

Unit: IV

Lecture: 8

Validation and System Testing

At the end of integration testing, software is completely assembled as a package, interfacing errors have been uncovered and corrected and now validation testing is performed.

Software validation is achieved through a series of black-box tests that demonstrate conformity with requirements.

After each validation test case has been conducted, one of two possible conditions exist:

1. The function or performance characteristics conform to specification and are accepted or
2. a deviation from specification is uncovered and a deficiency list is created.

Deviation or error discovered at this stage in a project can rarely be corrected prior to scheduled delivery.

Alpha and Beta Testing:

It is virtually impossible for a software developer to foresee how the customer will really use a program:

- Instructions for use may misinterpreted.
- strange combinations of data may be regularly used
- output that seemed clear to the tester may be unintelligible to a user in the field.

When custom software is built for one customer, a series of acceptance tests are conducted to enable the customer to validate all requirements.

If software is developed as a product to be used by many customers, it is impractical to perform acceptance tests with each one.

→ alpha and beta tests are used to uncover errors that only the end-user seems able to find.

The Alpha Test is conducted at the developer's site by a customer. The software is used in a natural setting with the developer "looking over the shoulder" of the user and recording errors and usage problems. **Alpha tests are conducted in a controlled environment.**

The Beta test is conducted at one or more customer sites by the end-user of the software. **Unlike alpha testing, the developer is generally not present.**

Unlike alpha testing, the developer is generally not present. Therefore, the beta test is a "live" application of the software in an environment that cannot be

controlled by the developer. The customer records all problems (real or imagined) that are encountered during beta testing and reports these to the developer at regular intervals. As a result of problems reported during beta tests, software engineers make modifications and then prepare for release of the software product to the entire customer base

System Testing: System testing is actually a series of different tests whose primary purpose is to fully exercise the computer-based system. Although each test has a different purpose, all work to verify that system elements have been properly integrated and perform allocated functions.

System Testing is basically performed by a testing team that is independent of the development team that helps to test the quality of the system impartial.

System Testing is carried out on the whole system in the context of either system requirement specifications or functional requirement specifications or in the context of both. System testing tests the design and behavior of the system and also the expectations of the customer.

Types of System Testing:

- **Performance Testing:**
Performance Testing is a type of software testing that is carried out to test the speed, scalability, stability and reliability of the software product or application.
- **Load Testing:**
Load Testing is a type of software testing which is carried out to determine the behavior of a system or software product under extreme load.
- **Stress Testing:**
Stress Testing is a type of software testing performed to check the robustness of the system under the varying loads.
- **Scalability Testing:**
Scalability Testing is a type of software testing which is carried out to check the performance of a software application or system in terms of its capability to scale up or scale down the number of user request load.