenance; Printers and Other Hardware; User Accounts; Date, Time, Language and Regional Options; and Accessibility Options.

There's actually a tenth category – easy to miss as it is only available via the task pane – called Other Control Panel Options. This is where Windows puts Control Panel applets installed by third-party applications, such as a QuickTime control or a special display control for your video card.

The other way to view the Control Panel is by the Classic

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View, familiar to anyone who has used the Control Panel in previous versions of Windows. In Classic View, all the applets are dumped into the one folder. It may be a little intimidating to start with, but it makes it much easier to track down *all* the Control Panel items and reduces the number of clicks required to access them.

You open the Control Panel by clicking Start -> Control Panel. If it's not on your Start Menu, it's easy to add:

1. Right-click the Start button and choose Properties from the pop-up menu.
2. On the Start Menu tab, make sure the first (non-classic) Start Menu option is selected and click Customize.
3. Click the Advanced tab.
4. In the Start Menu Items list under the Control Panel section, select either Display As Link or Display As Menu. The former (the default) simply displays a Control Panel option on the Start Menu; the latter displays the Control Panel option with a cascading menu providing direct access to each Control Panel applet. I prefer the former because I like to create shortcuts to only those applets I use often – I'll show you how soon; I can do without the others cluttering up my Start Menu.
5. Click OK twice to exit the dialogs.

Note, if you use the Display As Menu option for the Control Panel, you can still open the standard Control Panel window by clicking Start and then right-clicking the Control Panel option in the Start Menu and selecting Open from the pop-up menu.

Quick access

Some Control Panel applets are pretty esoteric and you're unlikely to call on them often, if at all. For example, the Java Plug-in control, which makes an appearance in the Control Panel if you install any version of the Java Runtime Engine, is something most of us never need to touch.

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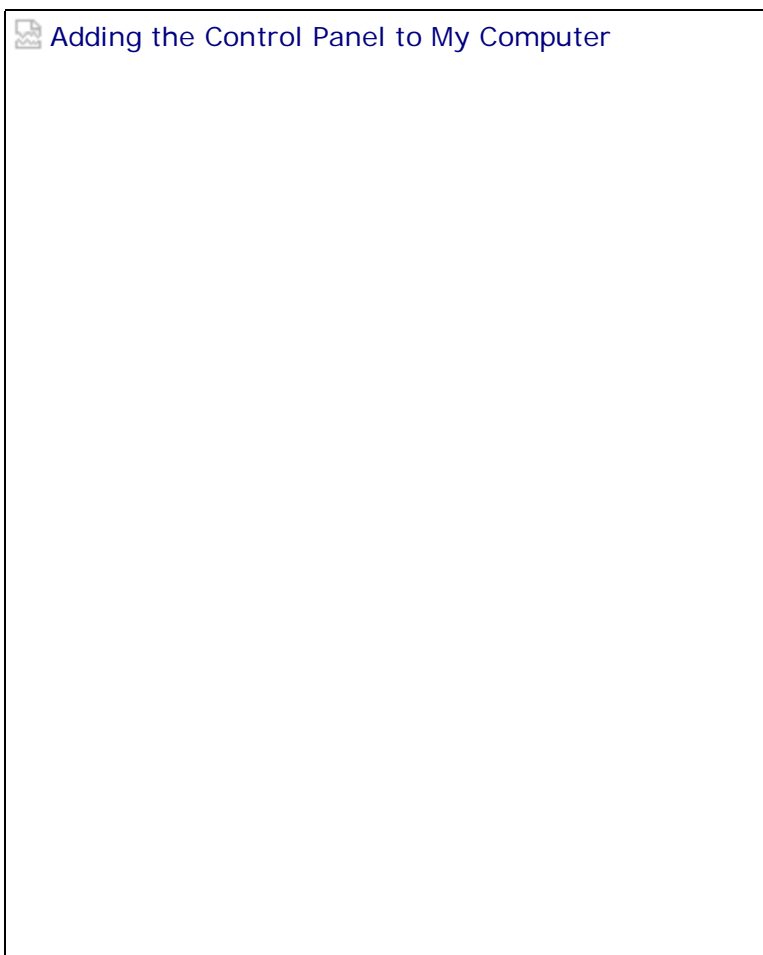
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Other applets, though, are so useful you'll want to make them as easy to get at as possible. In last month's column, I showed you how to create shortcuts to Control Panel applets such as Add Or Remove Programs by dragging them onto your Quick Launch bar. That gives you single-click access to your favourite applets.

If you have half a dozen Control Panel favourites, instead of cluttering up your Quick Launch bar you can always create a custom Control Panel folder which you can access either by the Start Menu or via the Quick Launch bar. This works much like the Display As Menu option described above, but in this case you get to pick and choose which applets appear in the menu (see the section **[Roll your own Control Panel](#)**).



Want to see the Control Panel in My Computer? You can add it via the Folder Options dialog (open any folder, choose Folder Options from the Tools Menu, click the View tab and select the option).

Tab hopping

Another way to burrow down quickly to out-of-the-way Control Panel settings is to make a direct call to the specific Control Panel applet. Using this technique you can even open a Control Panel applet to a specific tab.

For instance, if you frequently tinker with the sounds events

on your system, normally you get to these settings by clicking Start -> Control Panel -> Sounds, Speech and Audio Devices -> Change the Sound Scheme. Using a direct call, you can get there much faster.

First, a bit of background. Control Panel applets are stored in files with a .cpl extension. If you take a look in your Windows\System32 folder you'll find them there. (It makes it easier to see them all if you right-click in a blank spot and choose Arrange Icons By -> Type, select the Details View, and then scroll down the list and look for Control Panel Extensions.) You can run any applet by double-clicking its cpl file.

A faster way to run any applet is to issue a direct command:

`control applet.cpl`

where *applet* is any Control Panel applet on your system. Table 1 shows a list of the most common ones. Simply typing *control* by itself opens the Control Panel.

Table 1. Common Control Panel applets

| | |
|--------------------------|-------------------|
| Accessibility Options | access.cpl |
| Add New Hardware Wizard | hdwwiz.cpl |
| Add/Remove Programs | appwiz.cpl |
| Date and Time Properties | timedate.cpl |
| Display Properties | desk.cpl |
| FindFast | findfast.cpl |
| Folder Properties * | folders |
| Fonts Folder * | fonts |
| Internet Properties | inetcpl.cpl |
| Joystick Properties | joy.cpl |
| Keyboard Properties | main.cpl keyboard |
| Mouse Properties | main.cpl |
| Network Properties | ncpl.cpl |
| Password Properties | password.cpl |
| Phone and Modem options | telephon.cpl |
| Power Management | powercfg.cpl |
| Printers Folder * | printers |
| Regional settings | intl.cpl |

| | |
|------------------------------------|------------------|
| Scanners and Cameras | sticpl.cpl |
| Sound Properties | mmsys.cpl sounds |
| Sounds and Audio Device Properties | mmsys.cpl |
| System Properties | sysdm.cpl |
| User settings | nusrmgr.cpl |
| TweakUI | tweakui.cpl |

Note options marked with an * have special shortcut names which may be used instead of the usual *control applet.cpl, applet_number* format.

So, for example, to open the Sounds and Audio Device Properties dialog you click Start -> Run, type:

`control mmsys.cpl`

and click OK.

How, then, do you gain access to a specific tab in that dialog box? You use an extended form of the Control command:

`control applet.cpl,@applet_number,tab_number`

The applet_number is rarely required. There are a couple of cpl files which give access to multiple applets and in those cases you use the applet_number to identify which one you're calling. For example, main.cpl provides access to both the Mouse and the Keyboard properties. The numbering starts at 0, so **control main.cpl,@0** opens the Mouse Properties, **control main.cpl,@1** opens the Keyboard Properties. If you don't include an applet_number, @0 is assumed.

The tab_number is the number of the tab you want selected in the dialog box, with numbering starting from 0 from the left.

If you want to use a tab_number but want to omit the applet_number (or leave its value at 0), insert an extra comma before the tab_number to indicate the missing value. Thus:

`control main.cpl,,3`

opens the Mouse Properties dialog to its fourth tab.

So to open the Sounds and Audio Device Properties dialog with the Sounds tab already selected, click Start -> Run and enter the command:

```
control mmsys.cpl,,1
```

Tab shortcuts

Instead of typing these commands each time, create a desktop shortcut for your favourites and then stick them in the Quick Launch bar or wherever else you choose:

1. Right-click the desktop and choose New -> Shortcut.
2. Type the appropriate command in the Create Shortcut dialog and click Next. For example:
`control appwiz.cpl,,2`

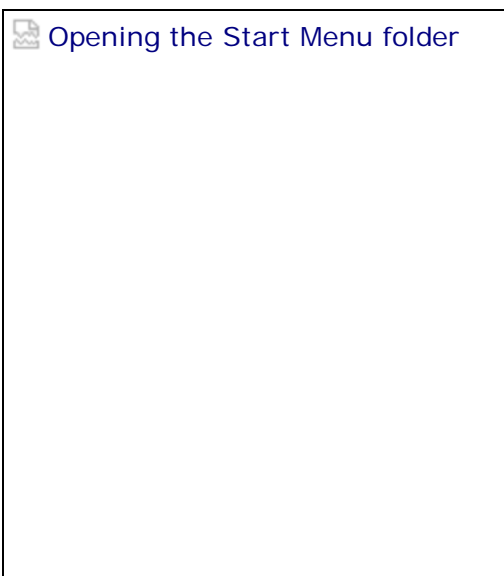
(this will open the Add Or Remove Programs dialog with the Add/Remove Windows Components section selected).

3. Give your shortcut a descriptive name, such as Remove Windows Components, and click Finish.

Step-by-step: Roll your own Control Panel

1. It's easy to create a Control Panel which contains only your most frequently used applets.

Start by right-clicking the Start button and choosing Open. This opens the `\Documents and Settings\username\Start Menu` folder (where *username* is your Windows logon name).



2. Create a new folder within this folder and call it whatever you like – My Controls, for example. Then click Start -> Control Panel to open the original Control Panel and click Switch To Classic View if you're not already in that mode. Position the two folders side by side.



 Add your favourite applets (click to see a full-size screenshot)

1. Click Start -> All Programs.
2. Hold down the Ctrl key and drag the My Controls item onto the Quick Launch bar.



In this way, you can gain quick access to all your favourite applets while adding only a single icon to the Quick Launch bar.

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Microsoft Color Control Panel Applet 1.0

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Publisher's Description

Microsoft Color Control Panel Applet adds a new 'Color' item to the Windows control panel, providing a single place to view and edit color management settings in Windows XP. Using it, you can install and uninstall color profiles, change color profile associations for displays, printers and scanners, view detailed properties for color profiles (including a 3D rendering of the color space gamut), and rename color profiles, keeping the filenames and "internal" names consistent.

This tool also enables Windows to automatically adjust the gamut curve of the display when a color profile containing gamut table information is set as the default profile for the display. Typically, such profiles are created by custom monitor calibration tools, such as those available from ColorVision, GretagMacbeth, and X-Rite. If a color profile has this information, it is shown with an asterisk (*) in the user interface.

Requires [Microsoft .NET Framework](#). (Note that .NET Framework is included in Windows XP. It is recommended to update to the latest version.)

GIMP Photo Editor



FreewareFiles tested **Microsoft Color Control Panel Applet 1.0** on 2005-10-31 using leading antivirus scanners and found it **100% Clean**. It does not contain any form of malware, spyware, viruses, trojans, etc. We will re-test each updated version and remove the award as well as the program if found infected.



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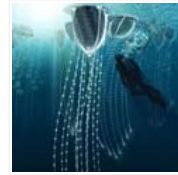
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Managing OS X

Trials and Tribulations of an OS X Administrator

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Universal AppleScript applets

I hadn't seen this documented anywhere else, and just stumbled across it... I wanted to update several AppleScript applets that were PowerPC applications into Universal binaries.

Note I'm talking about the sort of AppleScript applications that one builds with Script Editor and saving the script as an application – not AppleScript Studio apps.

When you save an AppleScript in Script Editor, there are several options in the File Format menu. If you choose “application”, you'll get a PowerPC-only app. However, if you choose “application bundle”, you'll get a Universal app.

So open your AppleScript apps in Script Editor, and resave them as “application bundles” and you are set!



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3 Comments on “Universal AppleScript applets”

1.  *Bahi* Says:

[March 25, 2006 at 12:24 pm](#)

Top tip! Thanks for this information and for consistently useful, informative and well written articles.

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2. [Starving Fool » Blog Archive » Saving Applescript applet as universal .app](#) Says:

[March 17, 2008 at 6:23 pm](#)

[...] emulated by rosetta. Surfing through ADC articles didn't show any hint, until I googled this one. Many thanks to the author [...]

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3.  *Corbin052198* Says:

[April 4, 2010 at 12:09 pm](#)

Thanks! I made an icon set that are applescripts with icons. When you click one them, they display the message "This is an icon, not an application", then close.

I saved as just an application, then later found out it was a PowerPC script. I knew Rosseta was optional in the Mac OS X 10.6 install, so I wanted to get it universal. Thanks for the tip!!

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Save Non-Popup Windows

an AppleScript applet by Antone Roundy
from Mouken, L.C.

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What it Does:

Save Non-Popup Windows saves the size and position of all open Finder windows, not including popup windows, and restores that same window setup later by closing all open windows, opening the windows that were open when you saved your setup, and resizing and positioning all windows as they were.

Use it to save all the different window setups you commonly use. I have a popup window at the bottom of my screen with six copies of this applet for different window configurations I use commonly.

How to Use It:

To save your window setup:

1. Doubleclick, or otherwise launch Save Non-Popup Windows.
2. Click "Save".
3. Optionally change the name of the applet to something describing the window setup you saved.

To restore your window setup:

1. Doubleclick, or otherwise launch Save Non-Popup Windows.
2. Click "Restore".

To reconfigure Save Non-Popup Windows so that you don't have to click "restore" every time:

1. Drag and drop any file or folder on Save Non-Popup Windows.
2. Click "Fix".

To make Save Non-Popup Windows put up the "save/restore" dialog again so that you can change the saved window settings:

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- Would this IIgs Sound Card Currently on eBay Solve the Issue?
- Colour Classic Analogue board, logic

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I-Spy 1.0b2; an AppleScript applet that monitors FTP sites

Submitted by [Ex-parrot](#) on February 10, 2006 - 11:00pm [Mac OS Classic](#) [1996](#) [Internet & Telecommunications](#) [Macintosh](#) [Unsorted](#) [Unsorted](#) [Info-Mac](#)

Hi,

Internet Spy 1.0b2 is a collection of AppleScript and Perl scripts that together monitor remote FTP sites for changes. I intend this beta release to ferret out bugs and problems as well as to solicit your feedback.

This distribution includes extensive documentation and examples. The documentation itself is a set of HTML pages, and you will need a web browser (like Netscape or Mosaic) or an HTML viewer to properly display them.

Changes since b2:

- o Recompiled with Tiny 1.0.5 (.txt suffix on log files to please Netscape)
- o Removed some unforgiving debugging code
- o Fixed a compatibility problem across versions of ACME Widgets

I-Spy is free and may be freely distributed.

Share and enjoy,
Igor

Path: /www/exparrot/files.tidbits.com/info-mac/comm/inet/i-spy-10b2-as.hqx

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[Index » Scripting Additions » Can I include a scripting addition in my application?](#)

2005-10-11 03:09:08 pm

#1

julifos**Administrator**

From: Malasaña, Madrid

Registered: 2002-11-20

Posts: 2014

Since the release of Panther and AppleScript 1.9.2, Apple's **Script Editor** can save a script application (applet or droplet) in a special new bundle format. You must create a folder called "Scripting Additions" within your application's "Contents/Resources/" folder, then copy the osaxen there. This also applies to AppleScript Studio applications.

A little example bundling **XML Tools** within your app:

`yourScript.app/Contents/Resources/Scripting Additions/XML Tools.osax`

The main goal of embedding scripting additions within your project is that the end-user doesn't have to install such osax in his system to make it work.

However, note that embedding a scripting addition in your application doesn't make it available to all the system. If you bundle **XML Tools** within your applet and you open it within the Script Editor, XML Tools must be present in your system before you can use its terminology. It won't be loaded from the applet. When the applet is run, it loads the osax on-the-fly, and it is available only to such applet.

Before distributing a scripting addition with your script, read carefully its license to make sure you are not distributing shareware, or perhaps you need include its documentation in the same distribution, or...

In OS X versions previous to Panther you could not embed scripting additions with your project. However, under OS 9 and back there was some tools able to do it, such as [Applet Binder](#) or [FaceSpan](#).

Pages: 1

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AppleScript Basics by Maria Langer

Note: this article is taken from MAC OS X 10.3 PANTHER ED: VISL QUICKSTRT GD, © 2004 Maria Langer Reproduced by permission of Pearson Education, Inc. Publishing as Peachpit Press. ALL RIGHTS RESERVED. To buy this book, visit www.peachpit.com

AppleScript is the scripting language that comes with Mac OS. It enables you to automate tasks and extend the functionality of Mac OS X.

You use AppleScript's Script Editor application to write small programs or *scripts* that include specially worded *statements*. AppleScript statements are converted by Mac OS into *Apple events*--messages that can be understood by the operating system and applications. When you run a script, the script can send instructions to the operating system or applications and receive messages in return.

For example, say that at the end of each working day, you back up the contents of a specific folder to a network disk before you shut down your computer. The folder is large and the network is slow, so you often have to wait ten minutes or more to shut down the computer when the backup is finished. You can write a script that mounts the network drive, backs up the folder, and shuts down your computer automatically. You simply run the script, turn out the lights, and go home. AppleScript does the rest.

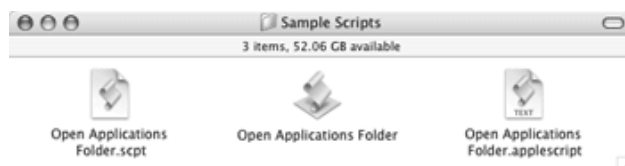
In this part of the chapter, I introduce AppleScript's components to give you an idea of how it works and what you can do with it.

Tip

You can find a lot more information about AppleScript, including tutorials, sample scripts, and a reference manual, at Apple's AppleScript Web site, www.apple.com/applescript/.

AppleScript Files

There are three main types of AppleScript files:



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- **Scripts** (formerly *compiled scripts*) are completed scripts that can be launched from an application's script menu or the Script Menu. Double-clicking a compiled script icon launches Script Editor.
- **Applications** (or *applets*) are full-fledged applications that can be launched by double-clicking their icons.
- **Text files** are plain text files containing AppleScript statements. They can be opened with Script Editor or any text editor and can be run from within Script Editor. Double-clicking a script text file icon launches the application in which it was written.

Script Editor

Script Editor, which has been completely rewritten for Mac OS X 10.3, is an application you can use to write AppleScript scripts. It has a number of features that make it an extremely useful tool for script writing:



- The Script Editor window can automatically format script statements so they're easy to read.
- The syntax checker can examine your script statements and identify any syntax errors that would prevent the script from running or compiling.
- The Open Dictionary command makes it possible to view an application's dictionary of AppleScript commands and classes.
- The record script feature can record actions as script steps.
- The Save and Save As commands enable you to save scripts in a variety of formats.

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GetCodecs description

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GetCodecs is a simple applet written in python with a GTK2 GUI.

GetCodecs is a simple applet written in python with a GTK2 GUI that downloads, installs, and configures your system to use the various multimedia formats ([MP3](#), DivX, DVD, etc) that are not shipped with many distributions (such as RedHat).

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- [DivX](#) :-) DirectShow decompression filter, v3.11 alpha (<http://divx.ctw.cc>)
- Microsoft MPEG-4 video, beta version 3.0.0.2700
- Microsoft WMV 7 (<http://codecs.microsoft.com/codecs/i386/wmvds32.cab>)
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EXHIBIT 9B

Gnome applets with Python

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Revision History

| | | |
|-----------------|---|-------------------------|
| Revision 0.5 | 07 February 2004 | |
| Revision 0.4 | 23 January 2004 (added "change-orient" event to callbacks section) | Revised by: arturogf |
| Revision 0.3 | 20 January 2004 (merge 0.2 with the new version. Some updates on bonobo and .server files. Autotools installation). | Revised by: arturogf |
| Revision 0.2 | 15 January 2004 (some grammar and structure corrections) | Revised by: lgs |
| Revision 0.1 | 07 January 2004 (first release) | Revised by: arturogf |

Table of Contents

1. [Introduction](#)
 - 1.1. [The applet code skeleton](#)
 - 1.2. [The bonobo .server file](#)
2. [Running the applet in its own window](#)
3. [Moving on: Object Oriented Applets](#)
 - 3.1. [The class definition](#)
4. [The import section](#)
5. [The class constructor: __init__](#)
 - 5.1. [Some instance variable definitions](#)
 - 5.2. [The GTK widgets definition](#)
 - 5.3. [Optional timeout callback method](#)
 - 5.4. [Connecting the "destroy" signal and show the applet](#)
 - 5.5. [Connecting signals and events to handlers](#)
 - 5.5.1. [Loading the interface with glade.XML\(\)](#)
 - 5.5.2. [Using the gtkWidget.connect\(\) method](#)
6. [The callback methods](#)
 - 6.1. [The timeout callback](#)
 - 6.2. [The panel applet "change-orient" signal](#)
7. [Autotools : a brief introduction to the installation process](#)
 - 7.1. [The project structure: directories and files needed](#)
 - 7.2. [Creating these files](#)
 - 7.3. [Editing the files Makefile.am and configure.in](#)
8. [Example applet](#)
- [Bibliography](#)

This article will cover how to make an applet for the GNOME 2.x desktop with the Python programming language. Usually, GNOME applets are made in C, which has the big advantage of generating compiled executables (this means less memory footprint and faster programs) but in the other hand it's more

difficult to do it and it takes more time to write the code. Python programs are developed faster, they have fewer lines of code, and it's an object oriented programming language. But it's an interpreted language, so the execution speed can be worse. It's up to the reader to decide if it is worthy writing a GNOME applet in Python. One good approach is to prototype the applet in Python and then write the final version in C. Here we'll explain the necessary steps to write and deploy a simple applet from scratch using Glade 2 and libglade for the dialogs. Look at the bibliography for an in-deep explanation. Another good source of information is the pyGTK mailing list archives.

However, with regard to the code shown at the tutorial, we advise you to better look at the example section, where you will find some releases that do like it has been explained here, so you can see it growing from a prototype to a really functional applet.


1. Introduction

GNOME 2.x applets need at least two files to get them working:

- The executable (in this case the applet code)
- The bonobo server component, that must be placed at `/usr/lib/bonobo/servers` by default. This file contains all the information about the resources the applet will use for its execution.

1.1. The applet code skeleton

The simplest applet we can write can be found in the `gnome-python` package documentation (`/usr/share/doc/python2.x-gnome2/examples/applet/applet.py` in DEBIAN-based distributions) or simply in the `gnome-python` tarball from the original GNOME ftp.

 **Warning** place this at `/usr/bin/pysample.py`

```
#!/usr/bin/env python
import pygtk
pygtk.require('2.0')

import gtk
import gnome.applet

def sample_factory(applet, iid):
    label = gtk.Label("Success!")
    applet.add(label)

    applet.show_all()
    return gtk.TRUE

gnome.applet.bonobo_factory("OAFIID:GNOME_PysampleApplet_Factory",
                           gnome.applet.Applet.__gtype__,
                           "hello", "0", sample_factory)
```

First, we need to import some Python modules that we will need. The *pyGTK* module, needed to specify the GTK version used (we'll be using 2.x in this article), the *gnome* module, that contains all the useful classes and methods about the gnome desktop, i.e. the applet class, and the *gtk* module, Python bindings for the GTK toolkit.

Then, we define the *sample factory* function to generate applet objects, with a text label "Sucess!". This function receives the object to be initialized (the applet) and the bonobo activation ID that the new factory will implement. It's all that simple. It returns `gtk.TRUE` if no errors were reported (see the *panelapplet* reference manual for details). When we call to `gnome.applet.bonobo_factory()`.

When we call the `bonobo_factory` method, we need to pass it the following arguments:

1. `iid`: The bonobo-activation iid of the factory.
2. `type` : the type of the created object.
3. `description`.
4. `version`.
5. `factory callback`: the name of the factory method.

1.2. The bonobo .server file

The second thing we need to get the applet running is to construct the bonobo server file. `bonobo-activation-server`, the GNOME application that tracks information about installed components and brokers components, reads and maintains the component descriptions from `/usr/lib/bonobo/servers/*.server`. These files provide an XML description of a component's capabilities which can be queried and manipulated by clients using the activation client library. `Bonobo-activation-server`, also ensures that the minimum necessary number of servers for your display setup are running.

Bonobo activation server is nothing but a daemon implementing a set of CORBA interfaces. These CORBA interfaces implement a name service for the set of CORBA servers installed on your system. GNOME Object Activation Framework daemon (OAFD) knows about all the CORBA servers in your system, running or not. The OAF daemon will activate those servers if you ask for them. Each server is described by its `.server` file which contains among other things the IDL interfaces it implements, some specific properties and an IID (Implementation ID). Each IID has to be globally unique, and its format is pretty simple:

```
OAFIID:program_name:UUID
```

The bonobo factories are CORBA objects that allow the creation of other new CORBA objects. This is a common practice in GNOME. The use of factories will allow us to use only an executable to get several instances of the component.

So we need to define the `.server` file and place it at the location mentioned before:

```
<oaf_info>
<oaf_server iid="OAFIID:GNOME_PysampleApplet_Factory"
            type="exe" location="/usr/bin/pysample.py">

    <oaf_attribute name="repo_ids" type="stringv">
        <item value="IDL:Bonobo/GenericFactory:1.0"/>
        <item value="IDL:Bonobo/Unknown:1.0"/>
    </oaf_attribute>
    <oaf_attribute name="name" type="string" value="Python applet example"/>
    <oaf_attribute name="description" type="string" value="Python applet example"/>
</oaf_server>

<oaf_server iid="OAFIID:GNOME_PysampleApplet"
            type="factory" location="OAFIID:GNOME_PysampleApplet_Factory">

    <oaf_attribute name="repo_ids" type="stringv">
        <item value="IDL:GNOME/Vertigo/PanelAppletShell:1.0"/>
        <item value="IDL:Bonobo/Control:1.0"/>
        <item value="IDL:Bonobo/Unknown:1.0"/>
    </oaf_attribute>
    <oaf_attribute name="name" type="string" value="Python applet example"/>
    <oaf_attribute name="description" type="string" value="Python applet example"/>
    <oaf_attribute name="panel:category" type="string" value="Utility"/>
    <oaf_attribute name="panel:icon" type="string" value="bug-buddy.png"/>
</oaf_server>
```

```
</oaf_server>  
</oaf_info>
```

The .server file registers two unique OAF identifiers, and give the activation-server the description of how the objects must be created. The first one is the Factory, that is created when the .py script is executed. The second is the applet itself, and is created asking the Factory how to do it. When we do the "add to panel" action in GNOME, it takes the OAF identifiers that are supposed to implement the "IDL:GNOME/Vertigo/PanelAppletShell:1.0" in its "repo_ids" attribute. The submenu is determined by the "panel:category" attribute, the icon from "panel:icon", the text displayed at the menu comes from "name" and the tooltip text from "description".

The `sample_factory()` function is called when a new applet is created. It receives a container that should be populated with the applet contents.

[Next](#)

Running the applet in its own window

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September 3rd, 2008

#1

ratl3

First Cup of Ubuntu


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New applet: Desktop Drawers

Hello, I have created a gnome panel applet to solve an issue that has bugged me for a while now. I was wanting to know if anyone else would like to use it or has any input.

It is an extension of the show desktop applet with some added features. It is a drop down menu that includes the ability to show the desktop, show the contents of the desktop, change desktop to a different folder, add a new desktop, and manage current desktops.

My current drawers drop down looks like this:

- Show Desktop
- Contents >
- -----
- Desktop Drawers
- Kids
- Temp
- Website
- -----
- Add Desktop
- Manage Desktops

I created this because I noticed that I was using the desktop for the projects I was currently working on. I needed a way to change the files on the desktop according to the project being worked on and originally would just link the desktop folder to a project folder. I created this panel applet to automate this process.

(Update)

NEW IN 0.4:

Addition of multiple new features and bug fixes. The desktop is now changed using the ~/.config/user-dirs.dirs file instead of symlinking the Desktop dir to the folder. This fixes Recent Document displays in user programs as well as allowing copy and paste between desktops. Recent Documents Desktop added to the list. This allows one to have the recently accessed documents show up on their desktop. Also, a Preferences window has been added to allow one to customize Drawers to their liking.

I have created a launchpad page and a PPA for this project at:

<https://launchpad.net/desktopdrawers>

<https://launchpad.net/~ryanhjefferson/+archive>

To add this to the list of apt repositories add the following entry to your /etc/apt/sources.list file:

Code:

```
deb http://ppa.launchpad.net/ryanhjefferson/ubuntu hardy main
```

After this has been added to the sources.list file and everything has been updated one can just apt-get install desktopdrawers to install Desktop Drawers.

Please leave a message if you use Desktop Drawers.

Thanks

Last edited by ratl3; September 20th, 2008 at 12:30 AM..



September 5th, 2008

#2

mujambee

Just Give Me the Beans!



Join Date: Aug 2008
Location: Madrid
Beans: 52



Re: New applet: Desktop Drawers

I like the concept. May I have a look at it?

QUOTE

QUOTE



September 5th, 2008

#3

ratl3

First Cup of Ubuntu



Join Date: Jun 2005
Beans: 5



Re: New applet: Desktop Drawers

I have attached two files that are needed to run Drawers, drawers.py and desktop_drawers.server.txt. The python file needs to be copied to the /usr/local/bin directory and the desktop_drawers.server.txt needs to be renamed to desktop_drawers.server and copied to the /usr/lib/bonobo/servers/ directory. One will also need to install some software to run this applet. The requirements for Drawers are python, wmcrtl, and xmacroplay. All of these are in the ubuntu repositories. If it seems like I am receiving any more interest I will set up a launchpad account with a deb repository for Drawers. I hope you find this as useful as I do.

Attached Files

- drawers.py (9.1 KB, 8 views)
- desktop_drawers.server.txt (1.1 KB, 7 views)

QUOTE



September 5th, 2008

#4

ratl3

First Cup of Ubuntu



Join Date: Jun 2005
Beans: 5



Re: New applet: Desktop Drawers

I should give a warning before anyone uses this applet. When it is first run it will move your current desktop to the folder ~/.Desktops/Original Desktop and link ~/Desktop to that folder. One should back up their current Desktop directory just in case something goes wrong.

QUOTE



September 11th, 2008

#5

ratl3

First Cup of Ubuntu



Join Date: Jun 2005
Beans: 5

Re: New applet: Desktop Drawers

I have created a PPA for this project at:

<https://launchpad.net/~ryanhjefferson/+archive>

To add this to the list of apt repositories add the following entry to your /etc/apt/sources.list file:

Code:

```
deb http://ppa.launchpad.net/ryanhjefferson/ubuntu hardy main
```

After this has been added to the sources.list file and everything has been updated one can just apt-get install desktopdrawers to install Desktop Drawers.

In the PPA as of this moment is release 0.3a which includes a default home folder switcher, showing of windows after desktop has been shown, and fixing of a bug where folders that have been switched to can not be selected.

Please leave a message if you use Desktop Drawers.

Last edited by ratl3; September 11th, 2008 at 02:23 PM..



October 2nd, 2008

[QUOTE](#)

#6

izm81

5 Cups of Ubuntu



Join Date: Nov 2005
Beans: 23
Dapper Drake Testing/


Re: New applet: Desktop Drawers

Hi, Ryan! I've tried out "Desktop Drawers" for a day and it is interesting! Nice little project. 😊 I've filed a few bugs on the project page. 😊

I think it's a great start! But in general, I think the most compelling use-case is not made clear enough, neither through the UI nor the documentation / description:

1. Install the Desktop Drawers applet on your panel.
2. Select Manage Desktops to open the ~/.Desktops directory in Nautilus.
3. In this folder, create folders for different "workspaces," ("Project 1", "Project 2", etc)
4. Then create links to related folders and files in each of these workspaces.
5. Projects/Workspaces can now be switched between using the applet.

Although it's not quite addressing the issues that I wanted to with the "Intelligent Desktop," (from my [blog](#)) I'm going to continue using Desktop Drawers for a while more, I think. 😊 Thanks!



November 17th, 2008

[QUOTE](#)

#7

zhocchao


A Carafe of Ubuntu



Join Date: Nov 2008
Beans: 91

Re: New applet: Desktop Drawers

hi
it's interesting. What about shortcuts. As I am switching workspaces with `ctrl + alt + left/right` i could switch desktops with `ctr + alt + up/down`.
greetings
z



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EXHIBIT 10



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| Michael Davis | # 1 | |
| daz | # 2 | |
| <p> Re: Anyone using RegisterClass from Win32API?</p> <p>"Michael Davis" <mdavis@sevasoftware.com> wrote in message news:3F24B15B.9070404@sevasoftware.com...</p> <div style="border: 1px solid black; padding: 5px;"> <p>> Hello yet again,</p> <p>></p> <p>> Is anyone using RegisterClass from Win32API?</p> </div> <p>Yes, swin is. You seem to be rewriting chunks of it :-)</p> <p>[url]http://raa.ruby-lang.org/list.rhtml?name=swin[/url]</p> <p>The C source for swin is very readable. A compile of this gives the DLL base which vruby calls (vruby is all in Ruby).</p> <p>I'd bang-on about it more but it's not multi-platform so we have to use it without the lights on.</p> <p>Huge compliments to the authors of visual-u-ruby (tempname - no mis-spelling).</p> <p>daz</p> <p><aside> Can't a *n*x guru port swin (to, say 'sux'), then change vruby calls to SUx::* rather than SWin::* (when running on *n*x platforms) so that the FreeRIDers can use it instead of fannyng around with wxwindows ? There'd be a real Ruby GUI. A bit late for that, I suppose.</p> <p>daz Guest</p> <p style="text-align: right;">Reply With Quote</p> | | |

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Anyone using RegisterClass from Win32API?

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Hello yet again,

Is anyone using RegisterClass from Win32API? To Register a class you need to supply the pointer to a callback function. To achieve this, I created a small class in C to provide me with the pointer to a function that I can use in my Ruby code for obtaining the callbacks from windows. This works great on Windows 2000 and 95 when using cygwin, but fails on XP, and will not likely work for those installing the windows version of Ruby. The C code to do this is provided below, incase anyone is interested. I am looking for a more creative way to provide RegisterClass with a function pointer that does not involve any C code. Any suggestions are greatly appreciated. Is there a way to get the function pointer of a Ruby method from within Ruby that DLL functions can call back to?

Thanks, Michael Davis

Here is the small C class for getting the pointer to a function that windows calls. I just have to create a Ruby method called Win32API_MessageHandler(hwnd, iMsg, wParam, lParam) and voila, my Ruby applet can process window events.

```
#if !defined _MSC_VER && !defined NT
#define WIN32_LEAN_AND_MEAN
#include <windows.h>
#include <stdio.h>
#endif

#include "ruby.h"
#include "rubysig.h"

static LRESULT CALLBACK
locana_mswin32_MessageHandler(hwnd, uMsg, wParam, lParam) // This is a pass through
function to the Ruby method called 'Win32API_MessageHandler' that will process windows
messages
HWND hwnd;
UINT uMsg;
WPARAM wParam;
LPARAM lParam;
{
    VALUE rc = Qnil;
    ID proc_id;
    proc_id = (ID)GetWindowLong(hwnd, (int)GWL_USERDATA); // let's see if the user has
    registered a proc name
    //printf("Win32API_MessageHandler(%d, ...) - proc_id: '%d'\n", (int)hwnd, proc_id);
    if (!proc_id)
        proc_id = rb_intern("Win32API_MessageHandler"); // the default message handler is a Ruby
        method that you must create called Win32API_MessageHandler
    if (proc_id)
        rc = rb_funcall(rb_cObject, proc_id, 4, INT2NUM((long)hwnd), INT2NUM((long)uMsg), INT2NUM
        ((long)wParam), INT2NUM((long)lParam));
    if (rc == Qnil)
        return DefWindowProc(hwnd, uMsg, wParam, lParam);
    else
        return (LRESULT)NUM2LONG(rc);
}

static VALUE
locana_mswin32_GetMessageHandler() // RegisterClass needs the C function used for
processing messages
{
    return INT2NUM((unsigned long)(locana_mswin32_MessageHandler));
}

void
Init_locana_gui_mswin32_ext()
{
    VALUE cWin32Ext = rb_define_class("Locana_gui_mswin32_ext", rb_cObject);
    rb_define_module_function(cWin32Ext, "get_message_handler",
    locana_mswin32_GetMessageHandler, 0);
}
```



After I closing of a popup window,...

Posted By Chandan Dash(0 Replies)
 November 3rd 08:22 AM
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Posted By saifulbd(0 Replies)
 November 3rd 03:32 AM
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EXHIBIT 11

11/28/2011

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EXHIBIT 12

Signed Applet Tutorial

by [Larry Siden](#)

Introduction

While volunteering on a pro-bono project at [Menlo Innovations](#) my colleagues and I encountered a problem. A team had developed a Java applet in which a user types in a URL and clicks a button. The applet then downloads the web page specified by the URL and extracts any links (i.e. ``) and displays them. While we tested this in our development environment's applet viewer everything seemed to work fine. But when we tried to use the applet in a browser and connect to Google, it seemed to hang. Opening the Java console window revealed

```
java.security.AccessControlException: access denied (java.net.SocketPermission www.google.com
connect,resolve)
```

Background

Java virtual machines run applets under a different security regime than applications. By default, applications are implicitly trusted. The designers of the JVM specification assumed that users start applications at their own initiative and can therefore take responsibility for the application's behavior on their machine. Such code is considered to be *trusted*. Applets, on the other hand, are started automatically by the browser after it downloads and displays a page. Users cannot be expected to know what applets a page might contain before they download it, and therefore cannot take responsibility for the applet's behavior on their machine. Applets, therefore, are considered by default to be *untrusted*. Among other restrictions, an applet cannot, by default, open a [socket](#) referred to by a URL whose domain different from the domain of the page that contains the applet. This is part of the security architecture that browsers employ to protect users' computing resources from malicious or faulty applets.

The JVM's security policy is set by the file `$JAVA_HOME/jre/lib/security/java.policy`. Here is an excerpt from the one found on my computer:

```
// Standard extensions get all permissions by default

grant codeBase "file:${java.home}/lib/ext/*" {
    permission java.security.AllPermission;
};

// default permissions granted to all domains

grant {
    // allows anyone to listen on un-privileged ports
    permission java.net.SocketPermission "localhost:1024-", "listen";

    ...
};
```

Its syntax is described by Default Policy Implementation and Policy File Syntax. The first **grant** construct permits any code that lives in the directory `$JAVA_HOME/lib/ext/*` to do anything. Such code is considered to be trusted. This makes sense only if this directory and its children are not writable to ordinary users.

When I create an applet and test it with [Eclipse](#)'s VM, Eclipse creates a file named **java.policy.applet** in the project root directory. Here are the contents:

```
/* AUTOMATICALLY GENERATED ON Tue Apr 16 17:20:59 EDT 2002 */
/* DO NOT EDIT */
```

```
grant {  
    permission java.security.AllPermission;  
};
```

As you can see, there is no **codebase** parameter here. This grant construct allows code from any codebase permission to do anything. Eclipse's authors assume that Eclipse users can take responsibility for the behavior of applets that they write and test on their own machines. So this explains why my team did not encounter any security exception when we ran the applet from Eclipse. Eclipse ran the JVM in the same working directory where it created the file **java.policy.applet** seen above. In this environment, the applet could do anything it asked to.

In order to recreate this scenario at home, I wrote a [simple applet](#) at home that produces the same behavior our team encountered. To download the entire project, type:

```
cvs -d :pserver:guest@lsiden.homeip.net:/cvsroot login  
cvs -d :pserver:guest@lsiden.homeip.net:/cvsroot checkout Signed-Applet
```

This will create a directory called **Signed-Applet** under the current working directory. The CVS archive is not writable for user **guest**.

This small applet produces the same behavior by requesting [SocketPermission](#) as described above to connect to any port in the domain `www.google.com`. Because of the security policy, the actual domain is irrelevant, since it is different from `localhost`. This is exactly what our team's applet was doing under the hood when it called `URL.getContent()` which is shorthand for `URL.openConnection().getContent()`. `URLConnection.openConnection()` makes exactly this call:

```
System.getSecurityManager().checkPermission(new SocketPermission("www.google.com",  
    "connect"));
```

which throws the `SocketException` that we were seeing in the Java Console window. `SocketException` is a subclass of `IOException`.

Digital Certificates

The solution to this conundrum is to create obtain a digital certificate and use it to sign the applet. When a well-behaved browser downloads a page that contains a signed applet, before running the applet it displays a certificate in a message box.

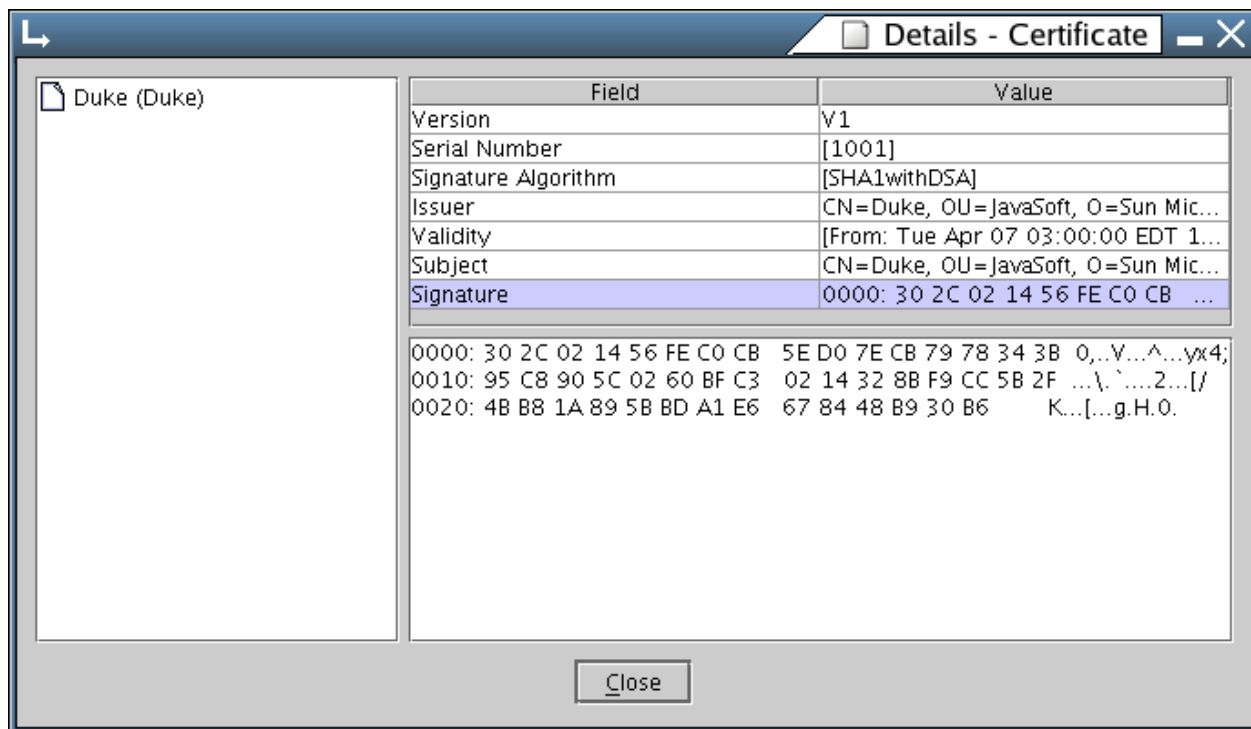


This certificate claims that the applet comes from the party named within and contains the digital signature of a *certificate authority*. In the above

example, the certificate holder is a party named "Duke" and the issuer is Netscape. The certificate contains identifying information about the certificate holder and the certificate issuer, or trusted authority. A certificate authority is a third party that is trusted to verify a certificate applicant's credentials. When the authority is satisfied with its applicant's credentials, it issues it a digitally signed certificate.

(In this instance the certificate makes no claims as to the trustworthiness of either the certificate holder or the certificate issuer. It is for demonstration purposes only. If your computer contains sensitive data, you should not trust this certificate.)

The certificate authority may also have its own certificate that was generated by an even more trusted authority that verified *its* credentials. Each certificate will refer to the certificate of its issuing authority. This may continue for several levels and is called a *chain of trust*. The chain of trust ends with a top-level authority that issues its own certificate based on its own reputation. The chain of trust in this example extend up only one level.



The

image on the right is what appears on the user's screen when they click the button labelled 'More Details'. Every certificate contains a numeric hash or *digest* of the certificate contents, which can be seen in the bottom right pane. A user can use the digest if he/she chooses to contact the authority to verbally confirm the validity of the certificate. The user could ask the authority for the digest of the certificate it issued and compare the response with the digest displayed on his/her screen.

Despite the robustness of public/private key encryption, and the thoroughness of the specification, digital certificates have yet to be universally adopted as a means of establishing trust when conducting business transactions. For a critique on digital certificates, see [The Emperor's New Clothes: The Shocking Truth About Digital Signatures and Internet Commerce](#) by Jane K. Winn.

Certificate authorities typically charge a fee for the service of validating their clients' credentials. However, for testing and demo purposes, we may create a self-signed certificate. The information given in a self-signed certificate has not been validated by a trusted third party.

The following section will cover the basic steps to creating a signed applet.

How To Create a Signed Applet

1. **Package the applet into a JAR file.** The applet must be in a JAR file before a certificate can be attached to it. Use the **jar** JDK utility. If the applet was previously referenced with the help of a **codebase** attribute in `<applet>` tag, replace the **codebase** attribute with the **archive** attribute. The value of the **archive** attribute is a URL of a JAR file.
2. **Create a public/private key pair.** The command for this is

```
keytool -genkey
```

[keytool](#) is another SDK utility. It will prompt you for a password to your *keystore* and for the remaining parameters, one of which is **alias**, whose value is the name of the key. The keystore is a file that contains your public/private key-pairs, and the public-keys of others with whom you exchange information. See the documentation in the above link.

3. **Create a certificate for the key you created in the previous step.**

```
keytool -selfcert
```

Again, **keytool** will prompt you for a keystore password and remaining parameters. This certificate is now self-signed by you, meaning that it has not been validated by any third party. This is suitable for demo purposes, and may be acceptable to yourself and those who know you because if there is any doubt that the certificate is really yours they can always call you up and ask you for the digest to verify that it is really you and not some impostor that created the certificate. However, if this applet were to be widely distributed, and you wanted it to be accepted by those who do not know you personally, you would certainly want to pay a modest fee to obtain a certificate that is validated by a trusted certificate authority. The procedure for this is straightforward, but beyond the scope of this simple tutorial.

4. Run [jarsigner](#) associate this certificate with the JAR file that contains your applet. You will need to give the name of the public key of the certificate you just created. This creates a digest for each file in your JAR and signs them with your private key. These digests or hashes, the public key, and the certificate will all be included in the "WEB-INF" directory of the JAR.

Your applet is now signed. The next time you or someone else downloads it in it's page the browser will present a dialog box displaying the credentials you just created for it and asking the user permission to run it. If he/she chooses not to, the applet will throw the same `AccessControlException` that we saw in the Java Console window the first time we tried to run it in our browser. The difference is that now the user gets to make an informed decision as to whether or not they trust your applet to not harm his/her system.

You will only need to generate the public/private key-pair once, but you will definitely want to automate the steps that create and sign the JAR file, because you will need to repeat those every time you modify anything in your code. You will most likely do this in your [ant](#) build-file, which is beyond the scope of this tutorial.

Links

1. [Security and the Java Platform](#)
2. [JDK\(TM\) 1.1.x - Signed Applet Example](#)
3. [Signed Applets, Browsers, and File Access](#)
4. [Digital Certificates Guide](#)
5. [RFC 2459 The Emperor's New Clothes: The Shocking Truth About Digital Signatures and Internet Commerce](#)