Testing

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Introduction

- Initially : Testing is the process of executing program with intent of finding errors
- Finally : Testing is the process of demonstrating that errors are not present.

- When you test a software, that testing raise the quality/reliablity of software. It mean finding and removing the errors.
- Therefore, don’t test a software to show that it works; rather, you should start with the assumption that the software contains error and then test the software to find as many of the errors as possible.

Why Testing?

- To find and correct defects
- To check whether the client need are satisfied
- To avoid user detecting problems
- To provide quality product

Why does software have bugs?

- Miscommunication or No communication
- Time pressure
- Changing requirements
- Software complexity
- Programming mistakes

Terms

- Errors : Human actions that produce incorrect result
- Bug : The presence of error at the time of execution
- Fault : State of software caused by error.
- Failure : Deviation from its expected result. It is the event.

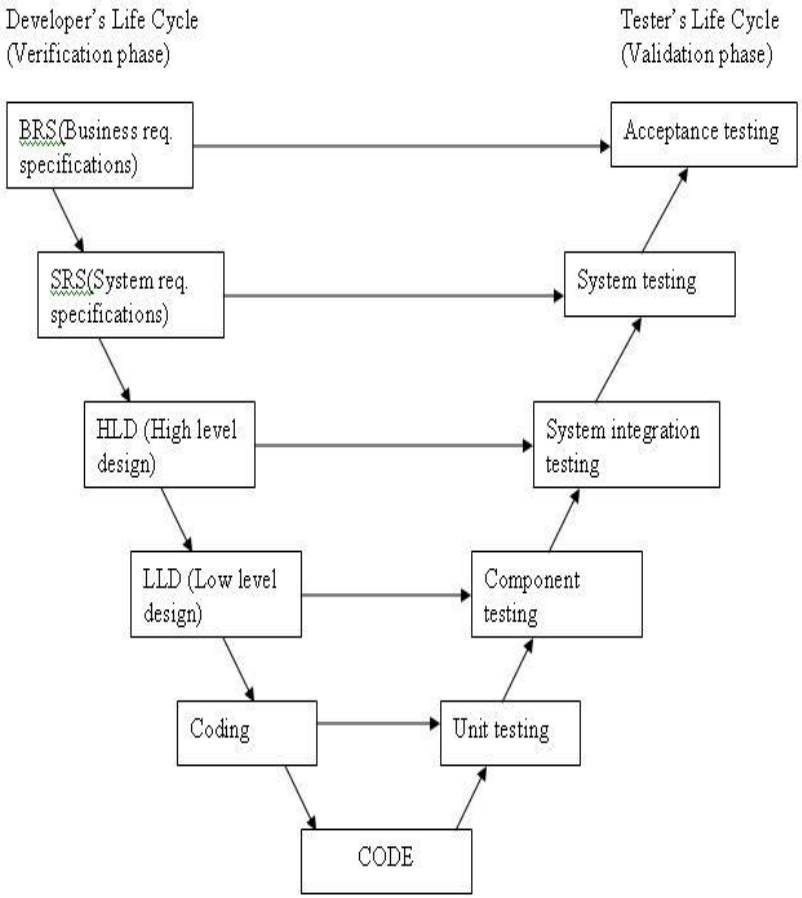
Where is Testing in methodologies?

In Waterfall,

- Analysis
- Design
- Implementation
- Integration and Testing
- Deployment
- Maintenance

V-Model

- It is an SDLC model where execution of processes happens in a sequential manner in a V-shape
- Also known as Verification and validation method

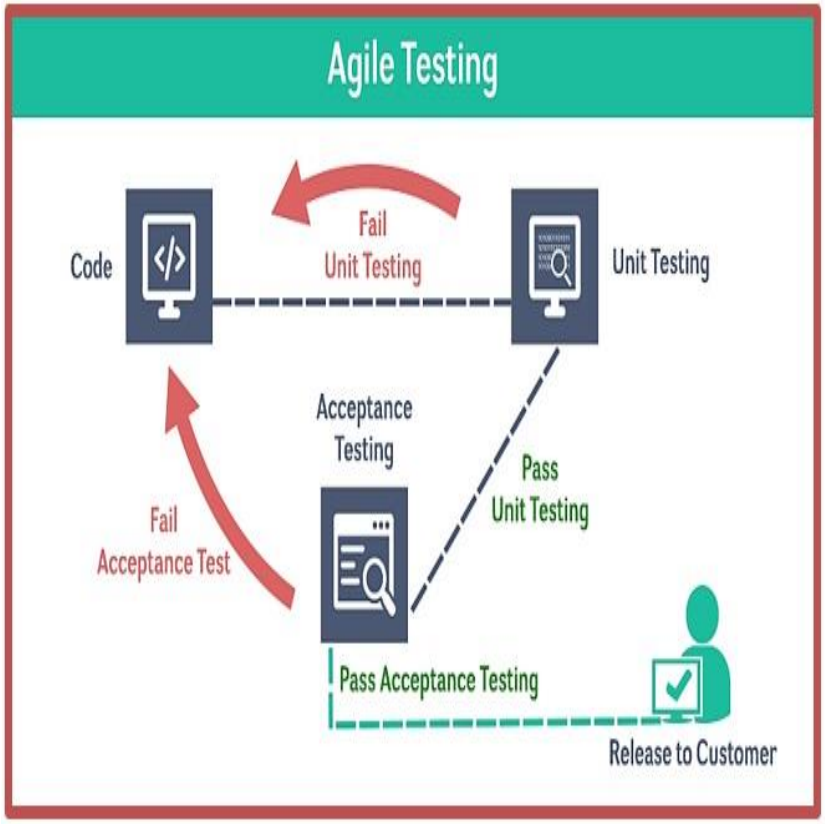


In Agile,

- Every iteration has its own testing phase. It allows implementing regression testing every time new functions or logic are released.
- Agile Testing is not sequential but continuous.

Agile Testing

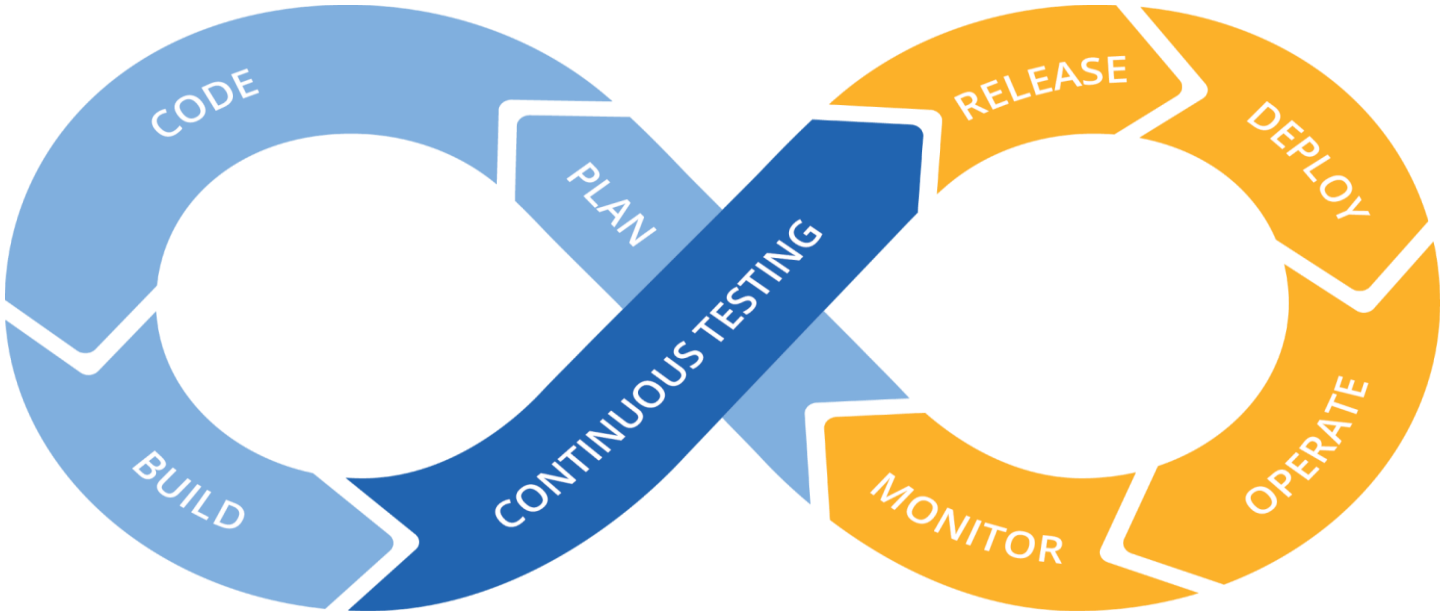
- Testing as part of development process, rather than considering it as a different phase
- It is actively gets done throughout the programming phase



In DevOps,

- Continuous Testing(CT)
- Process of executing automated tests as part of the software delivery pipeline.

The Flow


CODE
PLAN
BUILD
CONTINUOUS TESTING
RELEASE
DEPLOY
OPERATE
MONITOR

Testing Life Cycle

- System study
- Test plan
- Design test cases
- Execute test cases - Auto/Manual
- Report defects
- Regression test
- Analysis
- Summary reports

Test Plan

- It is a systematic approach to test a software. The plan typically contains a detailed understanding of what the eventual testing workflow will be.

Test Case

- It is a specific procedure of testing a particular requirement.
- It will include: Identification of specific requirement tested Test case success/failure criteria Specific steps to execute test Test data

Technique

- White box Testing
- Black box Testing

White box Testing

- Knowledge of the internal program design and code required.
- Testing are based on coverage of code.
- Doing by developers

Black box Testing

- No Knowledge of internal program design or code required
- Testing are based on requirements and functionality
- Doing by Testers

Levels of Testing

- Unit Testing
- Integration Testing
- System Testing
- User Acceptance Testing

Unit Testing

- Test each module individually
- Done by developers
- Performed at the earliest stage of development process
- Follows a white box testing.

Integration Testing

- For all modules unit tested, integration aims to test different parts of the system in combination.
- Identify errors associated with interfacing.
- Done by testers

System Testing

- System testing is to uncover the requirement errors
- All system elements work properly and that overall system function and performance has been achieved.
- Done by Testing team [Alpha]
- Done by Friendly-customer[Beta]

User Acceptance Testing

- To determine whether to accept or reject the delivery of the software.
- By Users

Points for Unit Testing

- Functional
  - Does the piece of code functionally perform the task.
- Boundaries
  - What are the minimum and maximum value for function? What happens if they are not within the boundaries.

Contd.,

- Termination
  - What happens in the normal termination of the function?
  - What about an abnormal termination of the function?. Will the application continue or will an error occur. Is the error trapped?

Contd.,

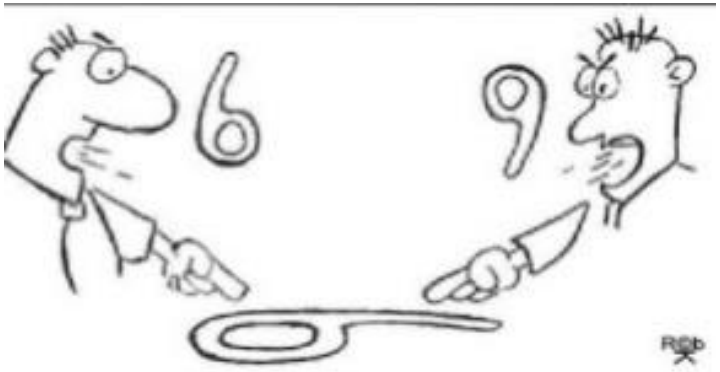
- Output:
  - What are the expected outputs of the function?
  - Where do they go, what happens if the output is nothing?
  - What happens if the output cannot be passed to next function?

Contd.,

- Inputs:
  - What are the expected inputs to the function?
  - What happens if they do not get passed in?
  - What happens if they are wrong type?
- Interactions:
  - What other modules does this interact with?will those be effected by the change?

Tester vs Developers

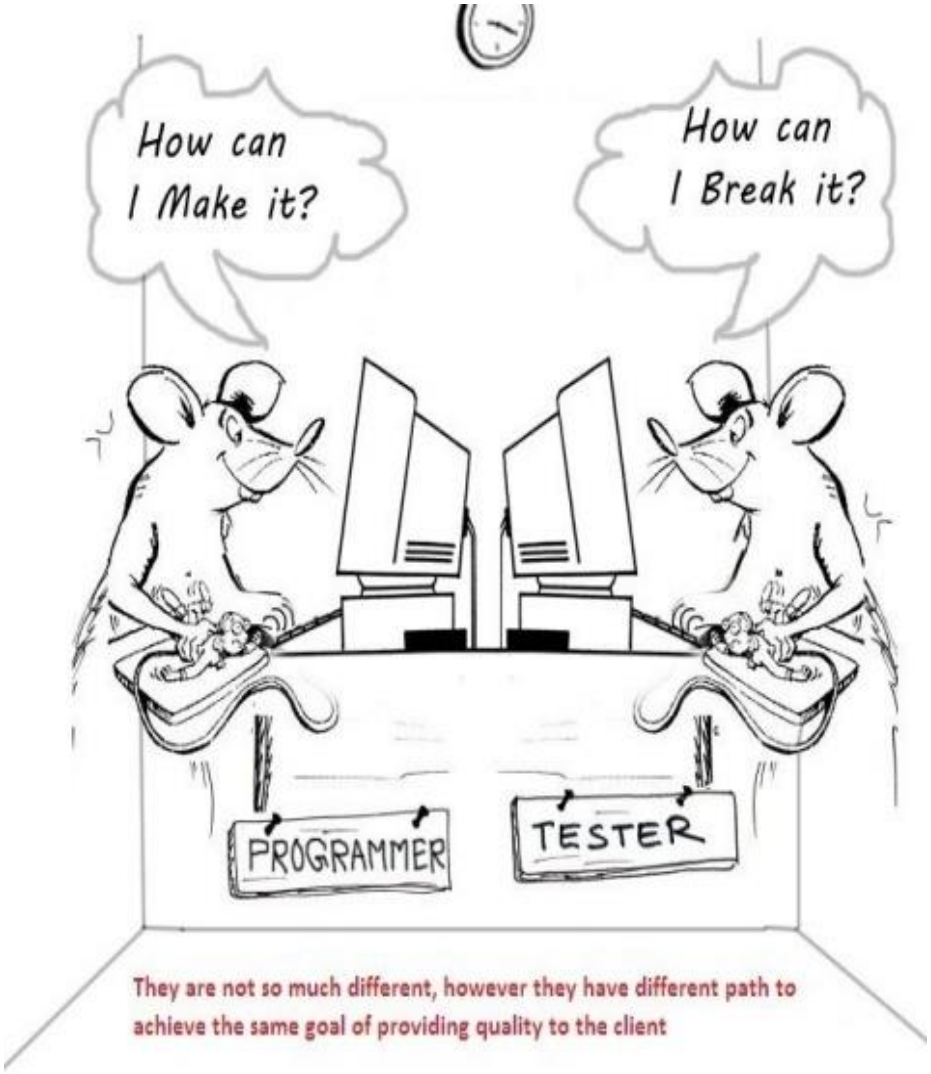
- Developer always wants to see his code working properly. So he will test it to check if its working correctly.
- Tester will test the application, to make it fail in any way and how application is not working correctly.



Contd.,

- For Success of any project there should be a Testing team validation the applications.

- The Testers responsibility to make APPLICATION Smarter!!!


How can
I Make it?
How can
I Break it?
PROGRAMMER
TESTER
They are not so much different, however they have different path to
achieve the same goal of providing quality to the client

Tester point of views

- Do your own acceptance tests.
- Do not REPEAT bugs
  - One bad thing that you may experience being a tester, is developer which repeats the same errors. This illustrates the CARELESSNESS of the programmer and his lack of progress in learning.

Contd.,

- Testers do not want hurt developers
  - Developers often are afraid to give the code for testing, rather seek the assistance in order to ensure doing good job.
- Write comments and human readable code
  - It will be useful in code review. In parallel, write code that explains a lot without reading the comments, function and variable names. [Standards Follow-ups]

Contd.,

- Provide descriptive error alerts
  - Through the provision of good error messages , tester can provides ready information with bug.
- Do not Test the Tester
  - Never code for unwanted bugs to demonstrate the poor quality of tester. It always ends with client' expectations.

Finally

- Have a good interaction,
- Take Responsibility,
- Understand the tasks,
- Close the bugs,
- And at last give the quality product.
- It Makes us to reach what we have aimed and also it reach our company to the top level.


THANK
YOU


questions