



AdaCore

TECH DAYS

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GNAT Pro Update

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Release Schedule

October: Preview release Oct 2018: 19.0 *Continuous Release Area*

February: **Major release** **Feb 2019: 19.1**

July: **Corrective release** **July 2019: 19.2**

Oct 2019: 20.0

Feb 2020: 20.1

July 2020: 20.2

GNAT

GNAT Pro 19 overview

62 platforms (57 cross, 5 native)

Support for Ada 83, 95, 2005, 2012, 202x, SPARK

GCC 6.x ➡ GCC 7.x

Binutils: 2.28.51 ➡ 2.30.52

GDB 7.10 ➡ GDB 8.2

MinGW 3.1.0 ➡ 5.0

QEMU 2.8.1 ➡ 2.12

GNAT Pro Ports

7 new ports, 11 new configurations

riscv64-elf

aarch64-elf-{linux,windows}64

aarch64-linux-linux64

aarch64-qnx-{linux,windows}64

aarch64-vx7-{linux,windows}64

ppc-linux-windows

x86-lynx178elf-{linux,windows}64

GNAT on VxWorks

Simplify mixing Ada/C++

Better integration of GNAT in Workbench (even for Ada-only projects)

Add support for Wind River's LLVM

Libadalang integration

Libadalang available to customers and supported

GNATpp now based on libadalang

faster and doesn't require closure, support for simple preprocessor directives

More to come

Other GNAT Highlights

Spectre V2 mitigation (`-mindirect-branch` and `-mfunction-return` switches)

Link time speedup on Windows for large executables with multiple DLLs

Full Ada 2012 syntax for C/C++ binding produced by `-fdump-ada-spec`

Improved suppression of access-before-elaboration checks and warnings

AWS improvements

- Enhanced interoperability with Apache CXF for document/literal WSDL and generated SOAP messages.

- Improved session handling security by using a configurable private hash.

IDEs

GPS

AdaCore's main IDE

Stability and speed

GPS

Learn view

The screenshot displays the 'Learn' view in the GPS IDE. The interface is divided into several sections:

- Scene:** Located at the top left, it contains a vertical toolbar with a plus sign (+), a minus sign (-), and an edit icon (pencil).
- Code Editor:** On the right side, it shows a snippet of code with line numbers 6 through 17. The code defines a function `Minus_I` within a larger function `Arithmetic`. Line 13 is highlighted, corresponding to the selected action.
- Actions:** A central panel titled 'Actions' lists various editor commands. The 'Goto declaration' action is selected and highlighted in blue. Other actions include 'Delete word backward', 'Uncomment lines', 'Previous subprogram', 'Comment lines', 'Delete word forward', 'Goto line', 'Goto end of line', 'Goto beginning of line', and 'Refill', each with its associated keyboard shortcut.
- Jump to the declaration of the current entity:** A text box below the actions list providing context for the selected action.
- Metadata:** Below the text box, it lists the action's details: **Action:** goto declaration, **Category:** Editor, and **Menu:** /Navigate/Goto Declaration.
- Messages:** A panel at the bottom right, currently empty, with a title 'Arithmetic.Minus_I' above it.

GPS

Libadalang view

Improved integration with debugger

- new Registers view

- set values in Variables view

- lazy retrieve of callstack information

Improved Scenario view

- untyped variables

- variables in aggregated projects

Revamp and simplification of color preferences + theme support

GNATbench

Eclipse Plug-In for Ada

Support for Eclipse 4.8 Photon, Wind River WorkBench 4.15

Eclipse SimRel 2018-09 under test

Improved Ada/C++ exception handling on VxWorks 7

Better integration with WorkBench

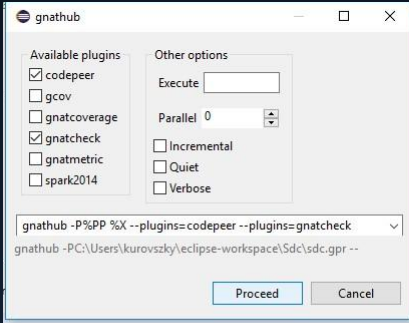
improve support for compiler with GNAT Pro C

full access to environment managed by WorkBench

New UI for runtime selection

GNATbench

GNAThub integration



eclipse-workspace - Sdc/struct/values.adb - Eclipse IDE

Tools:

<input checked="" type="checkbox"/>	codepeer	22
<input checked="" type="checkbox"/>	gnatcheck	63

Severities:

<input checked="" type="checkbox"/>	low	15
<input checked="" type="checkbox"/>	medium	7
<input checked="" type="checkbox"/>	unspecified	63

Rules:

<input checked="" type="checkbox"/>	array_index_check	3
<input checked="" type="checkbox"/>	conditional_check	3
<input checked="" type="checkbox"/>	numeric_literals	3
<input checked="" type="checkbox"/>	others_in_case_statements	1
<input checked="" type="checkbox"/>	others_in_exception_handlers	1
<input checked="" type="checkbox"/>	overflow_check	1
<input checked="" type="checkbox"/>	positional_parameters	21
<input checked="" type="checkbox"/>	precondition	11
<input checked="" type="checkbox"/>	predefined_numeric_types	31
<input checked="" type="checkbox"/>	raising_external_exceptions	6
<input checked="" type="checkbox"/>	suspicious_precondition	2
<input checked="" type="checkbox"/>	unused_out_parameter	1
<input checked="" type="checkbox"/>	validity_check	1

```
7 -----
8 -- Process --
9 -----
10
11 procedure Process (V : Value) is
12 begin
13   stack.Push (V);
14 end Process;
15
16 -----
17 -- Read --
18 -----
19
20 function Read (Word : String) return Value is
21   Int_Val : Integer;
22   Kind    : Input_Number_Kind;
23 begin
24   Input.Read_Number (Word, Int_Val, Real_Val, Kind);
25   if Kind /= Int_Number then
26     raise Except.User_Error;
27   end if;
28 end if;
```

GNAThub Analysis Data

- 16:11 gnatcheck: unspecified - explicit reference to predefined numeric subtype
- 41:4 codepeer: medium - suspicious precondition for Last: not a contiguous range of values
- 93:47 codepeer: medium - array index check might fail: requires I <= 200
- 93:35 codepeer: medium - precondition might fail on call to values.to_string: requires V /= null
- 93:35 gnatcheck: unspecified - positional parameter association
- 96:26 gnatcheck: unspecified - positional parameter association
- input.adb
 - screen_output.adb
 - 52:12 gnatcheck: unspecified - explicit reference to predefined numeric subtype
 - 63:52 gnatcheck: unspecified - explicit reference to predefined numeric subtype
 - 64:13 gnatcheck: unspecified - explicit reference to predefined numeric subtype
 - 81:12 gnatcheck: unspecified - explicit reference to predefined numeric subtype
 - values.adb
 - 11:4 codepeer: medium - suspicious precondition for Stack.Body.Last: not a contiguous range of values
 - 21:18 gnatcheck: unspecified - explicit reference to predefined numeric subtype
 - 22:18 gnatcheck: unspecified - explicit reference to predefined numeric subtype
 - 26:12 codepeer: medium - unused out parameter Real_Val
 - 26:26 gnatcheck: unspecified - positional parameter association
 - 26:32 gnatcheck: unspecified - positional parameter association
 - 26:41 gnatcheck: unspecified - positional parameter association
 - 26:51 gnatcheck: unspecified - positional parameter association
 - 29:10 codepeer: low - conditional check might raise exception: requires Kind = Int_Number
 - 29:10 gnatcheck: unspecified - raised exception is not declared in visible part of enclosing library package
 - 44:14 gnatcheck: unspecified - explicit reference to predefined numeric subtype
- sd.c.adb

GNATdoc

Documentation Generator

Support for generics

GNATdashboard

GNAT Tools Aggregation and Visualization

Support for SonarQube 6.7 LTS

New Web UI

Tools

GPRbuild

Multipurpose GNAT builder

Removed compile command line length limitation on Windows

Recompile if GNAT toolchain version changes between compiles

Propagation of static SAL link dependencies upstream

GNATcheck

Qualifiable Coding Standard Checker

Many new GNATcheck rules implemented & qualified

GNATcoverage

Qualifiable Code Coverage

Improved handling of pragmas wrt statement coverage

Support for programs with compressed debug info section

In Our Labs

New Elaboration Algorithm

Taking complete call graph into account

Will solve porting efforts

GNAT Pro C++

Cross Linux

VxWorks 6

VxWorks 7

GNAT LLVM

Working on plugging GNAT front-end with LLVM code generator

GNATcoverage

Support for source instrumentation to provide coverage everywhere

GPR

Active work on GPR2 library and tools

Libadalang and Tools

Libadalang will replace all source navigation, cross reference and refactoring capabilities in GPS and GNATbench

GNATstub, GNATmetric, GNATcheck are also being transitioned

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