Debugging

Debugging process starts with execution of test cases. The actual test results are compared with the expected results. The debugging process attempts to find the lack of correspondence between actual and expected results. The suspected causes are identified and additional tests or regression tests are performed to make the system to work as per requirement.

Common approaches in debugging are :

Brute force method - The memory dumps and run-time traces are examined and program with write statements is loaded to obtain clues to error causes.

In this method "Let computer find the error" approach is used.

This is the least efficient method of debugging.

Backtracking method - This method is applicable to small programs.

In this method, the source code is examined by looking backwards from symptom to potential causes of errors.

Cause elimination method - This method uses binary partitioning to reduce the number of locations where errors can exist.

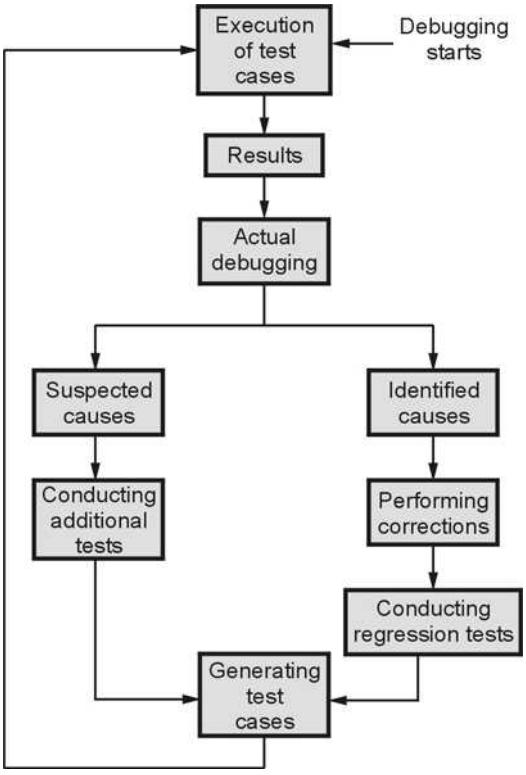

Fig. 4.11.1 Debugging process

4.11.1 Testing Vs. Debugging

Sr. No.	Testing	Debugging
1.	Testing is a process in which the bug is identified	Debugging is the process in which the bug or error is corrected by the programmer
2.	In testing process, it is identified where the bug occurs.	In debugging the root cause of error is identified.
3.	Testing starts with the execution results from the test cases.	Debugging starts after the testing process.

Validation Testing

The integrated software is tested based on requirements to ensure that the desired product is obtained.

In validation testing the main focus is to uncover errors in - System input/output
- System functions and information data
- System interfaces with external parts

- User interfaces
- System behaviour and performance

Software validation can be performed through a series of black box tests.

After performing the validation tests there exists two conditions.

1. The function or performance characteristics are according to the specifications and are accepted.

2. The requirement specifications are derived and the deficiency list is created. The deficiencies then can be resolved by establishing the proper communication with the customer.

3. Finally in validation testing a review is taken to ensure that all the elements of software configuration are developed as per requirements. This review is called configuration review or audit.