ADALOG

EXPERTISE IN ADA

AdaControl

Ada
Time-tested, safe and secure

The Company

ADALOG is a company specialized in expertise, consulting, and training related to the Ada langage, design methods, and software engineering in general.

ADALOG was founded in 1985 by Jean-Pierre Rosen, an reknown expert of the Ada langage and object oriented techniques. He has been teaching Ada since 1980; his extended knowledge of the langage coupled with famous pedagogical skills make ADALOG training sessions uniquely efficient.

ADALOG operates in all domains connected to the Ada language:

- ***Expertise***: code reviews, problem analysis, assistance to certification (DO178-B/C, EN50128), tooling.
- ***Consultancy***: Support to developpement, coding standards, quality assesment.
- ***Training***: from the overall overview of the langage to the most specific domains: real-time, numerics, AWS, ASIS...
- ***Validation***: ADALOG is an ACAL (*Ada Compiler Assertion Laboratory*, an official laboratory for the validation of Ada compilers).

ADALOG has no connection to makers or vendors of compilers and tools: this guarantees total freedom and provider independance in our expertise and advices.

The Ada Language

Ada is a programming langage which is the ultimate achievement in the line of "classical" (imperative, procedural) languages. It is mainly the outcome of a synthesis effort of all the best elements of previous programming langages, integrated into a consistent framework.

Its successive standards, up to the recent **Ada 2012**, follow the evolving needs of computer science by incorporating the most recent advances: **object oriented programming**, interfaces, **programming by contract**, support of **multi-core** architectures… It has been succesfully used in such various domains as real-time, finances, CAD, health devices, langage processing...

Ada was designed after a set of **requirements**, whose leading idea was to **reduce the cost of software** development, by considering all aspects of the life-cycle. The langage is thus built around some strong main lines:

- ➔ **Favour ease of maintenance over ease of writing**, because maintenance represents nearly 2/3 of software costs.
- ➔ **Provide an extremly rigorous type control system**, allowing detection of errors as early as possible.
- ➔ **Allow an intrinsically safe programming style**, by permitting the software to handle all abnormal situations.
- ➔ **Be portable between machines with various architectures**, in order to make software independent from hardware vendors.
- ➔ **Permit efficient implementations and provide access to low level interfaces**, features that are required when designing embedded, real-time, and safety-critical systems.

ADA LOG

Adalog, membre du groupe Pacte-Novation

Pacte Novation

AdaControl

Static Analysis Tool of Ada Code

Every control in one tool

AdaControl is a free (GMGPL) tool developped by ADALOG for checing occurrences of various kinds of constructs in Ada programs.

Its first goal is for checking programming rules, but it is also a powerful tool for finding the use (or non-use) of many features and programming patterns.

Checked elements range from very simple, like occurrences of certain entities, declarations, or statements, to quite sophisticated, like verifying that specific design patterns are being obeyed.

AdaControl is an **industrial tool** that has been used by companies such as Eurocontrol (checking over 2 millions lines of code), BelgoControl, Ansaldo, Alstom, Sagem, Thales… It is used to check coding standards, to provide evidence for software certification, and to help detecting complex issues.

Some examples of rules that can be cheked with AdaControl

- Lines are limited to 120 characters in length.
- Type names start with "T_", except names of access types that start with "TA_".
- The "goto" statement is forbidden.
- The "case" statement shall be used instead of "if" statement where possible.
- It is forbidden to declare array objects whose size cannot be determined at compile-time.
- No exception shall propagate out of a task body.
- An "accept" statement shall contain only statements that depend on its parameters.
- A given variable shall not be passed as an actual parameter to several formal parameters of mode "out" or "in out".
- Semaphores shall respect a coding pattern that ensures that they do not stay blocked forever, even in the face of exceptions.
- …

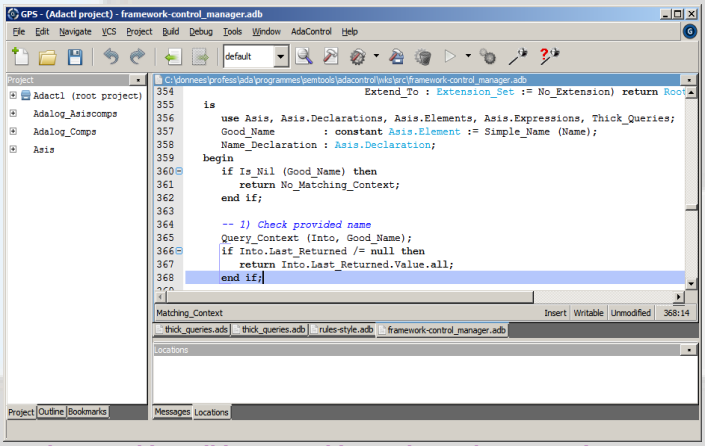
AdaControl : ADALOG's commercial offering

➔ **Maintenance contract:** For users who use AdaControl routinely, this contract offers the following benefits:

- **Help with installing** and using the product.
- **Fixes to problems** encountered while using AdaControl, with providing of "wavefront" versions for each fixed issue; a dedicated account into our BT system for quick processing of problems.
- **Access to beta versions** before they are officialy released.
- **Reduced rate** for the development of custom rules.
- **Priority handling** of improvement requests.

➔ **Development of custom rules:** ADALOG offers fixed price development of new rules, and especially business rules that are specific to the customer's context. The way AdaControl is structured garantees that such custom rules can be easily carried forward to future evolutions of the product.

➔ **Help with the definition of coding standards**: Our experience with the issues of coding standards and code checking allows us to offer consultancy and assistance services for defining coding standards and programming rules, together with the corresponding implementation of checks with AdaControl.



AdaControl is well integrated into AdaCore's GPS environment

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