

SOFTWARE ENGINEERING-I

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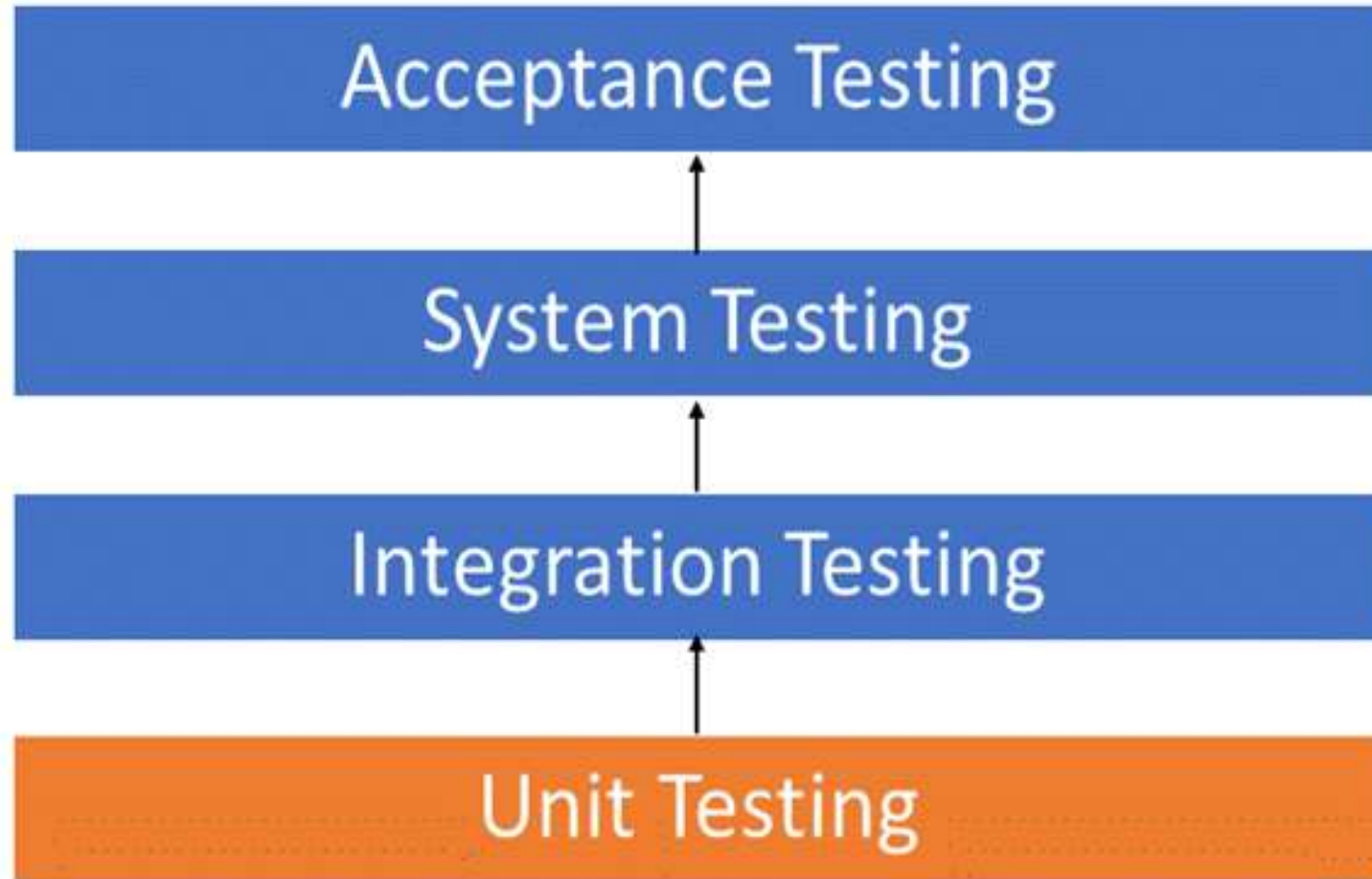
Software Testing Strategies

- Software Testing is a type of investigation to find out if there is any default or error present in the software so that the errors can be reduced or removed to increase the quality of the software and to check whether it fulfills the specifies requirements or not.
- Here are important strategies in software engineering:

Unit testing

- While coding, the programmer performs some tests on that unit of program to know if it is error free.
- Testing is performed under white-box testing approach.
- Unit testing helps developers decide that individual units of the program are working as per requirement and are error free.

Here, are the key reasons to perform unit testing in software engineering:



Objective of Unit Testing:

- The objective of Unit Testing is:
 - To isolate a section of code.
 - To verify the correctness of code.
 - To test every function and procedure.
 - To fix bug early in development cycle and to save costs.
 - To help the developers to understand the code base and enable them to make changes quickly.
 - To help for code reuse.

Unit test considerations

- There are several automated unit test software available to assist with unit testing.
- unit: Junit is a free to use testing tool used for Java programming language. It provides assertions to identify test method. This tool test data first and then inserted in the piece of code.
- NUnit: NUnit is widely used unit-testing framework use for all .net languages. It is an open source tool which allows writing scripts manually. It supports data-driven tests which can run in parallel.
- JMockit: JMockit is open source Unit testing tool. It is a code coverage tool with line and path metrics. It allows mocking API with recording and verification syntax. This tool offers Line coverage, Path Coverage, and Data Coverage.
- EMMA: EMMA is an open-source toolkit for analyzing and reporting code written in Java language. Emma support coverage types like method, line, basic block. It is Java-based so it is without external library dependencies and can access the source code.
- PHPUnit: PHPUnit is a unit testing tool for PHP programmer. It takes small portions of code which is called units and test each of them separately. The tool also allows developers to use pre-define assertion methods to assert that a system behave in a certain manner.

Advantages of Unit Testing:

- Unit Testing allows developers to learn what functionality is provided by a unit and how to use it to gain a basic understanding of the unit API.
- Unit testing allows the programmer to refine code and make sure the module works properly.
- Unit testing enables to test parts of the project without waiting for others to be completed.