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Ada 2012 Language Standard Corrigendum Approved by ISO

Milestone marks smooth continuation of Ada language standardization process

EMBEDDED WORLD 2016, Nuremberg, Germany, February 23, 2016 – The Ada Resource Association (ARA) and Ada-Europe today announced that an update to the Ada 2012 language standard, formally known as Technical Corrigendum 1 to ISO/IEC 8652:2012, has been approved and officially published by the Geneva-based International Organization for Standardization (ISO). Comprising a variety of clarifications and minor corrections driven by implementation and user experience, the Corrigendum was developed under the auspices of Working Group ISO/IEC JTC1/SC22/WG9, in particular by WG9's Ada Rapporteur Group (ARG), and was issued on February 1, 2016. This work was supported in part by the ARA and Ada-Europe.

The publication of the Corrigendum highlights the steady and orderly evolution of the Ada programming language. New versions of the standard are published by ISO at roughly ten-year intervals. Between releases, the ARG reviews the standard for completeness, correctness, and unambiguity, and also considers and analyzes proposed updates ranging from minor wording changes to the addition of major new features. Especially in the case of new features, the ARG performs a careful analysis of the tradeoffs among the design choices, taking into account the requirements of all the stakeholders (existing Ada users, potential new users, compiler implementors, third-party tool providers, educators and researchers, etc.) This process has worked successfully since the language's inception more than thirty years ago, resulting in precisely defined standards that are issued in a timely fashion and that meet the evolving needs of the Ada community.

A consolidated Ada 2012 Language Reference Manual, consisting of the Ada 2012 standard as updated by changes from the Corrigendum, is available online: www.ada-auth.org/standards/ada12_w_tc1.html/.

“In this phase of the language standardization process, the focus is on attention to detail, so the Corrigendum has ‘fine-tuned’ the wording to make sure that the standard is correct,” said Dr. Joyce Tokar, WG9 Convenor. “It has also enhanced the control provided by contract-based programming, so the Ada programmer can not only specify the preconditions and predicates that apply to inputs, but also identify which particular exceptions should be raised when a precondition or predicate fails. The preconditions and predicates can thus fully specify an API’s requirements, and the consequences of failure when these requirements are not met. The Corrigendum represents an important contribution to the Ada community.”

About Ada 2012

Ada 2012 has brought significant enhancements to Ada, most notably in the area of “contract-based programming.” Features here include the ability to specify preconditions and postconditions for subprograms, and invariants for private (encapsulated) types. These take the form of Boolean expressions that can be interpreted (under programmer control) as run-time conditions to be checked. The contract-based programming features fit in smoothly with Ada’s Object-Oriented Programming model, and support the type substitutability guidance supplied in the Object-Oriented Technologies and Related Techniques Supplement (DO-332) to the avionics software safety standard DO-178C / ED-12C.

Other Ada 2012 improvements include enhancements to the containers library, increased expressiveness through features such as conditional expressions and more powerful iterators, and support for multicore platforms (task affinities, and the extension of the Ravenscar profile – standardized in Ada 2005 as an efficient and predictable tasking subset for high-integrity real-time systems – to multiprocessor and multicore environments).

A technical summary of Ada 2012, together with an explanation of the language’s benefits and a set of links to further information, is available at www.ada2012.org, a website maintained by the Ada Resource Association.

About the Ada Resource Association

The Ada Resource Association (ARA) is a non-profit organization chartered to support the continued evolution of the Ada language and its infrastructure, to serve as a source of information about Ada and its usage, and to promote Ada as a language for effective software engineering. To these ends, the ARA maintains the Ada Information Clearinghouse website www.adaic.org and has provided funding for the development and maintenance of the Ada language standard and the Ada Conformance Assessment Test Suite. For information about the ARA, including sponsorship opportunities, please visit www.adaresource.com. The ARA is headquartered in Oakton, VA (US).

About Ada-Europe

Ada-Europe is the international non-profit organization that promotes the knowledge and use of the Ada programming language in academia, research and industry in Europe. Its flagship event is the annual international conference on reliable software technologies, a high-quality technical and scientific event that has been successfully running in the current format for the last 20 years. Ada-Europe has member organizations all over the continent, in Belgium, Denmark, France, Germany, Spain, Sweden, and Switzerland, as well as individual members in many other countries. For information about Ada-Europe, its charter, activities and sponsors, please visit: www.ada-europe.org. Ada-Europe is headquartered in Brussels, Belgium.

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