

## Software Testing Quiz

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\* Required

Can integration tests that do not require a human be automated? \*

6 points

- ☒ Yes
- ☐ No

What is 'static analysis' of code? \*

6 points

- ☐ An analysis of the codebase that requires the code be executed.
- ☒ An analysis of the codebase that does not require the code to be executed.
- ☐ An analysis of the behavior of the class definitions in the codebase without instantiating any objects.
- ☐ An analysis of the behavior of the objects in the codebase, irrespective of the classes they are instantiated from.

What is the relationship between load testing and stress testing of a system? \*

4 points

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What is the main difference between unit testing and integration testing? \*

6 points

- ☒ Unit testing tests each unit in isolation, while integration testing tests them all connected together as they would be in production.
- ☐ Integration testing tests each unit in isolation, while unit testing tests them all connected together as they would be in production.
- ☐ Unit testing and integration testing are basically the same thing, except that the syntax used in integration testing is based more on natural language than that used in unit testing.

Can User Acceptance Testing be automated? \*

6 points

- ☒ Yes
- ☐ No

Unit testing often requires that the production code be refactored to be more easily testable.

6 points

- ☒ True
- ☐ False

What does the term unit in "unit testing" refer to? (pick the best definition) \*

6 points

- ☒ The smallest testable piece of code in a system

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- ☒ Load testing tests the system at levels of resource usage for which it was designed. Stress testing tests it at levels of resource usage beyond which it was designed.
- ☐ Stress testing tests the system at levels of resource usage for which it was designed. Load testing tests it at levels of resource usage beyond which it was designed.

'Mocking', in terms of testing, is... \*

6 points

- ☐ the thorough testing of a single unit with multiple tests for every variety of argument and return value.
- ☐ the refactoring of code in order to make it more easily unit testable.
- ☒ the simulation of an external dependency to a unit test, such as a database, API, or other server.

Which of the following are advantages of using a code linter over manual checking of code? \*

6 points

- ☒ Abates the risk of personal conflict within a team
- ☒ Checks for correct syntax faster than a human
- ☒ Checks for good code style faster than a human
- ☒ Identifies the same issues every time it is run on the same code

What is the ideal ratio of test code to production code? \*

6 points

- ☒ 1-to-1
- ☐ 2-to-1
- ☐ 5-to-1
- ☐ There is no ratio that is ideal for all projects

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- ☐ A function/method
- ☐ An object
- ☐ A class

How does Test-Driven Development (TDD) relate to a project's 'code coverage'?

6 points

- ☐ Code coverage will vary tremendously from one project to another if TDD is followed, since each project is developed to meet its unique requirements.
- ☐ TDD uses more human-centric testing, and is thus cannot be analyzed reliably with a code coverage tool.
- ☒ With TDD, code coverage should always be near 100%, since production code is written to match the unit tests, rather than vice-versa.

Imagine the following scenario: a software engineer earns \$100/hr. A given simple project requires a set of 100 unit tests. Each unit test takes an average of 3 minutes for the engineer to write. If automated, the unit tests take a total of 1 minute to run. If the tests are executed manually, the unit tests take a total of 10 minutes to run. How many times must the set of unit tests be run in order for the time savings they offer throughout the lifetime of the project to compensate for the up-front cost of their creation?

6 points

- ☐ 1 time
- ☐ 11 times
- ☒ 33 times
- ☐ 44 times
- ☐ 122 times

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User Acceptance Testing is a form of... \*

6 points

- ☐ Code linting
- ☒ Integration testing
- ☐ Unit testing
- ☐ System testing

What is 'regression testing'? \*

6 points

- ☐ Benchmark testing that compares the performance a new version of a system to an older version of the same system.
- ☒ Re-running old unit tests every time new unit tests for new production code are run.
- ☐ Testing that the user interface is suitable and accessible to people with visual and other impairments.
- ☐ Testing the server load and stress handling.

Should refactoring a function change the result of an existing unit test? \*

6 points

- ☐ Yes
- ☒ No

Which static analysis tools have we discussed in class? \*

6 points

- ☐ Software integration testing tools
- ☒ Software **linting** tools such as PyLint, ESLint, etc.
- ☐ Software load testing tools
- ☐ Software stress testing tools
- ☐ Software unit testing tools, such as JUnit, PyUnit, mocha, etc

Why should unit tests follow the same standards of good code design for your test code? \*

6 points

- ☒ Because, if properly testing code, there will be more unit tests than there are units of production code, so it is just as or more important that the testing code be of high quality.
- ☒ Because, if properly testing code, unit tests become a form of documentation of the requirements of the system being built, so they should be highly readable, commented, and maintainable.
- ☒ Because, if properly testing code, each test will be run many times throughout the lifetime of the development process, while developers may come and go, so it should be highly readable, commented, and maintainable.

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