High Integrity Software The Spark Approach To Safety And Security | 6e7af4fafa379f13c7d79eb081ca0230


Introduction

The Spark approach to safety and security is a framework for developing high-integrity software. It is based on the concept of formal methods, which provide a rigorous and systematic approach to software development. The Spark environment consists of a set of tools and techniques that allow software engineers to design, verify, and validate software systems that meet high levels of safety and security requirements.

The Spark approach is particularly useful in the development of safety-critical systems, such as those found in aerospace, transportation, and nuclear power. It provides a structured methodology for ensuring that software systems are free from design errors and that they meet all safety and security requirements.

In this chapter, we will introduce the Spark approach to safety and security and provide an overview of the tools and techniques that are used in the Spark environment. We will also discuss some of the key benefits of using the Spark approach, such as improved efficiency, reduced risk, and increased confidence in the safety and security of the developed software systems.

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Reliable Software Technologies -- Ada-Europe 2006 Now available in a three-volume set, this updated and expanded edition of the bestselling Digital Signal Processing Handbook continues to provide the engineering community with authoritative coverage of the fundamental and specialized aspects of information-bearing signals in digital systems. Covering an essential range of topics, this comprehensive overview of the basic foundations of DSP. Coverage includes: Signals and Systems, Signal Representation and Quantization, Linear Time-Invariant Systems, Discrete Fourier Transforms, Digital Filtering, Statistical Signal Processing, Adaptive Filtering, Inverse Problems and Signal Reconstruction, and Time-Frequency and Multirate Signal Processing. Wireless, Networking, Radar, Sensor Array Processing, and Nonlinear Signal Processing (Catalog no. 48074) thoroughly covers the foundations of signal processing related to wireless, radar, space-time coding, and mobile communication together with advanced applications to networking, storage, and communications. Video, Speech, and Audio Signal Processing and Associated Standards, (Catalog no. 48061) details the latest developments in signal processing, audio, video, and image processing and associated applications to broadcasting, storage, search and retrieval, and communications.

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Formal Methods: Foundations and Applications of software is pervasive in our lives. We are accustomed to dealing with the failures of much of that software -- restating an application is a very familiar solution. Such solutions are unacceptable when the software controls our cars, airplanes and medical devices or manages our private information. These applications must run without error. SPARK provides a means, based on mathematical proof, to guarantee that a program has no errors. SPARK is a formally defined programming language and a set of verification tools specifically designed to support the development of software used in high-integrity applications. Using SPARK, developers can formally verify properties of their code such as information-flow, freedom from runtime errors, functional correctness, security properties and safety properties. Written by two SPARK experts, this is the first introduction to the just-released 2014 version. It will help students and developers alike master the basic concepts for building systems with SPARK.

Automated Tool for Verification and Analysis This book constitutes the proceedings of the 12th International Symposium on Automated Tool for Verification and Analysis, ATVA 2014, held in Sydney, Australia, in November 2014. The 29 revised papers presented in this volume were carefully reviewed and selected from 78 submissions. They show current research on theoretical and practical aspects of automated analysis, verification and synthesis by providing an international forum for interaction among the researchers in academe and industry.

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