Embedded Java

Wolfgang Rosenstiel
Technische Informatik
Universität Tübingen
Wilhelm-Schickard-Institut, Sand 13,
D-72076 Tübingen, Germany
rosenstiel@informatik.uni-tuebingen.de
http://www-ti.informatik.uni-tuebingen.de

The increasing complexity of embedded systems also results in a rapid growth of the software part, which tends to be developed in object oriented programming languages like C++ or Java. Originally planned for embedded systems, Java recently plays again a more important role in the context of embedded system from different points of views. Especially platform independence, multithreading, parallelism, and internet embedding are important advantages and contribute to the increasing importance of Java in the following different aspects.

At first, software reuse oriented concepts like JavaBeans for the specification and prototyping of embedded systems have to be mentioned.

Second, several standards have been developed to improve memory footprints as well as performance of Java for its use in embedded systems. Examples include PersonalJava, EmbeddedJava, JavaCard, Romizers, J2ME, and KVM.

As a third more research oriented development we find Java more and more in the role of a modeling, specification, simulation, and synthesis language not only for the software but also for the hardware parts of embedded systems. This aspect is especially interesting for hardware/software co-design and co-simulation.

In this talk, all these different aspects of Java, as well as their roles, contributions and impacts especially for embedded system design will be discussed.

Relevant Publications

6) T. Kuhn, W. Rosenstiel and U. Kebschull, Description and Simulation of Hardware/Software Systems with Java, 36 Design Automation Conference (DAC), New Orleans, USA, 1999
http://www.cygnus.com/products/client_services/java.html
http://www.java.sun.com/products/personaljava/
http://www.java.sun.com/products/embeddedjava/
http://www.java.sun.com/products/javacard/
http://www.java.sun.com/j2me/
http://www.sun.com/microelectronics/java/
http://www.jcan.com