Component Testing or Module Testing

Normally, components are individual elements of an application that can be integrated to form the application as a whole.

Component testing is a type of white box testing where you validate an individual component of the application before testing the entire application.

Objective of Component Testing

Below are the objectives of component testing:

1. **Verify components functionality:** The aim of component testing is to ensure that the test object's inputs and outputs are working correctly as specified. It ensures that the object's functionality is working correctly as well as being in harmony with the desired specification.
2. **Reducing risk:** A developer finds out the errors in the code and fixes them. As a result, it reduces the chances of risk at a fundamental level.
3. **Finding errors:** Its primary objective is to find errors in the source code of the application. In addition, it validates the function call flows, control flow, data structure, etc. used in the program.
4. **Confidence building in component's quality:** The majority of errors are detected and corrected while coding since component testing is done at the unit level. In this way, the product is developed with a greater assurance that it will have fewer errors in further testing.
5. **Escape defects to higher level:** The developers detect and eliminate all coding errors in Component testing before escalating to higher levels of testing.

When do we need to perform the Component Testing?

A component test takes place prior to integration testing. It is the first level of testing the system goes through.

Who performs component testing?

Developers who write the particular component or module perform Component testing. Usually, they perform testing in their local environments before publishing the code to higher environments. At times, depending on the appropriate risk level, a separate programmer may perform the component testing. Occasionally, if necessary, QA Engineers can also perform component testing.

Component Testing Techniques

Code developers generally perform component testing. This should be performed before moving into developing another component.

The developer completes the coding to guarantee the test case passes. Upon passing a test case, a developer moves on to the next feature; otherwise, he refactors the code. If a test case fails, the code needs to be modified. It can also happen that the test case passes, but there are performance issues which require further refactoring. This process repeats until the developer passes the test case with the code refactoring.

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