

Multiple-Choice Questions:

1. True or false? Generally, in practice, developers exhaustively test software.
 - a. True
 - b. False

2. True or false? All “real” software contains bugs.
 - a. True
 - b. False

3. Which of the following is not a desirable quality of a unit test?
 - a. No I/O
 - b. Fast
 - c. Non-deterministic
 - d. Tests one property
 - e. None of the above

4. Which of the following is true of *exhaustive testing*?
 - a. Generally infeasible in practice
 - b. Tests all possible inputs
 - c. Typically results in an intractably large set of test cases even for small programs
 - d. All of the above
 - e. None of the above

5. Which of the following is not a difference between unit tests and integration tests?
- a. Unit tests should not perform I/O, whereas integration tests may do so
 - b. Unit tests should be deterministic, whereas integration tests may have non-determinism
 - c. Unit tests should be fast (less than half a second), whereas integration tests may be slower
 - d. Unit tests must be black-box tests, whereas integration tests must be white-box tests
 - e. None of the above (they are all differences)
6. Which of the following is not a difference between black-box and white-box testing?
- a. Black-box tests are based only on the interface of a component, whereas white-box tests are based on the implementation
 - b. Black-box tests often focus on boundary cases, whereas white-box tests tend not to
 - c. White-box tests often aim to achieve particular levels of code-coverage, whereas black-box tests do not
 - d. White-box tests are made by programmers, whereas black-box tests are made by ordinary users
 - e. None of the above (they are all differences)
7. In _____, you hook everything together and treat the system like a black box.
- a. test-driven development
 - b. system testing
 - c. unit testing
 - d. integration testing
 - e. None of the above

Solutions:

1. b

2. a

3. c

4. d

5. d

6. d

7. b

Solution:

Exhaustive testing is where you have a test case for every possible input.

People don't do it because, even for small inputs, it is too computationally intensive (e.g., takes too long) to run all the tests.

Problem:

For each piece of text below, place a “B” or a “W” next to it if it corresponds to *Black-Box* or *White-Box* testing, respectively.

_____ Tests based on the implementation of a component

_____ Tests based only on the interface of a component

_____ Tests focus on boundary cases

_____ Tests aim to achieve particular levels of code-coverage

Solution:

W Tests based on the implementation of a component

B Tests based only on the interface of a component

B Tests focus on boundary cases

W Tests aim to achieve particular levels of code-coverage

Problem:

For each piece of text below, place a “U” and/or “I” and/or “S” next to it if it corresponds to *Unit* and/or *Integration* and/or *System* tests, respectively.

_____ May have non-determinism

_____ Should not perform I/O

_____ Tests the whole system

_____ Should be fast (less than half a second)

Solution:

I,S May have non-determinism

U Should not perform I/O

S Tests the whole system

V Should be fast (less than half a second)