Ada Conference UK

April 25th, 2013
Austin Court, Birmingham

A benchmark for safety, security and reliability – the new updated Ada 2012 language

In an era when software impacts on almost every part of our lives, the need for software that is both safe and secure has never been greater or more urgent. With decades of success in industrial sectors including avionics, aerospace and defence, Ada is generating new interest in domains such as automotive, medical and financial systems, where the cost of software errors can range from lost livelihoods to lost lives. Ada 2012 is the next generation of the world's premier programming language for engineering safe, secure and reliable software.

The most important enhancements in Ada 2012 are directly related to program "correctness", namely the introduction of more powerful assertion mechanisms (predicates) into the language: pre- and post-conditions for subprograms, type invariants, and subtype predicates. These are mechanisms that encourage the programmer to better specify the intent of the code they write, and allow the run-time system to verify that this intent is actually achieved. These "programming by contract" features are also beneficial when utilising static analysis tools.

The one-day Ada Conference UK will feature a half-day tutorial on the new capabilities introduced in this latest version. Presented in the morning by Tucker S. Taft, language expert and member of the Ada Rapporteur Group (ARG), this tutorial will introduce these new features to programmers familiar with either Ada or other systems programming languages such as C, C++ or Java. The afternoon session will offer talks from industry and technical experts as well as a selection of vendor talks from the Ada ecosystem.

Registration details and further information on this key event in the Ada calendar can be found at www.ada-uk-conference.co.uk.

Event operated by CSR, in cooperation with the Safety-Critical Systems Club:
www.scsc.org.uk

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Please register my interest for the Ada UK Conference, 25th April, 2013 or
Please book a delegate place for me at the Ada UK Conference, at a cost of £180

[*delete one line above* and fax to +44 191 222 7995,
or send an e-mail to Joan.Atkinson@ncl.ac.uk]

Name .....

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A short summary of the new features in Ada 2012 is provided below.

What's new in Ada 2012?

Contract-based Programming

- Pre-conditions and post-conditions define the expectations and obligations of a subprogram.
- Type invariants specify boundary constraints for objects of an encapsulated (private) type.
- Subtype predicates capture general constraints on data objects.

Increased Expressiveness

- Expression functions offer a convenient way to express simple functions.
- Conditional expressions provide a compact notation for a common idiom.
- Quantified expressions for universal and existential forms specify predicates over arrays and containers.

Concurrency and Multicore Support

- Task affinities and dispatching domains allow tasks to be mapped to specific CPUs or cores.
- Ravenscar for multiprocessor systems adapts a safe and widely used tasking profile to modern architectures.

Container Enhancements

- Bounded containers use stack allocation and do not incur the overhead of dynamic memory management.
- Task-safe queues and priority queues provide efficient implementations of synchronized structures.
- Holder containers create singleton structures for objects of an unconstrained type.
- Iterators provide familiar idioms with uniform syntax to search and manipulate arrays and containers.