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Software and systems engineering — Software testing —

Part 5: Keyword-Driven Testing

Ingénierie du logiciel et des systèmes — Essais du logiciel —

Partie 5: Essais axés sur des mots-clés

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. The IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While the IEEE administers the process and establishes rules to promote fairness in the consensus development process, the IEEE does not independently evaluate, test, or verify the accuracy of any of the information contained in its standards.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of ISO/IEC JTC 1 is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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ISO/IEC/IEEE 29119-5 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in cooperation with the Software & Systems Engineering Standards Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

ISO/IEC/IEEE 29119 consists of the following parts, under the general title *Software and systems engineering — Software testing:*

— *Part 1: Concepts and definitions*

— *Part 2: Test processes*

— *Part 3: Test documentation*

— *Part 4: Test techniques*

— *Part 5: Keyword-Driven Testing*

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Introduction

The purpose of the ISO/IEC/IEEE 29119 series of software testing standards is to define an internationally-agreed set of standards for software testing that can be used by any organization when managing or performing any form of software testing.

This part of ISO/IEC/IEEE 29119 defines a unified approach for describing test cases in a modular way, which assists with the creation of items like keyword-driven test specifications and test automation frameworks. The term "keyword" refers to the elements which are, once defined, used to compose test cases, such as with building blocks. ISO/IEC/IEEE 29119-5 will explain the main concepts and application of Keyword-Driven Testing. It will also define attributes of frameworks designed to support Keyword-Driven Testing.

The concepts and definitions relating to software testing defined in ISO/IEC/IEEE 29119-1 are also applicable to ISO/IEC/IEEE 29119-5.

The test process model on which the Keyword-Driven Testing framework is based is defined in ISO/IEC/IEEE 29119-2 Test Processes. It comprises test process descriptions that define the software testing processes at the organizational level, test management level and dynamic test level. Supporting informative diagrams describing the processes are also provided in ISO/IEC/IEEE 29119-2. However, ISO/IEC/IEEE 29119-5 describes a specific implementation of the test design and implementation processes of ISO/IEC/IEEE 29119-2; in particular TD4 (Derive Test Cases), TD5 (Assemble Test Sets) and TD6 (Derive Test Procedures) as here applied to Keyword-Driven Testing.

The templates and examples of test documentation as defined in ISO/IEC/IEEE 29119-3 are also applicable to ISO/IEC/IEEE 29119-5.

Software test design techniques that can be used during test design are defined in ISO/IEC/IEEE 29119-4 Test Techniques. The application of ISO/IEC/IEEE 29119-4 is assumed when designing test cases that are then described by keywords according to ISO/IEC/IEEE 29119-5.

This part of ISO/IEC/IEEE 29119-5 has the following structure:

— terms and definitions can be found in clause 4

— an introduction to Keyword-Driven Testing is given in clause 5

— the application of Keyword-Driven Testing is explained in clause 6

— frameworks for Keyword-Driven Testing are described in clause 7

— data interchange is covered in clause 8

— Annex A states naming conventions for keywords

— Annex B names benefits that can be achieved with Keyword-Driven Testing

— Annex C gives advice on how interested parties wanting to use Keyword-Driven Testing can start

— Annex D describes roles that can be used in Keyword-Driven Testing

— Annex E contains examples of basic keywords that can be used to create test cases

— Annex F contains examples for keyword test cases

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Software and Systems Engineering — Software Testing — Part 5: Keyword-Driven Testing

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1 Scope

This part of ISO/IEC/IEEE 29119 defines an efficient and consistent solution for Keyword-Driven Testing by:

— giving an introduction to Keyword-Driven Testing;

— providing a reference approach to implement Keyword-Driven Testing;

— defining requirements on frameworks for Keyword-Driven Testing to enable testers to share their work items, such as test cases, test data, keywords, or complete test specifications;

— defining requirements for tools that support Keyword-Driven Testing. These requirements could apply to any tool that supports the Keyword-Driven approach (e.g., test automation, test design and test management tools);

— defining interfaces and a common data exchange format to ensure that tools from different vendors can exchange their data (e.g. test cases, test data and test results);

— defining levels of hierarchical keywords, and advising use of hierarchical keywords. This includes describing specific types of keywords (e.g. keywords for navigation or for checking a value) and when to use "flat" structured keywords;

— providing an initial list of example generic technical (low-level) keywords, such as "inputData" or "checkValue". These keywords can be used to specify test cases on a technical level, and may be combined to create business-level keywords as required.

NOTE This standard is applicable to all those who want to create keyword-driven test specifications, create corresponding frameworks, or build test automation based on keywords.

2 Conformance

2.1 Intended usage

The requirements in ISO/IEC/IEEE 29119-5 are contained in Clause 7 and in Annex A. ISO/IEC/IEEE 29119-5 provides requirements on frameworks supporting the application of Keyword-Driven Testing. It is recognized that particular projects or organizations may not need to use all of the components defined in this standard. Therefore, implementation of ISO/IEC/IEEE 29119-5 typically involves selecting a set of components or parts of components suitable for the organization or project. There are two ways that an organization can claim to conform to the provisions of this standard.

The organization or individual shall assert whether full or tailored conformance to this standard is claimed.

2.2 Full conformance

Full conformance is achieved by demonstrating that all of the Keyword-Driven Testing requirements (i.e. shall statements) defined in ISO/IEC/IEEE 29119-5 have been satisfied.

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2.3 Tailored conformance

When ISO/IEC/IEEE 29119-5 is used for implementing components of frameworks that do not qualify for full conformance, the subset of components for which tailored conformance is claimed should be recorded. Tailored conformance is achieved by demonstrating that all of the requirements (i.e. shall statements) for the recorded subset of components have been satisfied.

Where tailoring occurs, the justification shall be provided, either directly or by reference, whenever a requirement defined in clauses 7 and Annex A of ISO/IEC/IEEE 29119-5 is not followed. All tailoring decisions shall be recorded with their rationale, including the consideration of any applicable risks. Tailoring decisions shall be agreed to by the relevant stakeholders.

EXAMPLE Tool vendors may in their portfolio provide only part of a keyword-driven test framework, and thus decide not to implement requirements that are covered by complementary tools (e.g. a vendor only provides an execution engine, but no keyword driven editor – then the execution engine can still be conforming with the standard).

3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document, including any amendments, applies.

ISO/IEC/IEEE 24765, *Systems and software engineering – Vocabulary*

ISO/IEC/IEEE 29119-1, *Software and systems engineering – Software Testing – Part 1: Concepts and Definitions*

ISO/IEC/IEEE 29119-2, *Software and systems engineering – Software Testing – Part 2: Test Processes*

ISO/IEC/IEEE 29119-3, *Software and systems engineering – Software Testing – Part 3: Test Documentation*

ISO/IEC/IEEE 29119-4, *Software and systems engineering – Software Testing – Part 4: Test Techniques*

Other standards useful for the implementation and interpretation of this standard are listed in the bibliography.

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC/IEEE 24765 and the following apply.

NOTE Use of the terminology of ISO/IEC/IEEE 29119-5 is for ease of reference and is not mandatory for conformance with ISO/IEC/IEEE 29119-5. The following terms and definitions are provided to assist with the understanding and readability of ISO/IEC/IEEE 29119-5. Only terms critical to the understanding of ISO/IEC/IEEE 29119-5 are included. This clause is not intended to provide a complete list of testing terms. The Systems and Software Engineering vocabulary ISO/IEC/IEEE 24765 can be referenced for terms not defined in this standard. ISO/IEC/IEEE 29119-1 can be referenced for terms related to software testing in general. ISO/IEC/IEEE 29119-5 only defines terms specific to Keyword-Driven Testing.

4.1
domain layer
highest level of abstraction for the test item

Note 1 to entry: Keywords on this level are chosen in a way that is familiar to domain experts.

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