

Software Testing Strategies – Q&A

1. Why is regression testing an important part of any integration testing procedure?

The goal of integration testing is to make sure that independent modules that work correctly on their own do not interfere with one another when added to the same program (unforeseen side effects are always possible). Regression testing checks for defects propagated to other modules by changes made to an existing program.

2. List four types of systems tests.

- Recovery testing
- Security testing
- Stress testing
- Performance testing

3. What are the key differences between validation testing goals and acceptance testing goals?

In validation testing, the test team seeks to ensure that each software function or performance characteristic conforms to its specification. In acceptance testing, the test team needs to ensure that the software works correctly for the intended user in his or her normal work environment.

4. Describe the difference between verification and validation. Do both make use of test-case design methods and testing strategies?

Verification focuses on the correctness of a program by attempting to find errors in function or performance. Validation focuses on "conformance to requirements—a fundamental characteristic of quality.

5. Why is a highly coupled module difficult to unit test?

A highly coupled module interacts with other modules, data and other system elements. Therefore its function is often dependent of the operation of those coupled elements. In order to thoroughly unit test such a module, the function of the coupled elements must be simulated in some manner. This can be difficult and time consuming.

6. The concept of "antibugging" (Section 17.2.1) is an extremely effective way to provide built-in debugging assistance when an error is uncovered:

- a. Develop a set of guidelines for antibugging.
- b. Discuss advantages of using the technique.
- c. Discuss disadvantages.

A single rule covers a multitude of situations: All data moving across software interfaces (both external and internal) should be validated (if possible).

Advantages: Errors don't "snowball."

Disadvantages: Does require extra processing time and memory (usually a small price to pay).

7. How can project scheduling affect integration testing?

The availability of completed modules can affect the order and strategy for integration. Project status must be known so that integration planning can be accomplished successfully.

8. Is unit testing possible or even desirable in all circumstances? Provide examples to justify your answer.

No. If a module has 3 or 4 subordinates that supply data essential to a meaningful evaluation of the module, it may not be possible to conduct a unit test without "clustering" all of the modules as a unit.

9. Who should perform the validation test—the software developer or the software user? Justify your answer.

Developer, if customer acceptance test is planned. Both developer and customer (user) if no further tests are contemplated. An independent test group is probably the best alternative here, but it isn't one of the choices.