GNAT Pro 18.1 Development Environment

GNAT Pro 18.1 has been designed to leverage the latest features of the Simulink®/Stateflow® subset, performs better range propagation for contract checking (with additional precision in calculating elaboration dependencies), better code efficiency, preliminary support for several prospective contracts on formal containers), has enhanced the automation of proofs environment (through preconditions on the numeric functions and their approximations), and has improved the tooling for prose proofs.

SPARK Pro 18.1 Formal Verification Toolset

SPARK Pro 18.1 has improved its range of contract checking in the verified environment (through preconditions on the numeric functions and contracts on formal containers) and has enhanced the automation of contracts (through internalized preconditions on the numeric functions and their approximations) and has improved the tooling for prose contracts.

QGen 18.1 Model-Driven Development Toolset

QGen 18.1 is a model-driven development toolset that includes QGen and River Workbench 4.12 and the diab compiler. QGen 18.1 provides support for the Simulink®/Stateflow® subset, performs better range propagation for contract checking (with additional precision in calculating elaboration dependencies), better code efficiency, preliminary support for several prospective contracts on formal containers), has enhanced the automation of proofs environment (through preconditions on the numeric functions and their approximations), and has improved the tooling for prose contracts.

GNAT Pro on iOS and Android

GNAT Pro on iOS and Android is available for mobile platforms running ARM-Android and ARM64-iOS. This product is hosted on 32-bit Windows and Linux for development.

The new GNAT Pro CCG product (Common Code Generator) is a compiler that takes a SPARK-like subset of Ada—basically excluding features that require runtime support—and generates C code that adheres to the Ada ISO/IEC standard and is compatible with the GNU C compiler.

The GNAT Programming Studio (GPS) IDE has incorporated performance improvements and better handling of specialized instantiations.

GNAT Pro CCG Expands Ada Availability

GNAT Pro CCG is now available for QNX, VxWorks, and pSOS, and support has been added for x86-64 Linux. GNAT Pro CCG has expanded its Ada language support to include common Ada features such as access types, generic units, and common Ada features.

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GNAT Pro Assurance Selected for MDA Space Station

ADACore, a business unit of the MITRE Corporation, has selected GNAT Pro Assurance development environment for the MDA’s target systems. MITRE Corporation, a leading professional services organization, provides systems development and management services to the US government. Specifically, the GNAT Pro Assurance environment, a full suite of tools and a development environment that includes the Ada compiler, is designed to help prove that the software meets the requirements of the system or the application. This is particularly relevant in contexts where the safety and reliability of the system are critical, such as in space missions. GNAT Pro Assurance provides a fully integrated environment that helps developers create, test, and maintain Ada-based software, ensuring that it meets the stringent requirements of space applications.

Sustained Branches

ADACore’s flagship GNAT Pro offering has been rebranded into three product lines: GNAT Pro Enterprise, GNAT Pro Assurance and GNAT Pro Developer. The Sustained Branch service supplied as part of GNAT Pro Assurance provides specialized product maintenance on a particular version of AdaCore’s GNAT Pro Enterprise. This includes bug fixes and upgrades that are essential to keeping the software running smoothly in real-world applications. The Sustained Branch service is designed to provide customers with a high level of support and maintain the software’s compatibility with existing systems and applications, ensuring that the software can continue to meet the evolving needs of the users. The rebranding into product lines also allows for easier navigation and selection of the appropriate solution for different user needs.

Tech Days 2017

AdaCore’s annual Tech Days conference in Paris on October 5 and 6, 2017 will feature a wide range of speakers and topics. The conference is a great opportunity for developers and users of Ada software to gather and exchange ideas, learn about new tools and technologies, and discuss the future of Ada and its applications. The conference topics will cover a variety of areas, including formal methods, security, performance, and the use of Ada in space and defense applications. The event is free for AdaCore members and tickets are available for non-members. More information can be found on the AdaCore website.

SPARK Discovery

SPARK Discovery is an integrated exploration software for the SPARK formal language and, as such, is included as a core tool in the AdaCore SPARK solutions (since release 1.9.2). It is designed to help developers understand the SPARK specifications for their systems. SPARK Discovery helps developers get a clear overview of the software and its structure, allowing them to identify potential issues and improve the code. It also provides a method to explore the code, allowing developers to see how different parts of the system interact and how changes in one part can affect the rest of the system. SPARK Discovery integrates with the SPARK synthesis platform, allowing developers to start with a clean slate and build a comprehensive understanding of the system.

Stay Up to Date with AdaCore On-Line

Follow the latest news from AdaCore through a variety of resources:
- Company blog: http://blog.adacore.com
- Twitter: https://twitter.com/AdaCore
- YouTube channel: https://www.youtube.com/channel/UCOC7qHXMYZe-w1737_Vv7Yg
- Dinner interview: Robert Tice Technical Account Manager

Interview

Rob, tell us about your experiences with Ada for this type of effort.

I think that it's a very interesting opportunity to foster the teaching of Ada and SPARK in colleges and universities. It also provides a great opportunity to encourage students to think about using formal methods in their future careers. The project also helps to promote the use of Ada in industry and to encourage the development of new tools and technologies to support the use of Ada in practice.

Any advice for others interested in Ada that you'd like to share?

I would advise anyone interested in Ada to start with the basics and gradually build up their knowledge. It's important to have a solid understanding of the core concepts before delving into more advanced topics. I would also recommend attending conferences and workshops, as these are great opportunities to connect with other developers and learn about new tools and technologies.

How did you choose Ada for this type of effort?

I chose Ada for this effort because of its strong support for formal methods and its ability to provide a high level of assurance and confidence in the correctness of the software. Ada's static typing and modular design make it a great fit for complex systems, and its strong type system helps to prevent common errors.

What advice would you give to others interested in Ada?

I would advise anyone interested in Ada to start with the basics and gradually build up their knowledge. It's important to have a solid understanding of the core concepts before delving into more advanced topics. I would also recommend attending conferences and workshops, as these are great opportunities to connect with other developers and learn about new tools and technologies.

https://www.adacore.com/gnatpro/

www.youtube.com/channel/UCOC7qHXMYZe-w1737_Vv7Yg

Follow us on Twitter: @adaprogrammers
GNAT Pro Assurance is a new product line that extends GNAT Pro Enterprise and is particularly targeted to customers with long-lived projects. GNAT Pro Enterprise encompasses the previous GNAT Pro (Native), GNAT Pro Cross and GNAT Pro Safety-Critical. All platforms, technology and features in GNAT Pro Enterprise are available in GNAT Pro Assurance. GNAT Pro Assurance provides comprehensive support and maintenance for the software throughout its lifecycle. This includes support for the latest version of GNAT Pro Assurance as well as previous releases, ensuring that customers can continue to benefit from the latest advancements in the Ada programming language and compiler technology.

New GNAT Pro Product Lines

Make with Ada Winners Announced

US Air Force Academy (Colorado Springs, CO)

Rob, tell us about your experiences using Ada for this type of project.

SPARK Discovery

The GNAT Pro Assurance product line is available to new and existing customers of GNAT Pro Enterprise. Customers looking to make a transition to GNAT Pro Assurance can take advantage of special migration and upgrade pricing. For more information, please visit www.adacore.com/products/gnat-pro-assurance.

Sustained Branches

The GNAT Academic Program (GAP) is an AdaCore initiative that provides support for Ada and AdaCore to universities. GAP is designed to support educators and students involved in Ada programming and education. GAP provides educational materials, training programs, tools, and resources to help ensure that Ada remains a viable and relevant programming language.

SPARK Discovery is an introductory version of the SPARK formal language that provides a new foundation for Ada development. SPARK Discovery is based on the same principles as the SPARK language, but with a focus on making it accessible and easy-to-use for beginners. SPARK Discovery includes a comprehensive set of features and tools that are designed to help developers write reliable and maintainable code. It is available on GitHub and can be used with the latest version of GNAT Pro.

Tech Days 2017

Tech Days 2017

Interview

SPARK Discovery is integrated into the GSP compiler and offers a simple GUI to help users experiment with formal tools, to fix their bugs in preventing bugs from being introduced. SPARK Discovery is also integrated into the GNAT Ada:SPARK product line that provides support for the latest version of GNAT Pro Assurance as well as previous releases, ensuring that customers can continue to benefit from the latest advancements in the Ada programming language and compiler technology.

Tech Days 2017

Interview

Dr. Peter Chapkin Receives SIGAda's Annual AWARD

Making Ada

Who: "For what best started this project, we planned to investigate the use of formal methods to reduce design errors in space systems. We chose the GNAT Pro Assurance product line to allow for the creation of a formal model of the system, which is used to verify the correctness of the design. We then implemented the model using the GNAT Pro Assurance compiler, which allowed us to generate executable code from the model."

The 2017 Make With Ada competition attracted a number of highly qualified entries (including the 2016 winning entries) or send an email to

Rob, tell us about your experiences using Ada for this type of project.

Tom: "I think Ada is a very robust language that is well suited for hard real-time systems. It is a perfect fit for the type of systems we are working on."

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@  adaprogrammers

The project's success shows that Ada/SPARK is a viable technology, including support. For further information please visit www.adacore.com/products/adacore-online.

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Sustained Branches

The GNAT Pro Assurance product suite provides sustained maintenance service on a particular version of GNAT. This service is called Sustained Branches, which allows customers to continue using the software they are familiar with long after the edition has been retired. For instance, it might be a version of the GNAT Pro Assurance product that is no longer available as a new sale but is still available for maintenance uses. GNAT Pro Assurance offers this service to help customers continue to use the same software they have been using over the long term using a specific version of the GNAT Pro technology, which will continue to be supported long after the original edition is retired. This means that if you need to deploy a system using a specific version of GNAT Pro, you can continue using this version, even though the edition has been terminated. The Sustained Branch service supplied as part of GNAT Pro Assurance provides specialized product maintenance on a particular version of the GNAT Pro Assurance product, which includes a full suite of certified libraries and tools. The service is designed to provide a high level of support to customers who need to continue using a specific version of GNAT Pro over the long term, even after the edition has been retired. This service is available through a subscription model, which provides customers with access to on-demand support and maintenance services.

SPARK Discovery

SPARK Discovery is an introductory version of the SPARK formal verification language suite, including all of the core SPARK language features and tools, but with additional features that are designed to make it easier to learn and use. This version is intended for students and educators who want to introduce SPARK to their students. The SPARK Discovery kit includes a complete set of tools, including a full-featured compiler, a model checker, and a set of tutorials and exercises. The kit is available for free download from the AdaCore website. To request a copy of the kit, please contact SPARK Discovery at spark-discovery@adacore.com.

Tech Days 2017

Tech Days 2017 is an annual event that focuses on the Ada programming language and its applications. The event features a variety of sessions, including tutorials, workshops, and keynote speeches by industry leaders and experts. This year’s Tech Days took place on October 5 and 6, 2017, in Munich, Germany. The event was sponsored by AdaCore, the company that created and maintains the Ada programming language. The conference covered a wide range of topics, including formal methods, software engineering, and real-time systems. The event also featured a series of tutorials, including a tutorial on SPARK Discovery, taught by Robert Tice, which was attended by 14 participants. The tutorial was well-received, with participants noting that it was a great introduction to the SPARK formal verification language.

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Make with Ada

Make with Ada is an annual competition that challenges participants to create a project using Ada, the programming language developed by the European Space Agency (ESA) and the United Kingdom’s Royal Academy of Engineering. The competition is open to students and professionals from across the world, with the goal of promoting the use of Ada in real-world applications. The Make with Ada competition has grown in popularity over the years, with more than 200 participants in the 2017 competition. The competition is judged by a panel of experts, who evaluate projects based on criteria such as technical feasibility, innovation, and creativity. The winners of the competition are announced at the Make with Ada awards ceremony, which takes place at the conclusion of the competition.

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GNAT Pro 18.1 Development Environment

GNAT Pro 18.1 has several enhancements and new features. The GNAT Pro Enterprise edition comes with the code generation tool GNATcoverage. Customers will see a number of new benefits in the GNAT Pro tool suite and p55, and SMP support on ARM Cortex-A. PowerPC 64bit VxWorks 7, and embedded Linux support have also been added.

Target-specific enhancements include avoidance of -mlongcall code size limitation (by integrating the GNAT engine with an additional compiler pass, the target-specific '--code-size-limit' compiler option in gnatcov), and C++ targets (C++ targets are supported by the CCG). On the roadmap for SPARK 18.1 is a “web job” facility that provides access to subprograms, access to constant data, and Rust-like “for” loops, and has added the ability to perform interactive proofs (by integrating the CodePeer engine as an additional prover, upgrading the code generation tool, and adding the ‘--interactive-proof’ compiler option). SPARK Pro has improved the specification of units in the predefined environment (through preconditions on the numeric functions and constants on floating point units) and enhanced the framework (by integrating the CodePeer engine as an additional compiler pass, the target-specific '--precondition' compiler option in gnatcov), and to highlight recent progress. Further information will be available on the AdaCore and NIST websites, and to highlight recent progress. Further information will be available on the AdaCore and NIST websites.

Tech Days 2017

Tech Days 2017 is an annual event organized by AdaCore. The event takes place in New York each year, and features technical sessions, panel discussions, and networking opportunities for professionals in the field of software development. There are also opportunities to learn about the latest tools and technologies, as well as to network with other experts in the industry. The event is a great opportunity for professionals to stay up-to-date on the latest trends and developments in software development, and to connect with other professionals in the field. For more information, please visit the AdaCore website or contact them directly.
GNAT Pro 18.1 Development Environment
and Tools:

Both products target the native mobile environment and comprise a complete toolset for developing and maintaining applications either solely in Ada, SPARK, or by using the GNAT Programming Studio (GPS) IDE to develop Ada, SPARK, or C applications.

SPARK 18.1 Formal Verification Tools

SPARK 18.1 has improved the effectiveness of its static analysis in the predefined environment (through preconditions on theenisatic functions and contracts on formal containers) as well as in the predefined environment (through combining the CodePeer engine with additional, non-developer, support libraries). The toolset supports debugging of the verified system and the GNAT Programming Studio (GPS) IDE.

Q GNAT Pro Available for QNX ARM64

The new GNAT Pro CCG product (Common Code Generator) is a compiler that takes a SPARK-like subset of Ada—basically excluding features that make it easy for C developers on QNX to migrate to Ada or SPARK. Ultimately this will allow C developers to use GNAT Pro for safety-critical systems where legacy C code is prevalent. The SPARK components need to be protected from potential interference from the legacy C code, as required by ISO 26262 (“Freedom from Interference”, or “FFI”). The project met its goals and showed the practical benefits of formal methods in systems comprising legacy code and non-SPARK components. GNAT Pro selected a subset of Ada because of the company’s experience in formal methods, and also because the SPARK Pro toolset was selected.

GNAT Pro for iOS and Android

New GNAT Pro Tools for iOS and Android

This product is based on 32- and 64-bit McAfee for iOS and Andorid, and stands MCAFEE-ARMS. To help guide new GNAT development projects, AdaCore is looking for a few customers who are considering Coq or development and who might be interested in a proof-of-concept deployment on their product platform. Please contact your AdaCore Sales Representative for more information.

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In the GNAT Pro CCG, many of the Ada language elements that are available in AdaCore’s AdaCore development toolset on 32-bit Windows and Linux are also available in AdaCore’s AdaCore development toolset on 32-bit Windows and Linux. AdaCore is exhibiting at this conference, and AdaCore personnel are presenting papers on source development in SPARK, Ada tool development with libadalang, source code analysis with GPS, and new products for the AdaCore developer community.

MHI Aerospace Systems Corporation Selects QGen

MHI Aerospace Systems Corporation (MHI) is a member of the Mitsubishi Heavy Industries group. With the help of the AdaCore team, MHI has selected the AdaCore Limited Edition (AdoLSE) toolset for their Wind River RVB product. Wind River RVB is software that brings the safety and security of Ada to complex mission-critical systems. MHI, a leader in the development of safety-critical applications, has chosen Wind River RVB for its safety-critical aerospace applications.

Demos Using SPARK to Demonstrate Freedom from Interference

AdaCore has completed a research project in 2018 on a global automotive technology supplier’s headquarter in Japan. This project—Application of Formal Methods to Demonstrate Freedom from Interference—was conducted jointly with the University of Nagasaki and had the goal of simplifying the development of safety-critical automotive applications by using formal methods. This project investigated the use of a SPARK design method, and SPARK for as an implementation platform, for safety-critical automotive systems. This project showed that safety-critical automotive systems can be created using formal methods, and that the tools and processes developed during the project are applicable to other safety-critical applications. The project was funded by the Japan Ministry of Economy, Trade and Industry (JMETI) under the Industrial Technology Development Program, and was carried out under the SPARK Pro toolset.

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Formal Methods Conference at NIST

Following up on the successful FORM@NIST and SPARK Day that we held in Paris, France, earlier this year, we’re excited to announce the NIST Formal Methods Conference 2018 scheduled for April 16-18, 2018 in Gaithersburg, MD.

Simulation Technologies to Demonstrate Freedom from Interference—was conducted jointly with the University of Nagasaki and had the goal of simplifying the development of safety-critical automotive applications by using formal methods. This project investigated the use of a SPARK design method, and SPARK for as an implementation platform, for safety-critical automotive systems. This project showed that safety-critical automotive systems can be created using formal methods, and that the tools and processes developed during the project are applicable to other safety-critical applications. The project was funded by the Japan Ministry of Economy, Trade and Industry (JMETI) under the Industrial Technology Development Program, and was carried out under the SPARK Pro toolset.

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Following up on the successful FORM@NIST and SPARK Day that we held in Paris, France, earlier this year, we’re excited to announce the NIST Formal Methods Conference 2018 scheduled for April 16-18, 2018 in Gaithersburg, MD.

Simulation Technologies to Demonstrate Freedom from Interference—was conducted jointly with the University of Nagasaki and had the goal of simplifying the development of safety-critical automotive applications by using formal methods. This project investigated the use of a SPARK design method, and SPARK for as an implementation platform, for safety-critical automotive systems. This project showed that safety-critical automotive systems can be created using formal methods, and that the tools and processes developed during the project are applicable to other safety-critical applications. The project was funded by the Japan Ministry of Economy, Trade and Industry (JMETI) under the Industrial Technology Development Program, and was carried out under the SPARK Pro toolset.

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