(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 343 132 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.09.2003 Bulletin 2003/37

(51) Int Cl.[7]: **G09G 1/16**

(21) Application number: **02005440.9**

(22) Date of filing: **08.03.2002**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

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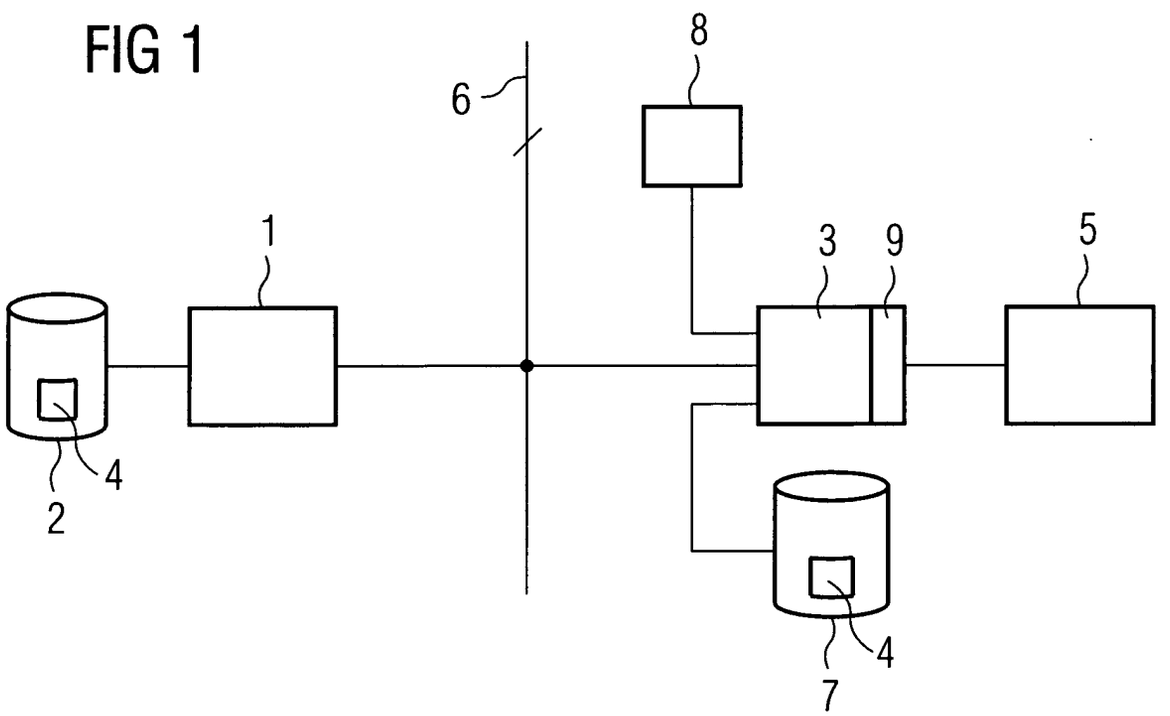
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(54) Data viewer

(57) A data viewer is provided with at least a first data processing unit. Connected to said data processing unit is a non-volatile memory unit on which at least one data file is stored. A monitor is connected to said first data processing unit for viewing data provisionally stored in a working memory. There is provided an access device in the first data processing unit which is reading a predetermined part of the data file and storing said part to the working memory so that said part is viewable on the monitor.

FIG 1



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Description

[0001] The invention relates to a data viewer according to claim 1.

[0002] Commonly, users of data processing units are familiar with browser or data editors which download and display text from data files. Current browsers will download a complete text file and display it in the browser's main window as well as text editors will do, respectively. A scroll bar typically to the right of the text area allows the user to scroll through the file as do the scroll keys.

[0003] This approach works fine for relatively small files that contain only a few hundred or even a few thousand lines of text. The user may have to wait until the complete file will be downloaded and the user can view all of it.

[0004] However, this approach has severe limitations for extremely large files that may be hundreds of megabytes or even a few gigabytes in size. The download time will become very long. Even worse, by downloading the entire file to the client system, the disk capacity or at least the working capacity of the client system may be overwhelmed. System log files in some operating systems may grow to large sizes, for example, in Unix system the /var/adm/message files may grow to several hundred megabytes or more.

[0005] Displaying these files in a browser-based environment is thus problematic.

[0006] Similarly, the user of a data processing system has the same problem when he has to inspect a data file or text file which needs more capacity in the working memory than the system is provided with. In this case, common data or text editors load as much as possible into the working memory and write the excess to the hard disk drive.

[0007] It is therefore object of the invention to provide a data viewer which is useful in viewing large files with a minimal charge of the working memory.

[0008] This object is solved by the data viewer according to claim 1.

[0009] The data viewer according to the invention is provided with at least a first data processing unit, a non-volatile memory unit which is connected with said first data processing unit, at least one data file which is stored in said non-volatile memory unit, a monitor is connected to said first data processing unit for viewing data provisionally stored in a working memory whereby the viewer is characterised by an access device which is a part of the first data processing unit, reading a predetermined part of the data file and storing said part in the working memory unit to provide a view via said monitor.

[0010] Additional features of the invention are described as the depending claims.

[0011] In the following, the invention is further described with reference to the following drawings in which

figure 1 shows a viewer according to the invention and

figure 2 a data file viewed by said data viewer.

[0012] Figure 1 shows a client data processing unit 3 which is provided with a working memory 8, a hard disk drive 7, and a monitoring unit 5. Furthermore, in said client first data processing unit 3, an access device 9 is implemented. This access device may be implemented as a hardware as well as a software solution.

[0013] Furthermore, said client data processing device 3 is connected to a bus system 6 to which a server data processing unit 1 may be connected. In this context the system bus may be any connection between at least two data processing devices, e.g. connetions via Internet, USB, phoneline or any other communication link. The server unit 1 is additionally provided with at least a hard disk drive 2.

[0014] At least on one of the two said hard disk a data file 4 is stored for an inspection of a user of said first data processing unit 3.

[0015] In figure 2, said data file 4 is shown schematicaly. If the user wants to view a part of said data file which is determined by the boundaries 11 and 12, for instance with the scroll bar 10, he may select said part and the access device 9 will read this designated part and transfer it to the working memory 8 so that it can be shown on said monitor 5.

[0016] In a more advanced version of the invention, the access device 9 will also read a preceding part 14 and a subsequent part 15 which are adjacent parts to the designated part 13. These two parts are additionally limited by the boundary 17 for the preceding part 14 and by lower boundary 16 for the subsequent part 15.

[0017] The access device 9 reads said two additional parts and saves them to the working memory 8. This has the advantage that when the user wants to view the subsequent or preceding part, he has no waiting period until the access device has transferred one of the two parts to the working memory.

[0018] If the data viewer is provided by this additional feature after each change of the designated part to view, the access device 9 has to replace the subsequent and preceding part, respectively.

[0019] Wherever the data file is stored, the data viewer overcomes the above-mentioned problems by downloading only the designated portion of the file the user is interested to view at a time.

[0020] The user can move the scroll bar for designating the designated part 13 to any point in the file simply by adjusting the scroll bar. In the background, however, the viewer is calculating what part of said file the scroll bar's position corresponds to. It then requests just that portion of the file from the back end and displays it. It waits until the user lets it rest at the final position and then fetches that portion of the file.

[0021] Furthermore, the viewer has a search and filter capability. In a server/client system as schown in Fig. 1

schematicly, the actual searches are done on the server represented in this example by the second data processing unit 1. The client is represented by the first data processing unit 3. The search or filter results are, like the normal text, just sent to the client upon demand. Thus, the load on the working memory at the client is actually quite light. According to the invention, the viewer has the following advantages. It avoids downloading the entire file. The user doesn't have to wait for a slow download of large files and resources requirement on the client system in particular for the working memory are relatively light. It allows the user to view, search and filter the entire file without having to deal with it in blocks. Instead, to download the complete file, the access device is provided with a helper process optionally on the server system, which builds a series of indexes for the file. The indexes conceptually break the file into sequential blocks and each index points to the beginning of its respective block. The helper process then communicates information about the number of indexes to the access device which is displaying the designated part and the scroll bar. As the user moves the scroll bar, the access device calculates which index the scroll bar position corresponds to and asks the helper process to retrieve the block for the index. In this way, the access device does "just-in-time" data retrieval.

[0022] It should be mentioned that when the user moves the scroll bar, the index calculation is not done until the user lets the scroll bar rest in a position. As already said at the beginning of the description, although the description above uses a text file for the viewable object, it should be emphasized that the viewer approach would work equally well with other types of objects such as graphic images or large tables. The basic idea of having a server side helper program breaking the viewable object up into logical indexes and sending them to the client upon demand is applicable to either object types.

[0023] Finally, it should be noted that the architecture of the invention also supports text searches and filtering. The searches and filtering are done by the helper process on the server in response to a client request. The same sort of scheme with logical indexes is used to break the results of the search or filter into small chunks which are presented to the client as a seamless whole.

Claims

1. Data viewer with

at least a first processing unit (3),
a non-volatile memory unit (2;7) which is connected with said first data processing unit (3),
at least one data file (4) which is stored in said non-volatile memory unit (2;7),
a monitor (5) is connected to said first data processing unit (3) for viewing data, provisionally stored in a working memory (8),

characterized by

an access device (9) which is a part of said first data processing unit (3),
reading a predetermined part of the data file (4) and storing said part in the working memory (8).

2. Data viewer according to claim 1,
characterized in that
the access device (9) reads additionally a preceding and subsequent part of said predetermined part of said data file (4).

3. Data viewer according to claim 2,
characterized in that
at least a second data processing unit (1) is connected with said first data processing unit (3) and provided with said non-volatile memory unit (2;7) on which said data file (4) is stored.

4. Data viewer according to claim 3,
characterized in that
first data processing unit (3) is connected to the main memory unit (8) via a bus unit (6).

5. Data viewer according to claim 4,
characterized in that
said predetermined part of said data file (4) is determined by boundary marks viewable on said monitor unit (5).

6. Data viewer according to claim 5,
characterized in that
said boundary marks are represented by a scroll bar (10).

FIG 1

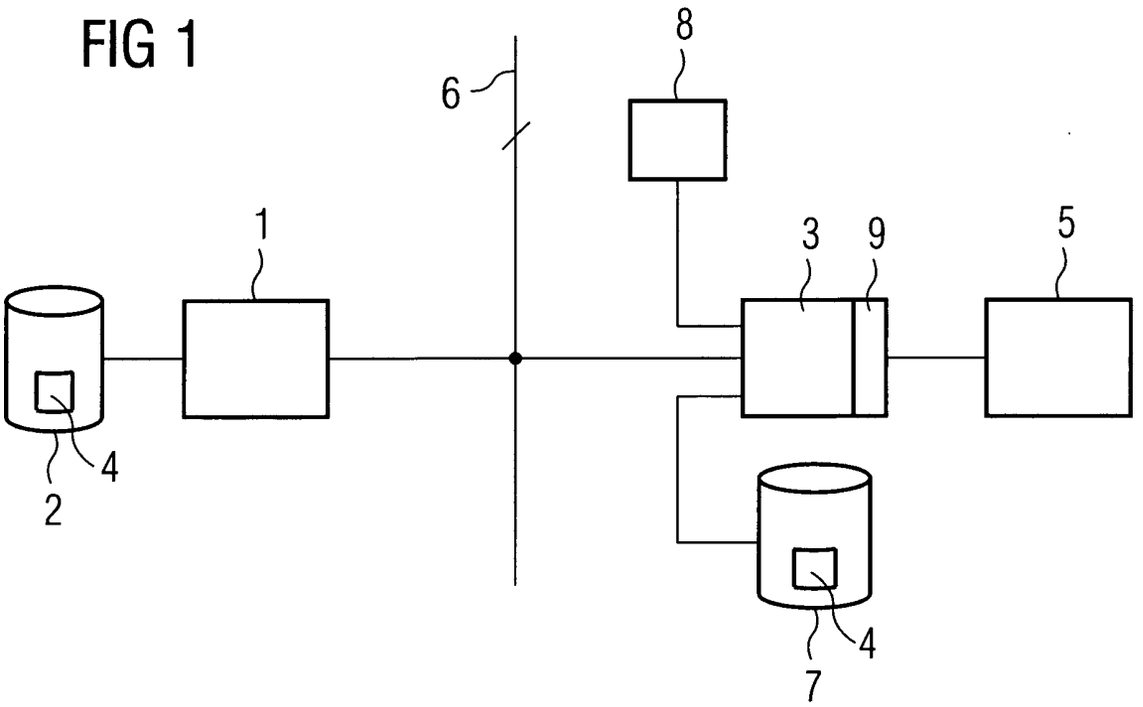
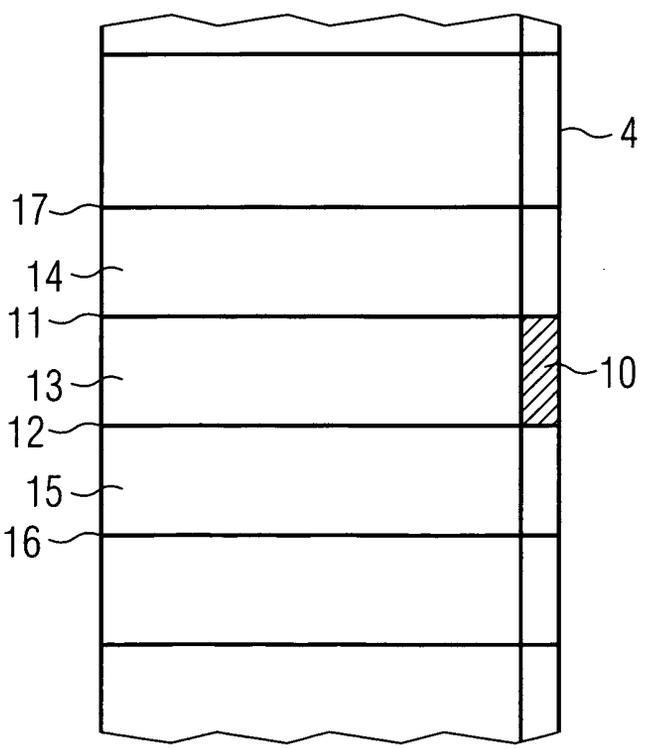


FIG 2



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EUROPEAN SEARCH REPORT

Application Number
EP 02 00 5440

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 02 15162 A (FUJI TELEVISION NETWORK INC ;OKAMURA TOMOYUKI (JP); INNOTIVE CORP) 21 February 2002 (2002-02-21) * page 2, line 21 - page 3, line 2; figures 1,2 * * page 14, line 6 - page 22, line 3; figures 3A-5C * * page 30, line 20 - page 33, line 25; figure 15 * ---	1-6	G09G1/16
X	EP 0 933 694 A (PFU LTD) 4 August 1999 (1999-08-04) * column 6, line 7 - column 16, line 25; figure 4 * -----	1-6	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

G09G
G06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 November 2002	I. SZÁNTÓ

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03 82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 00 5440

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-11-2002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0215162 A	21-02-2002	AU 6949401 A	25-02-2002
		WO 0215162 A2	21-02-2002
EP 0933694 A	04-08-1999	JP 11088866 A	30-03-1999
		EP 0933694 A1	04-08-1999
		WO 9904331 A1	28-01-1999

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82