WHY TEST?

CSC Software Testing Materials (Software Testing Introduction)

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WHAT IS TESTING?

- Testing is the process of finding software faults
  - Fault: “an incorrect step, process, or data definition in a program” [IEEE]
- Testing: “the ***dynamic*** verification of the behavior of a program on a finite set of test cases, ***suitably selected*** from the usually infinite executions domain, against the ***expected behavior***” [ISO/IEC]
- Test cases uncover failure by finding where the actual behavior of a program deviates from the expected behavior.
- Investigation of failures uncovering faults.

WHY TEST?

Testing increases confidence that your program works correctly and meets the customer requirements or expectations

- Better scores on assignments
- Save companies millions, if not billions, of dollars
- Maintain customer's confidence in company

BROOKS' RULE OF THUMB FOR SCHEDULING A SOFTWARE PROJECT

- 1/3 design
- 1/6 coding
- 1/2 testing
  - 1/4 component testing
  - 1/4 system testing

TESTING EARLY AND OFTEN

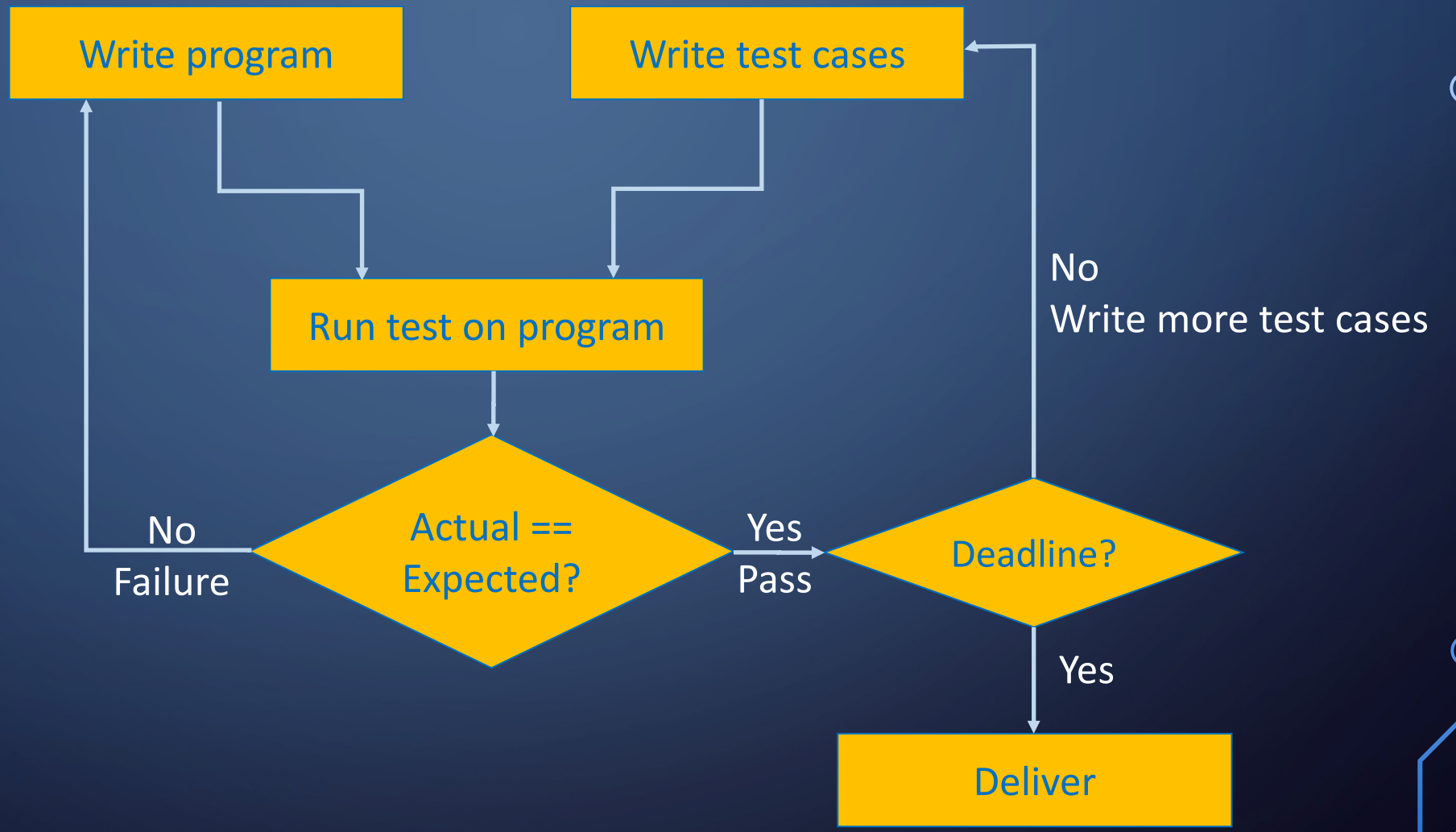
- Test Early
  - start testing as soon as parts are implemented
- Test Often
  - running tests at every reasonable opportunity

TEST CASE INFORMATION

- Unique Identifier
  - common name when discussing test cases and test case execution results
- Input into the program or program unit
  - should be specific and repeatable
- Expected output from the program or program unit
  - specific for clarity in determining if a test passes or fails
- Actual results of running the test case
  - records what happens when the test case is run

Any difference in expected and actual results represents a failing test case.

TESTING PROCESS



BASIC TESTING TECHNIQUES

- System Testing
- Unit & Integration Testing