Testing

**Introduction**

The most important phase in system development life cycle is system testing. The number and nature of errors in a newly designed system depends on the system specifications and the time frame given for the design.

A newly designed system should have all the subsystems working together, but in reality each subsystems work independently. During this phase, all the subsystems are gathered into one pool and tested to determine whether it meets the user requirements.

Testing is done at two level -Testing of individual modules and testing the entire system. During the system testing, the system is used experimentally to ensure that the software will run according to the specifications and in the way the user expects. Each test case is designed with the intent of finding errors in the way the system will process it.

Testing plays a very critical role in determining the reliability and efficiency of software and hence is a very important stage in software development. Software testing is done at different levels. They are the unit testing and system testing which comprises of integration testing and acceptance testing.

**TYPES OF TESTING**

**Unit Testing**

This is the first level of testing. The different modules are tested against the specifications produced during the integration. This is done to test the internal logic of each module. Those resulting from the interaction between modules are initially avoided. The input received and output generated is also tested to see whether it falls in the expected range of values. Unit testing is performed from the bottom up, starting with the smallest and lowest modules and proceeding one at a time.

The units in a system are the modules and routines that are assembled and integrated to perform a specific function. The programs are tested for correctness of logic applied and detection of errors in coding. Each of the modules was tested and errors are rectified. They were then found to function properly.

**Integration Testing**

In integration testing, the tested modules are combined into sub-systems, which are then tested. The goal of integration testing to check whether the modules can be integrated properly emphasizing on the interfaces between modules. The different modules were linked together and integration testing done on them.

**Validation Testing**

The objective of the validation test is to tell the user about the validity and reliability of the system. It verifies whether the system operates as specified and the integrity of important data is maintained. User motivation is very important for the successful performance of the system.

All the modules were tested individually using both test data and live data. After each module was ascertained that it was working correctly and it had been "integrated" with the system. Again the system was tested as a whole. We hold the system tested with different types of users. The System Design, Data Flow Diagrams, procedures etc. were well documented so that the system can be easily maintained and upgraded by any computer professional at a later

**System Testing**

The integration of each module in the system is checked during this level of testing. The objective of system testing is to check if the software meets its requirements. System testing is done to uncover errors that were not found in earlier tests. This includes forced system failures and validation of total system as the user in the operational environment implements it. Under this testing, low volumes of transactions are generally based on live data. This volume is increased until the maximum level for each transactions type is reached. The total system is also tested for recovery after various major failures to ensure that no data are lost during the breakdown.