

Overview

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This standard identifies the competences you need to test software as part of the product definition activity, in accordance with approved procedures. You will be given a detailed brief and will be required to assess these requirements and to extract all necessary information in order to carry out the software test activity. You will need to select the appropriate software test method to use, based on the type and complexity of the software functions/software design/requirements to be tested. You will be expected to use current British, European, international and company standards to test the software.

Your responsibilities will require you to comply with organisational policy and procedures for working in the software development team. You will be required to report any problems with the computer hardware, software or procedures that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You will be expected to work to verbal/written instructions and draft specifications, with a minimum of supervision, taking personal responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide a good understanding of your work and will provide an informed approach to applying software test procedures. You will understand the computer system and software used, and its application, and will know about the various tools and techniques used to test the software, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

You will understand the safety precautions required when working in the software development team. You will be required to demonstrate safe working practices throughout and will understand the responsibility you owe to yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety legislation, regulations, directives and other relevant guidelines
2. plan the software testing activities before you start them
3. use appropriate sources to obtain the required information for the software testing activity
4. access and use the correct software test tools
5. use appropriate techniques to create the software tests
6. use references that follow the required conventions
7. produce the finished test script/case, with sufficient detail to allow execution
8. make sure that the test script/case is checked and approved by the appropriate person
9. save and store the test script/case as the appropriate file type and in the correct location
10. execute a test script/case and record the results
11. review the results of the test script/case
12. deal promptly and effectively with problems within your control, and seek help and guidance from the relevant people if you have problems that you cannot resolve

Knowledge and understanding

You need to know and understand:

1. the specific safety precautions to be taken when working with software development environment hardware (to include such items as safety guidance relating to the use of visual display unit (VDU) equipment and workstation/workstation environment; repetitive strain injury (RSI); the dangers of trailing leads and cables; how to spot faulty or dangerous electrical leads, plugs and connections)
2. how to return the work area to a safe and useable condition (such as cleaning down work surfaces; putting media, manuals and unwanted items of equipment into safe storage; leaving the work area in a safe and tidy condition)
3. the relevant sources and methods for obtaining any required technical information relevant to the test script/case being produced (such as new model brief/request, drawing briefs, specification sheets, request for changes or modifications to code, technical publications, calculations, software requirements)
4. test methodologies and national, international and relevant company software test procedures (such as black box, white box testing)
5. identification of the correct version of software tool, and the various testing techniques that are supported by the tool
6. how to use and configure the testing environment (such as target, host and target simulator)
7. the basic principles of software testing, and how to create suitable tests for the particular specified application
8. how to access the specific software requirements, design model and code to be tested
9. the national, international and organisational standards and conventions that are used for the test script/case and results
10. the application and use of software testing tools
11. how to access, recognise and use a wide range of standard components and symbol libraries from the testing tools
12. the need for configuration control on all test artefacts (such as ensuring that completed test script/case and results are approved, labelled and stored on a suitable storage device)
13. why it is necessary to be able to recall previous issues of test script/case and

results

14. when to act on your own initiative and when to seek help and advice from others

Scope/range

1. Prepare for the software testing activities, by carrying out all of the following:
 - 1.1 check that the working environment is in a safe and appropriate condition and that all working equipment is in a safe, tested and usable condition (such as cables undamaged, correctly connected, safely routed)
 - 1.2 start the appropriate software test tool
 - 1.3 set up the testing environment and select a suitable template/folder
 - 1.4 identify relevant software requirements/design to be tested against
 - 1.5 identify the required standards and all relevant sources (such as software requirements, design and software test methods)
2. Use three of the following to obtain the necessary data to produce the required test script/case:
 - 2.1 change order/modification request
 - 2.2 standards reference documents
 - 2.3 technical publications
 - 2.4 specifications
 - 2.5 calculations
 - 2.6 regulations
 - 2.7 software requirements
 - 2.8 software design
 - 2.9 technical notes (such as meetings/discussions, e-mail)
 - 2.10 other specific available data
3. Demonstrate how the software testing takes account of six of the following:
 - 3.1 function
 - 3.2 cost
 - 3.3 operating environment
 - 3.4 quality
 - 3.5 lifetime of the product
 - 3.6 interfaces
 - 3.7 testing method
 - 3.8 accuracy
 - 3.9 safety
 - 3.10 resources (such as memory, performance and bandwidth)
 - 3.11 design structure
 - 3.12 software requirements
 - 3.13 run time sequencing
 - 3.14 system/software safety requirements
4. Carry out all of the following before producing the software test script/case:
 - 4.1 ensure that the data and information you have is complete and accurate
 - 4.2 analyse the data and information to identify the test script/case requirements
 - 4.3 recognise and deal with problems (such as technical issues and lack of information, or incorrect information)

5. Use one of the following modelling methodologies to produce the software test script/case:
 - 5.1 black box
 - 5.2 white box
6. Create/modify the software test script/case using four of the following:
 - 6.1 objects
 - 6.2 classes
 - 6.3 types
 - 6.4 functions
 - 6.5 procedures
 - 6.6 data
 - 6.7 change requests
 - 6.8 test rigs specifications
7. Run the test script using one of the following:
 - 7.1 target simulator environment
 - 7.2 host environment
 - 7.3 target environment
8. Check the test script/case for all of the following:
 - 8.1 completeness
 - 8.2 traceability
 - 8.3 accuracy
 - 8.4 sequencing
 - 8.5 coverage
9. Save and store the test script/case and results in appropriate locations, to include carrying out all of the following:
 - 9.1 check that the test script/case and results are correctly titled, referenced and annotated
 - 9.2 ensure that your test script/case and results have been checked and comply with company procedures
 - 9.3 save the test script/case and results to an appropriate location (such as storage device, configuration database)
 - 9.4 register and store the test script/case and results in the company information system (where appropriate)
 - 9.5 record and store any changes to the test script/case and results in the appropriate company information system
 - 9.6 ensure that a separate backup copy is created and placed in safe storage
10. Produce a test script/case which complies with one of the following:
 1. organisation standards and procedures
 2. customer standards and requirements
 3. statutory regulations and codes of practice
 4. software standards
 5. BS, ISO or BSEN standards and procedures

6. other international standards

SEMETS365

Testing engineering software



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