

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
2 December 2004 (02.12.2004)

PCT

(10) International Publication Number
WO 2004/104823 A3

(51) International Patent Classification⁷: **G06F 9/45**, 9/46

(21) International Application Number:
PCT/US2004/008589

(22) International Filing Date: 19 March 2004 (19.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/441,357 20 May 2003 (20.05.2003) US

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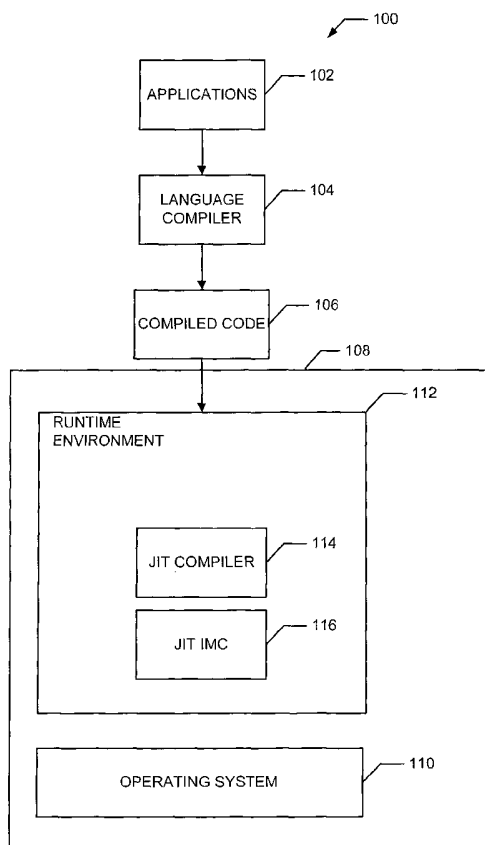
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: APPARATUS AND METHODS FOR RESTORING SYNCHRONIZATION TO OBJECT-ORIENTED SOFTWARE APPLICATIONS IN MANAGED RUNTIME ENVIRONMENTS



(57) Abstract: Apparatus and methods for restoring synchronization to object-oriented software applications in managed runtime environments are disclosed. The disclosed apparatus and methods determine if a class object has been dynamically loaded, perform an escape analysis on the program code and determine if assumptions made during an initial escape analysis are valid. Additionally, the disclosed system and methods restore synchronization to at least a portion of the program code affected by loading of the class object if the assumptions made during the initial escape analysis are no longer valid.



GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

27 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/008589

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F9/45 G06F9/46

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)
IPC 7 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, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WHALEY J ET AL: "Compositional pointer and escape analysis for Java programs" SIGPLAN NOTICES ACM USA, vol. 34, no. 10, October 1999 (1999-10), pages 187-206, XP002307578 USA ISSN: 0362-1340 abstract paragraph '01.1! - paragraph '01.2! paragraph '09.2! - paragraph '09.3! ----- -/--	1-37

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☐ Patent family members are listed in annex.

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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

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Date of the actual completion of the international search

25 November 2004

Date of mailing of the international search report

10/12/2004

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/008589

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	RUF E: "Effective synchronization removal for Java" SIGPLAN NOTICES, ASSOCIATION FOR COMPUTING MACHINERY, NEW YORK, NY, US, vol. 35, no. 5, May 2000 (2000-05), pages 208-218, XP002301519 ISSN: 0362-1340 abstract page 208, left-hand column, line 17 - page 209, right-hand column, line 33 paragraph '04.2! paragraph '007.! -----	1-37
A	BOGDA J ET AL: "Removing unnecessary synchronization in Java" SIGPLAN NOTICES, ASSOCIATION FOR COMPUTING MACHINERY, NEW YORK, NY, US, vol. 34, no. 10, October 1999 (1999-10), pages 35-46, XP002301518 ISSN: 0362-1340 page 35, left-hand column, line 1 - page 38, right-hand column, line 8 -----	1-37