CI and Testing.
Lab 12

Continuous Integration

- **Continuous Integration (CI) is the process of automating the build and testing of code every time a team member commits changes to version control.**

- **Every developer pushes their code and unit tests to a shared version control repository after every small task completion.**

- **Committing code triggers an automated build system to grab the latest code from the shared repository and to build, test, and validate the full master branch**

- **Each check-in is then verified by an automated build, allowing teams to detect problems early.**

- **By integrating regularly, you can detect errors quickly, and locate them more easily.**

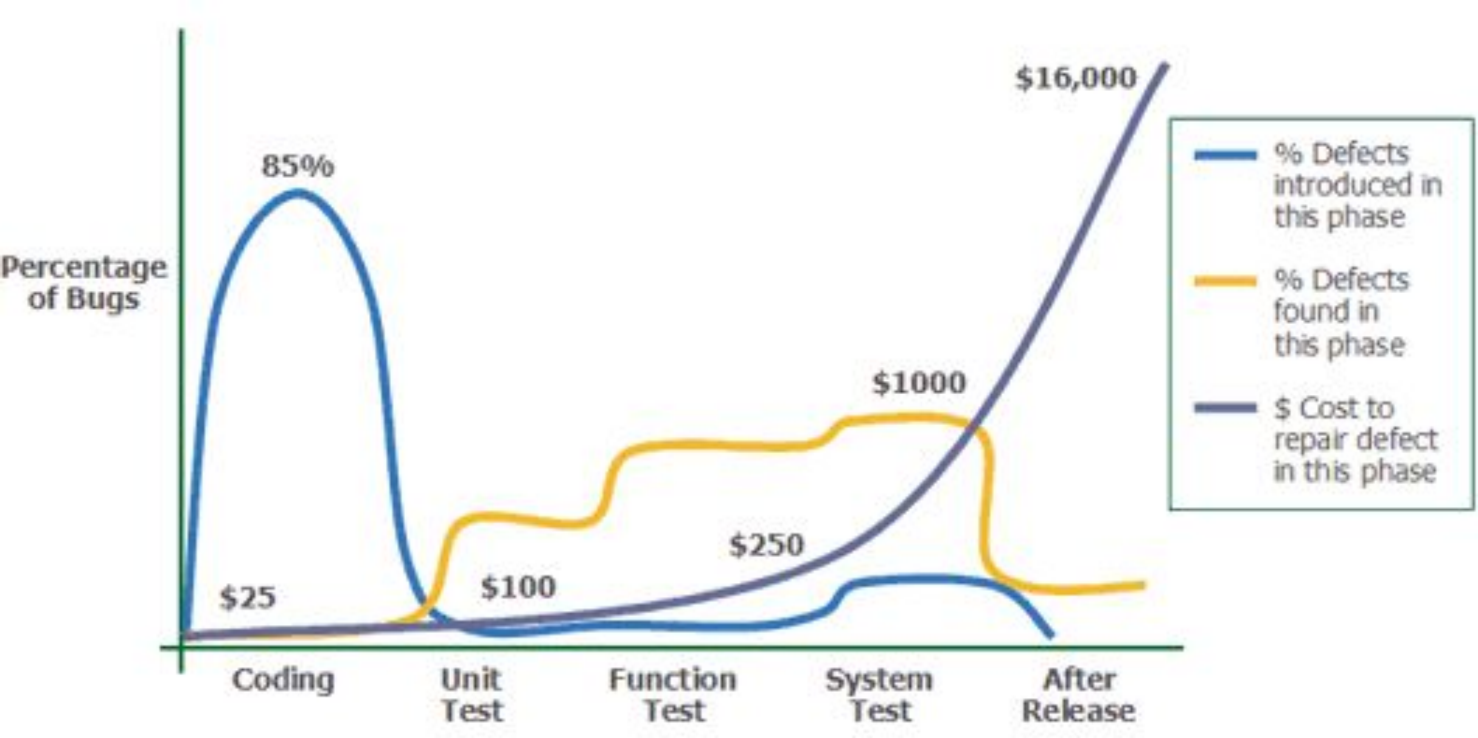
Why Tests?

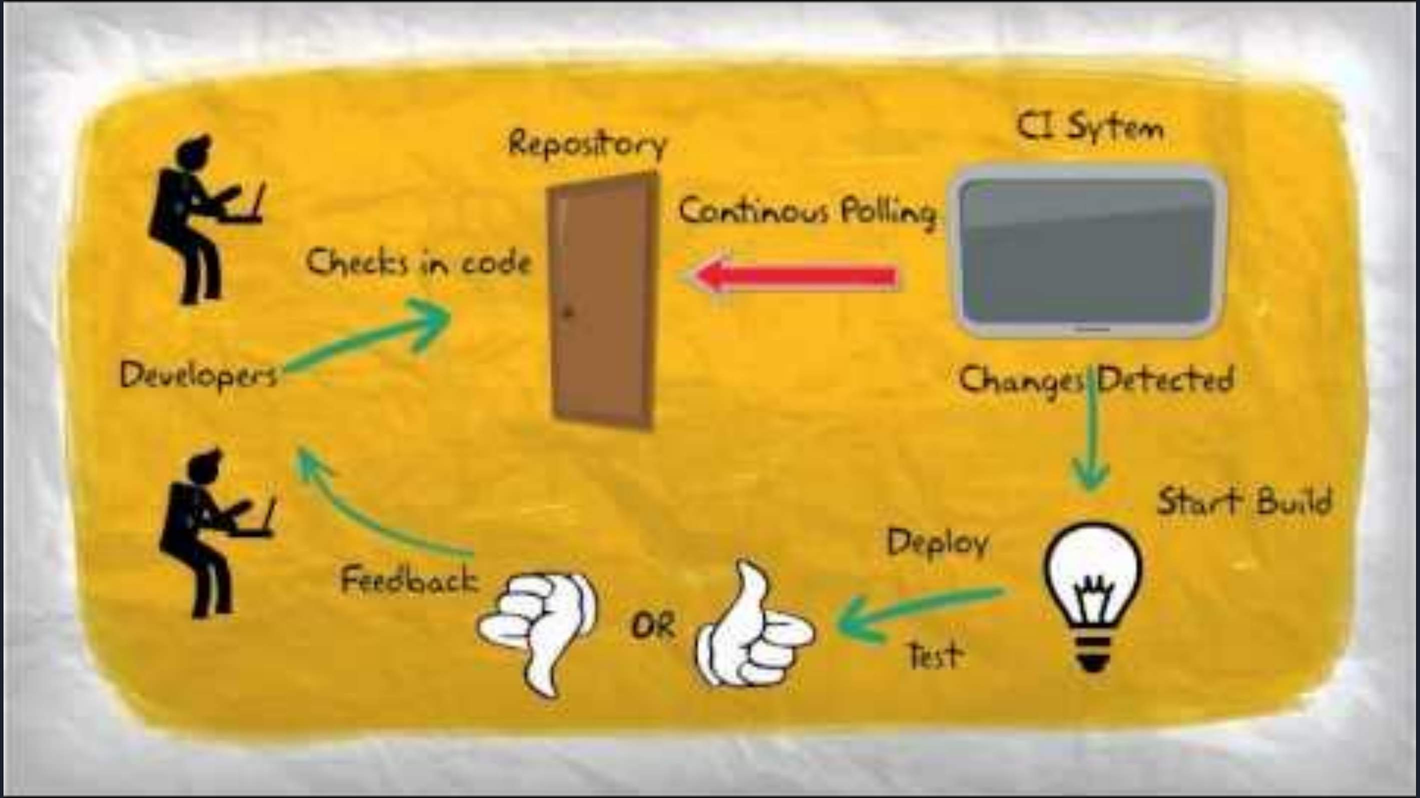
- **Faster time-to-market**: Too many development and QA cycles are consumed coddling fragile legacy applications

- **Higher quality:** Teams often release code with more bugs than they would like, leading to longer and more expensive QA cycles and more bugs delivered to end users. There's been too much focus on testing to remove bugs, instead of building software without bugs in the first place.

- **More flexibility**: Many legacy systems are too fragile and too inflexible to enhance. It’s hard to be agile as a business if you’re afraid to change the code on which the business depends.

Why Tests?


$16,000
85%
Percentage of Bugs
$1000
$250
$25
$100
Coding
Unit Test
Function Test
System Test
After Release
% Defects introduced in this phase
% Defects found in this phase
$ Cost to repair defect in this phase


Repository
CI Sytem
Continous Polling
Checks in code
Developers
Changes Detected
Start Build
Deploy
Feedback
OR
Test

“Continuous Integration doesn’t get rid of bugs, but it does make them dramatically easier to find and remove.”

— Martin Fowler, Chief Scientist, ThoughtWorks

Advantages of CI?

- Say goodbye to long and tense integrations
- Increase visibility enabling greater communication
- Catch issues early and nip them in the bud
- Spend less time debugging and more time adding features
- Solves the problem of - “But it works on my machine!!!”