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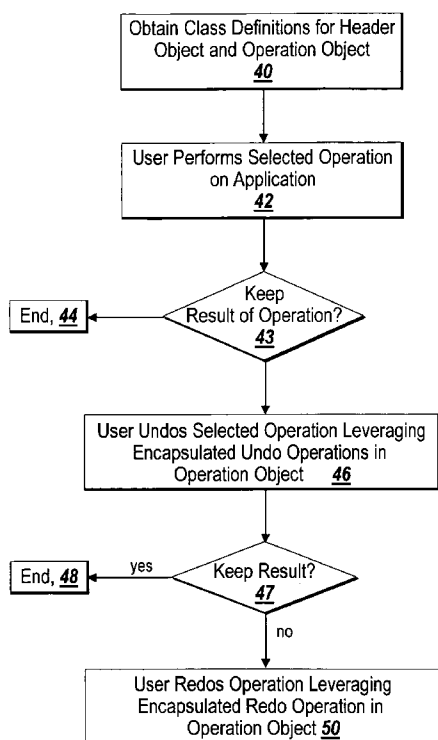
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[Continued on next page]

(54) **Title:** SYSTEM FOR AUTOMATING THE DEFINITION OF APPLICATION OBJECTS SUPPORTING UNDOING, REDOING, COMPRESSING AND LOGGING OPERATIONS



(57) **Abstract:** A configurable class system for an application author working in an application development environment that automates the handling of undo, redo and logging operations is discussed. The configurable class system removes the burden from the application author of having to custom manage undo, redo and logging information during application writing by providing the necessary mechanisms to every application object created. The configurable class system also allows the application author to handle exceptional state changes in an application by configuring the underlying base classes provided by the configurable class system. Additionally, the embodiments of the present invention enable the application author to customize the compression of a series of identified operations by selecting the type of operations that are to be compressed and the manner in which the compression is to occur.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/026412

A. CLASSIFICATION OF SUBJECT MATTER

INV. G06F9/44
ADD. G06F11/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GAMMA ET AL: "Design Patterns - Elements of Reusable Object-Oriented Software - Command and Memento Pattern" 1995, ADDISON-WESLEY, XP002482253 page 233 - page 242 page 283 - page 291	1-39, 43, 44
X	COLE ET AL: "Java Swing, 2nd Edition" [Online] November 2002 (2002-11), O'REILLY, XP002482254 Retrieved from the Internet: URL: http://proquest.safaribooksonline.com/0596004087 [retrieved on 2008-05-30] chapter 18	1-39, 43, 44



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 491 997 A (MICROSOFT CORP [US]) 29 December 2004 (2004-12-29) the whole document -----	1-39, 43, 44

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/026412

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-39, 43-44

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-39, 43-44

Implementing undo operations.

2. claims: 40-42

Implementing logging operations.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/026412

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1491997	A	29-12-2004	CN 1573691 A	02-02-2005
			JP 2005018774 A	20-01-2005
			KR 20050000330 A	03-01-2005
			US 2004268187 A1	30-12-2004