Real-time garbage collection for java microprocessor

Dung V.Q., Ha N.V.
Department of Software Engineering, College of Technology, Vietnam National University, Hanoi

Abstract: Problem in Java processor is small supported memory, and the device that using Java processor need to refresh (restart) memory manually in the ending of one thread. Automatic memory management of garbage collection greatly simplifies the development of large systems, but for using in mobile device, we need to control the memory size for it. However, garbage collection is used in that systems must running on real-time, it can be scheduled periodically in the same way as ordinary application threads. We provide an upper bound for the garbage collector period so that the application threads on mobile devices never run out of memory. © 2008 IEEE.

Index Keywords: Application threads; Automatic memory managements; Garbage collections; Garbage collectors; Java microprocessors; Java processors; Large systems; Memory sizes; Out of memories; Real-time garbage collections; Upper bounds; Mobile devices; Portable equipment; Real time systems; Refuse collection; Waste disposal; Data storage equipment

Year: 2008
Source title: Proceedings - 2008 International Conference on Advanced Technologies for Communications, ATC 2008, Held in Conjunction with REV Meeting
Art. No.: 4760590
Page : 335-338
Link: Scorpus Link
Correspondence Address: Dung, V. Q.; Department of Software Engineering, College of Technology, Vietnam National University, Hanoi; email: dungvq@vnu.edu.vn
Conference name: 2008 International Conference on Advanced Technologies for Communications, ATC 2008
Conference date: 6 October 2008 through 9 October 2008
Conference location: Hanoi
Conference code: 75765
ISBN: 9.78E+12
DOI: 10.1109/ATC.2008.4760590
Language of Original Document: English
Abbreviated Source Title: Proceedings - 2008 International Conference on Advanced Technologies for Communications, ATC 2008, Held in Conjunction with REV Meeting
Document Type: Conference Paper
Source: Scopus
Authors with affiliations:

- Dung, V.Q., Department of Software Engineering, College of Technology, Vietnam National University, Hanoi
- Ha, N.V., Department of Software Engineering, College of Technology, Vietnam National University, Hanoi

References:

- Martin Schoeberl: JOP - A Java Optimized Processor for Embedded Real-Time Systems, 2005Trevor Harmon and Raymond Klefstad: Interactive Back-annotation of Worst-case Execution Time Analysis of Java microprocessors, RTCSA 2007Martin Schoeberl: Real-Time Garbage Collection for Java, IEEE 2006Matthias Meyer, (2005) An On-chip Garbage Collection Coprocessor for Embedded Real-Time Systems,RTCSA
- Meyer, M: A novel processor architecture with exact tag-free pointer, IEEE Micro, vol24(3), May 2005Chai, Z., Tang, Z., (2005) Wang LiMing and Tu ShiLiang: An Effective Instruction Optimization Method for Embedded Real-Time Processor, ICPPW
- Dijkstra, E.W., On-the-fly garbage collection
- an exercise in cooperation (1978) Comm. ACM, 21 (11). , Nov