Fundamentals of Software Testing

# ReVISION HiSTORY

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Table of Contents

[ReVISION HiSTORY 1](#_Toc376622011)

[1. INTRODUCTION- 3](#_Toc376622012)

[2. Difference between QA, QA and Testing- 3](#_Toc376622013)

[2.1. Quality Assurance- 3](#_Toc376622014)

[2.2. Quality Control- 3](#_Toc376622015)

[2.3. Testing- 3](#_Toc376622016)

[3. Terminologies Used In Software Testing- 3](#_Toc376622017)

[3.1. Bug- 3](#_Toc376622018)

[3.2. Defect- 3](#_Toc376622019)

[3.3. Build- 4](#_Toc376622020)

[3.4. Release- 4](#_Toc376622021)

[3.5. Versions- 4](#_Toc376622022)

[3.6. Severity- 4](#_Toc376622023)

[3.7. Priority- 4](#_Toc376622024)

[3.8. Verification- 4](#_Toc376622025)

[3.9. Validation- 4](#_Toc376622026)

[3.10. Requirement Document- 4](#_Toc376622027)

[4. Principles Of Testing- 4](#_Toc376622028)

[5. Software Development Life Cycle phases- 5](#_Toc376622029)

[6. Software Development Models- 5](#_Toc376622030)

[7. Bug Life Cycle- 5](#_Toc376622031)

[8. Different Types Of Testing- 6](#_Toc376622032)

[8.1. Acceptance Testing- 6](#_Toc376622033)

[8.2. Alpha Testing- 6](#_Toc376622034)

[8.3. Beta Testing- 6](#_Toc376622035)

[8.4. Functional Testing- 6](#_Toc376622036)

[8.5. Unit Testing- 6](#_Toc376622037)

[8.6. Regression Testing- 6](#_Toc376622038)

[8.7. Whitebox Testing- 7](#_Toc376622039)

[8.8. Blackbox Testing- 7](#_Toc376622040)

# INTRODUCTION-

Software testing is a process of executing a program or application with the intent of finding the [software bugs](http://istqbexamcertification.com/what-is-defect-or-bugs-or-faults-in-software-testing/). It can also be stated as the process of validating and verifying that a software program or application or product:

* Meets the business and technical requirements that guided it’s design and development.
* Works as expected.
* Can be implemented with the same characteristic.

# Difference between QA, QA and Testing-

* 1. Quality Assurance-Activities which ensure the implementation of processes, procedures and standards in context to verification of developed software and intended requirements. Focuses on processes and procedures rather than conducting actual testing on the system.
  2. Quality Control-Activities which ensure the verification of developed software with respect to documented (or not in some cases) requirements. Focuses on actual testing by executing Software with intend to identify bug/defect through implementation of procedures and process.
  3. Testing-Activities which ensure the identification of bugs/error/defects in the Software. Focuses on actual testing.

# Terminologies Used In Software Testing-

* 1. Bug-A bug is the result of a coding error.
  2. Defect- A defect is a deviation from the requirements. A defect does not necessarily mean there is a bug in the code, it could be a function that was not implemented but defined in the requirements of the software.
  3. Build-Refer to the process by which source code is converted into a stand-alone form that can be run on a computer or to the form itself. Builds are created when a certain point in development has been reached or the code has been deemed ready for implementation, either for testing or outright release.
  4. Release- Is that which we finally hand it over to the client of the project after the development and testing phases are completed.
  5. Versions-This is incremental part of initial build which is given after regression testing or addition of the requirement of the client.
  6. Severity-It is the extent to which the [defect](http://istqbexamcertification.com/what-is-defect-or-bugs-or-faults-in-software-testing/) can affect the software. In other words it defines the impact that a given defect has on the system.
  7. Priority- Priority defines the order in which we should resolve a defect. Should   we fix it now, or can it wait? This priority status is set by the tester to the developer mentioning the time frame to fix the defect. Please follow link <http://www.softwaretestingclass.com/what-is-difference-between-priority-and-severity/>.
  8. Verification- Is the process of evaluating products of a development phase to find out whether they meet the specified requirements.
  9. Validation- Is the process of evaluating software at the end of the development process to determine whether software meets the customer expectations and requirements.
  10. Requirement Document- It’s a [document](http://en.wikipedia.org/wiki/Document) written by a company that defines a product they are making, or the requirements for one or more new features for an existing product.

# Principles Of Testing-

There are seven principles of testing and they are described at location <http://istqbexamcertification.com/what-are-the-principles-of-testing/> in detail.

# Software Development Life Cycle phases-

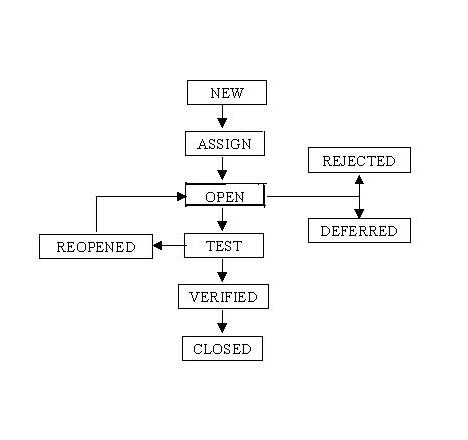
Software life cycle models describe phases of the software cycle and the order in which those phases are executed. There are six phases-Requirement gathering and analysis, Design, Implementation or coding, Testing, Deployment, and Maintenance.

# Software Development Models-

The development models are the various processes or methodologies that are being selected for the development of the project depending on the project’s aims and goals. Please refer link <http://codebetter.com/raymondlewallen/2005/07/13/software-development-life-cycle-models/> to know about different development models in detail.

# Bug Life Cycle-

Bug life cycle is a cycle which a bug goes through during its lifetime. It starts when defect is found and ends when a defect is closed, after ensuring it’s not reproduced. The Life cycle of the bug can be shown diagrammatically as follows:



Please go through link <http://www.softwaretestingmentor.com/defects/defect-lifecycle/> to know the significance of different phases of bug life cycle in detail.

# Different Types Of Testing-

* 1. Acceptance Testing-Acceptance testing is basically done by the user or customer although other stakeholders may be involved as well. The goal of acceptance testing is to establish confidence in the system. Acceptance testing is most often focused on a validation type testing.
  2. Alpha Testing- Takes place at the developer’s site. Developers observe the users and note problems. Alpha testing is testing of an application when development is about to complete. Minor design changes can still be made as a result of alpha testing.
  3. Beta Testing- It takes place at the developer’s site. Developers observe the users and note problems. Alpha testing is testing of an application when development is about to complete. Minor design changes can still be made as a result of alpha testing.
  4. Functional Testing- In functional testing basically the testing of the functions of component or system is done. It refers to activities that verify a specific action or function of the code. Functional test tends to answer the questions like “can the user do this” or “does this particular feature work”. This is typically described in a requirements specification or in a functional specification.
  5. Unit Testing-Unit testing is a method by which individual units of source code are tested to determine if they are fit for use. A unit is the smallest testable part of an application like functions/procedures, classes, interfaces. Unit tests are typically written and run by software developers to ensure that code meets its design and behaves as intended.
  6. Regression Testing-It is type of testing carried out to ensure that changes made in the fixes or any enhancement changes are not impacting the previously working functionality. It is executed after enhancement or defect fixes in the software or its environment.
  7. Whitebox Testing- It is a software testing method in which the internal structure/ design/ implementation of the item being tested is known to the tester. Mainly applicable to lower levels of testing.
  8. Blackbox Testing- Black Box Testing is a software testing method in which the internal structure/ design/ implementation of the item being tested is not known to the tester.