

ISO/IEC/IEEE 29119-4:2015-12 (E)

Software and systems engineering - Software testing - Part 4: Test techniques

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Conformance	1
2.1	Intended Usage	1
2.2	Full Conformance	1
2.3	Tailored Conformance	1
3	Normative References	1
4	Terms and Definitions	2
5	Test Design Techniques	4
5.1	Overview	4
5.2	Specification-Based Test Design Techniques	7
5.2.1	Equivalence Partitioning	7
5.2.2	Classification Tree Method	8
5.2.3	Boundary Value Analysis	9
5.2.4	Syntax Testing	11
5.2.5	Combinatorial Test Design Techniques	12
5.2.6	Decision Table Testing	15
5.2.7	Cause-Effect Graphing	15
5.2.8	State Transition Testing	16
5.2.9	Scenario Testing	17
5.2.10	Random Testing	18
5.3	Structure-Based Test Design Techniques	18
5.3.1	Statement Testing	18
5.3.2	Branch Testing	19
5.3.3	Decision Testing	20
5.3.4	Branch Condition Testing	20
5.3.5	Branch Condition Combination Testing	21
5.3.6	Modified Condition Decision Coverage (MCDC) Testing	21
5.3.7	Data Flow Testing	22
5.4	Experience-Based Test Design Techniques	25
5.4.1	Error Guessing	25
6	Test Coverage Measurement	25
6.1	Overview	25
6.2	Test Measurement for Specification-Based Test Design Techniques	26
6.2.1	Equivalence Partition Coverage	26
6.2.2	Classification Tree Method Coverage	26
6.2.3	Boundary Value Analysis Coverage	26
6.2.4	Syntax Testing Coverage	26
6.2.5	Combinatorial Test Design Technique Coverage	27
6.2.6	Decision Table Testing Coverage	27
6.2.7	Cause-Effect Graphing Coverage	28
6.2.8	State Transition Testing Coverage	28
6.2.9	Scenario Testing Coverage	28
6.2.10	Random Testing Coverage	28

6.3	Test Measurement for Structure-Based Test Design Techniques	29
6.3.1	Statement Testing Coverage	29
6.3.2	Branch Testing Coverage	29
6.3.3	Decision Testing Coverage	29
6.3.4	Branch Condition Testing Coverage	29
6.3.5	Branch Condition Combination Testing Coverage	29
6.3.6	Modified Condition Decision (MCDC) Testing Coverage	30
6.3.7	Data Flow Testing Coverage	30
6.4	Test Measurement for Experience-Based Testing Design Techniques	31
6.4.1	Error Guessing Coverage	31
Annex A (informative)	Testing Quality Characteristics	32
Annex B (informative)	Guidelines and Examples for the Application of Specification-Based Test Design Techniques	43
Annex C (informative)	Guidelines and Examples for the Application of Structure-Based Test Design Techniques	103
Annex D (informative)	Guidelines and Examples for the Application of Experience-Based Test Design Techniques	126
Annex E (informative)	Guidelines and Examples for the Application of Interchangeable Test Design Techniques	129
Annex F (informative)	Test Design Technique Coverage Effectiveness	133
Bibliography	137