" What is software test? "
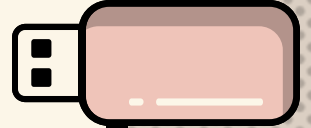# Asked a Developer

Mehrdokht, August 2023

About

Research
Designing a process flow
Writing technical documentation
Comprehensively testing
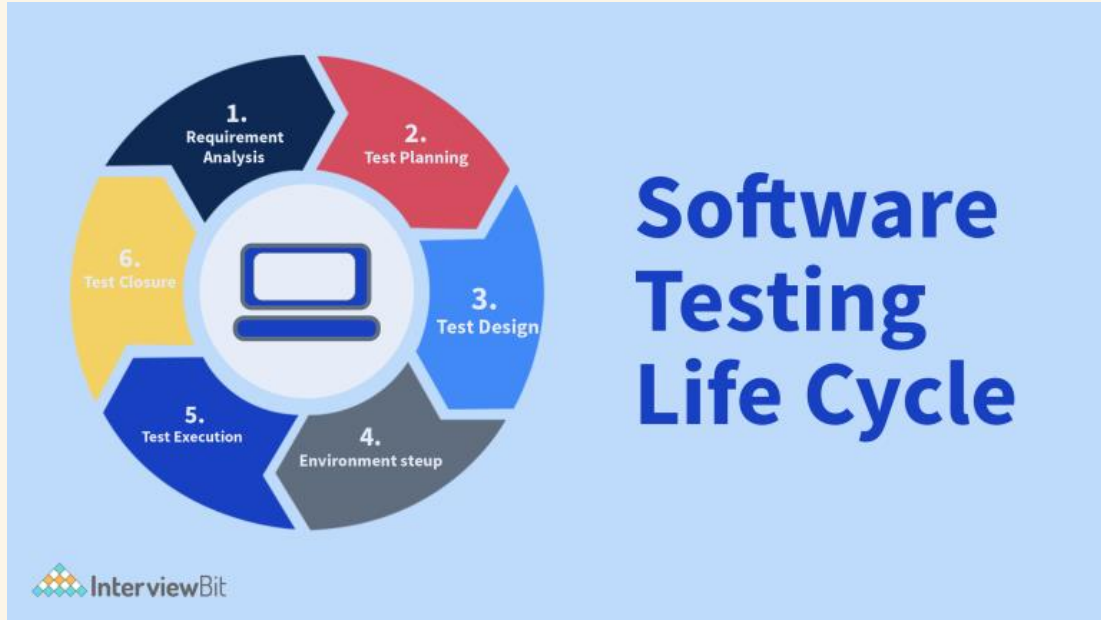Debugging

Why test?

Enhancing user experience

Identifying defects and bugs

Ensuring compatibility

Security and data integrity
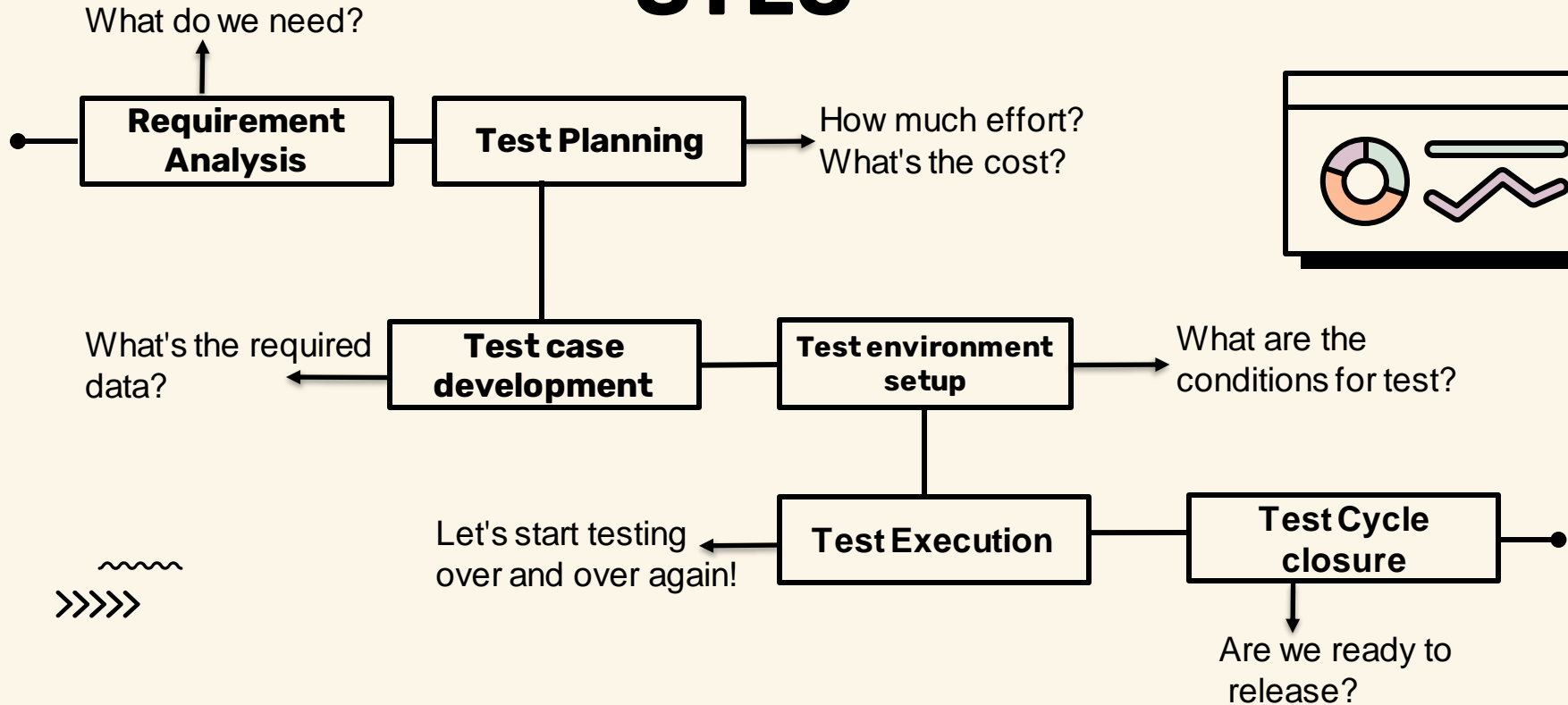
Optimizing performance

Software Testing Life Cycle

1. Requirement Analysis
2. Test Planning
3. Test Design
4. Environment steup
5. Test Execution
6. Test Closure

InterviewBit

STLC

What do we need?

Requirement Analysis — **Test Planning**

How much effort?
What's the cost?

What's the required data?

Test case development — **Test environment setup**

What are the conditions for test?

Let's start testing over and over again!

Test Execution — **Test Cycle closure**

Are we ready to release?

>>>>>

Software Testing Types

Functional Testing

- **Unit Testing**
  - White Box Testing
  - Gorilla Testing
- **Integration Testing**
  - Gray Box Testing
- **System Testing**
  - End to End Testing
  - Black Box Testing
  - Smoke Testing
  - Sanity Testing
  - Happy path Testing
  - Money Testing
- **Acceptation Testing**
  - Alpha Testing
  - Beta Testing
  - OAT

Non Functional Testing

- **Security Testing**
  - Penetration Testing
- **Performance Testing**
  - Load Testing
  - Stress Testing
  - Soak Testing
  - Volume Testing
  - Endurance Testing
  - Scalability Testing
- **Usability Testing**
  - Exploratory Testing
  - Cross browser Testing
  - Accessibility Testing
- **Compatibility Testing**
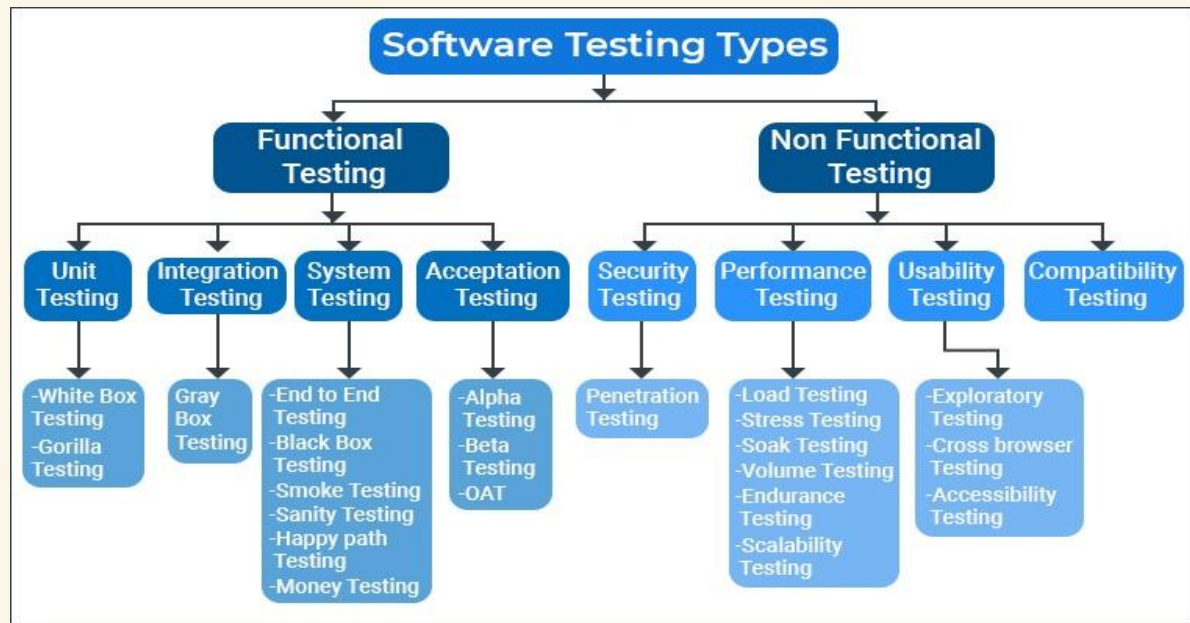
Functional non-functional test ~~~~ .....

Software application's functionalities

Does not rely on the application's source code

Performance, usability, and dependability

Analyzing the measurements and metrics

Both manually and automatically

Every aspect can be checked

Improve the knowledge of current technology

Exact figures aren't known from the beginning

Box techniques

1 Uses the knowledge of internal data structures, physical logic flow, and architecture at the level of source code.
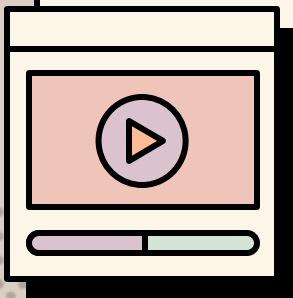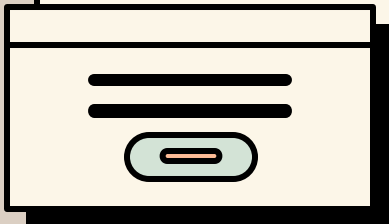
—White Box

2 The functionality of the software is not known. Done without the internal knowledge of the products. Focuses on software's external attributes and behavior.
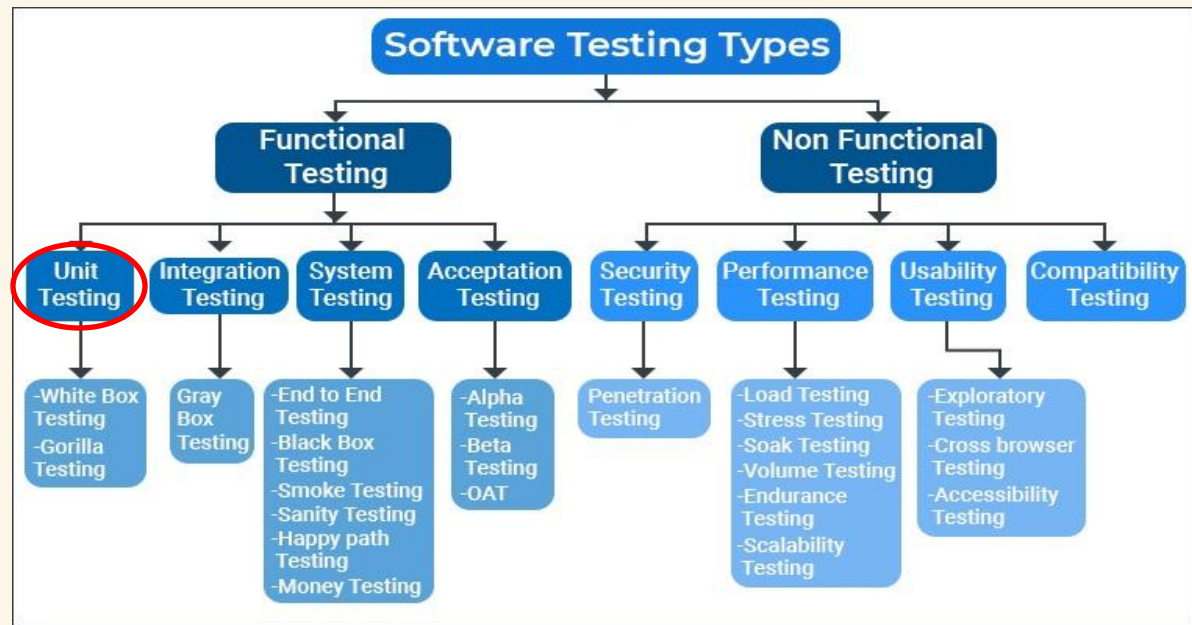
—Black Box

3 Combination of the Black Box and the White Box Testing. Involves inputs and outputs of a program for the testing purpose. Tested by using the information about the code. Suited for web application testing.

—Grey Box

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Compatibility Testing

Non-Functional test

Security

Is software, application, or website secure from internal and/or external threats?

Penetration testing
- SQL injection
- URLs manipulation

Performance

Application's stability and response time by applying load.

Load test
Stress test
Scalability test
Volume test
Endurance test

Usability

From the user's perspective feel and user-friendliness

Compatibility

How software behaves and runs in a different environment, web servers, hardware, and network environment.

UNIT TEST

- To isolate a section of code.

- To verify the correctness of the code.

- To test every function and procedure.

- To fix bugs early in the development cycle and to save costs.

- To help the developers to understand the code base and enable them to make changes quickly.

- To help with code reuse.

Data mocking

Replacing dependencies by controlled replacement objects that imitate or simulate the behavior of the real ones. This process of replicating the real environment having actual external dependencies is called mocking.

Having too many mocks in code is bad.

Mocking frameworks exist to help make this process easier.

Unit test pros and cons

Advantages	Disadvantages
learn what functionality is provided by a unit	Time-consuming
Units can test in isolation	Doesn't cover all the errors in the module
Early Detection of Issues	Not efficient for checking the errors in the UI
Improved Code Quality an increased code confidence	Requires more time for maintenance
Faster Development	Doesn't cover scalability, the performance of the system
Better Documentation	Dependence on Developers
Facilitation of Refactoring	Over-reliance on Automation
Reduced Time and Cost	Maintenance Overhead

Tools for JS Unit test

Jest
JavaScript Testing Framework with a focus on simplicity.

Mocha
Mocha is a feature-rich JavaScript test framework running on Node.js and in the browser,
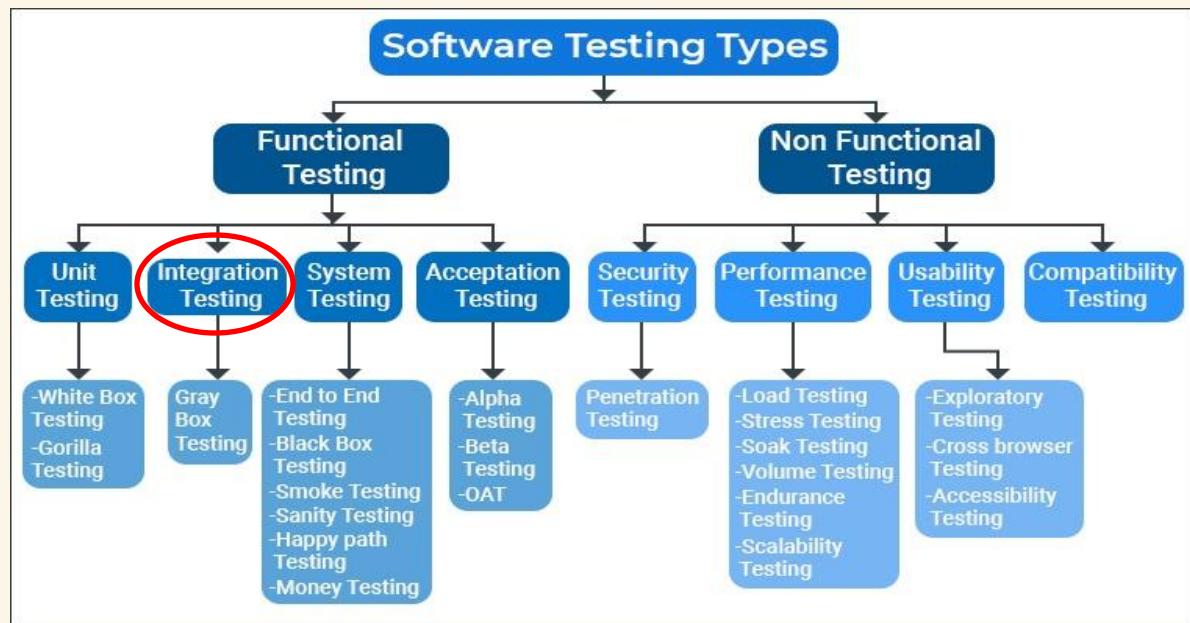
Storybook
Use it for UI development, testing, and documentation.

Jasmine
Behavior-driven development framework. I does not depend on any other JavaScript frameworks. It does not require a DOM.

Software Testing Types

Functional Testing

Non Functional Testing

Unit Testing | Integration Testing | System Testing | Acceptation Testing

Security Testing | Performance Testing | Usability Testing | Compatibility Testing

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Integration Test

01 Data flow between dependent modules or interface between two features

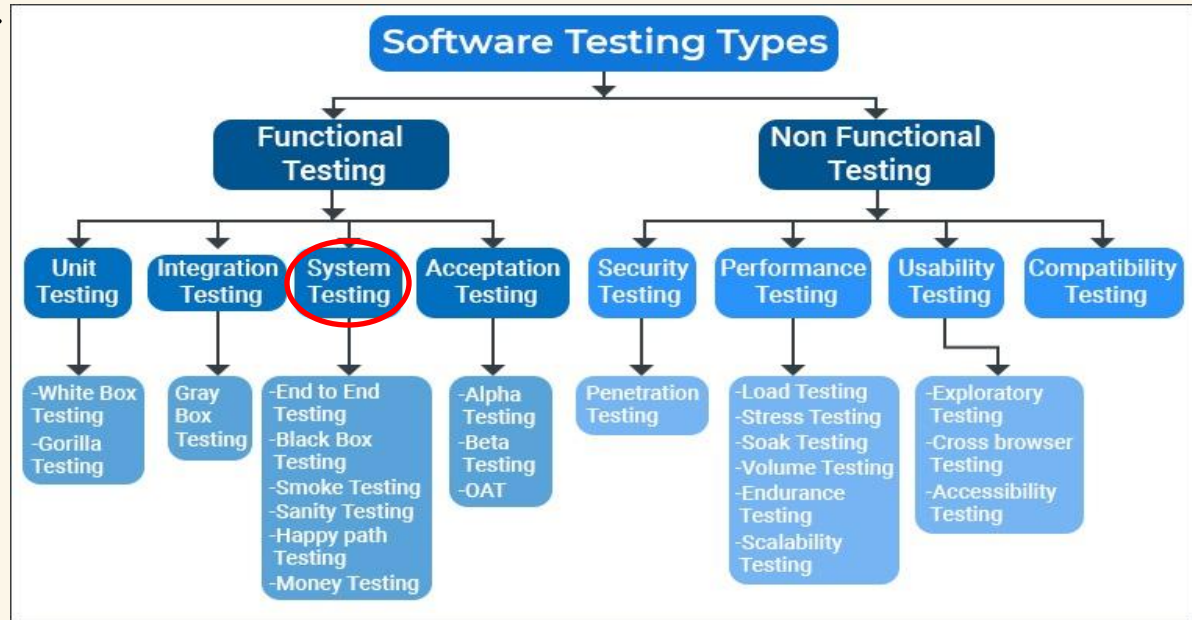**02** Purpose is to test the statement's accuracy between each module

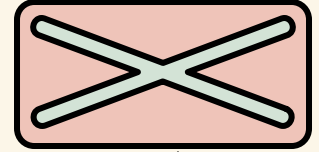**03** Aggregate results from various parts and sources

04 No need to mock away parts of the application

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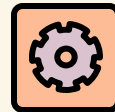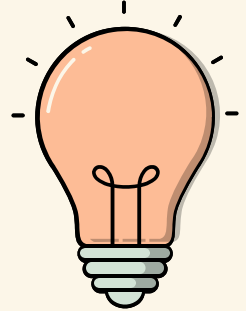   - -Accessibility Testing
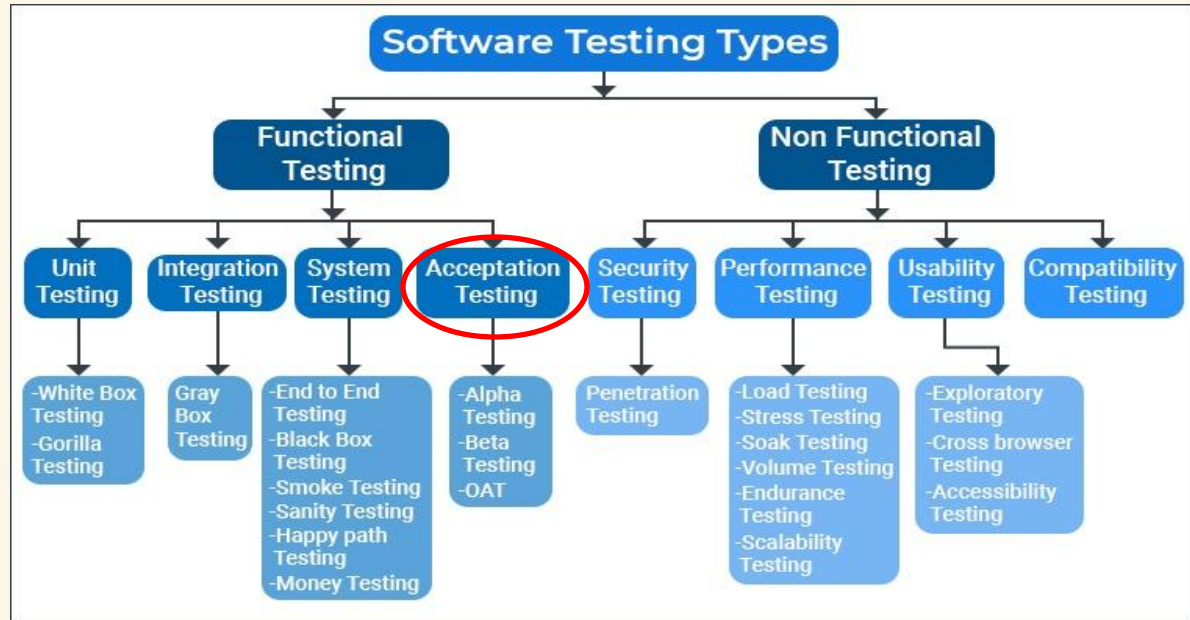 - Compatibility Testing

System Testing (E2E)

- Performed by testing team (Thank you guys)

- Test the quality of the system impartial

- Both functional and non-functional testing

- Performed on a complete integrated system

- Detects defects within both the integrated units and the whole system.

- The goal is to detect any irregularity between the integrated units

- Integration testing passed components are taken as input

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Acceptance Test

QA process (Again thank you guys)

Determines to what degree an application meets end users' approval

Beta testing, application testing, field testing or end-user testing

Code Coverage

- Measure the codebase's effectiveness

- The test code must be changed to stay updated with these changes

- Testing standards established at the beginning of the project must be maintained throughout subsequent release cycles
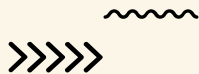
Test Coverage

Monitors the executed number of tests that have been executed.

Written to ensure maximum coverage of requirements outlined in multiple documents

- Reports on portions of the codebase that necessary test cases have not covered
- Detects the areas of test cases that are useless for the current project
- Lets developers create additional test cases as required
- Prevents defect leakage.

>>>>>

Test coverage VS code coverage

Test coverage

Better for code function test

Suitable with test-driven development

Used in the early stages of development

Code coverage

Make sure all code is being executed

Used when the code gets more complex

Resources

- https://jestjs.io/

- https://www.perfecto.io/blog/automated-testing-vs-manual-testing-vs-continuous-testing
- https://www.javatpoint.com/types-of-software-testing
- https://www.geeksforgeeks.org/software-development-life-cycle-sdlc/?ref=lbp
- https://www.browserstack.com/guide/code-coverage-vs-test-coverage
- https://preflight.com/blog/why-mocking-is-required-in-unit-testing-a-detailed-guide/

- https://www.techtarget.com/searchsoftwarequality/definition/unit-testing

- https://github.com/moh3n9595/js-abbreviation-number

- https://github.com/moh3n9595/react-beacon-hint

- https://www.tatvasoft.com/outsourcing/2021/09/types-of-software-testing.html

- Ali Rastegar

Thanks!

Does anyone have any questions?
Go find the answers.