Continuous Integration & Automation with Jenkins- Hands-On

Module Goals

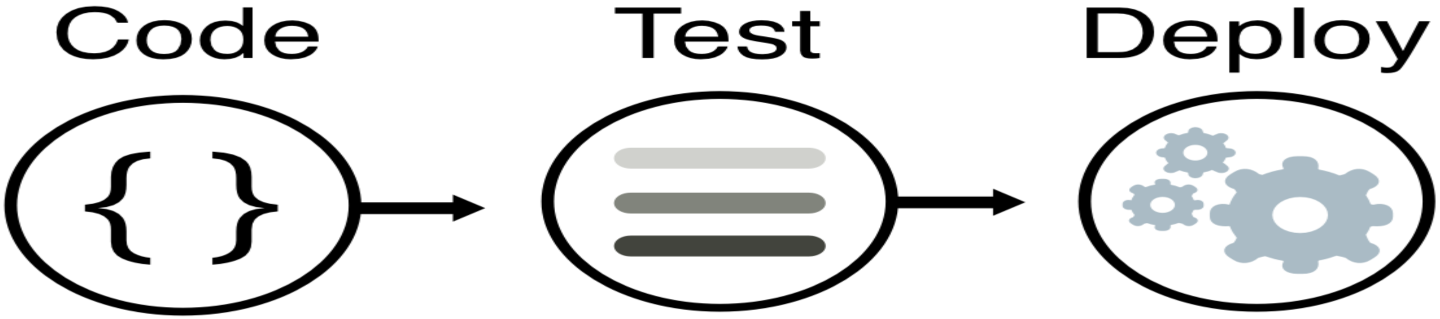
- Get Familiar With Jenkins
- Learn Jenkins Key Features
- Build CI/CD Pipeline
- Hands-on Practical Labs
- Automate, automate, automate!!!

Module Overview

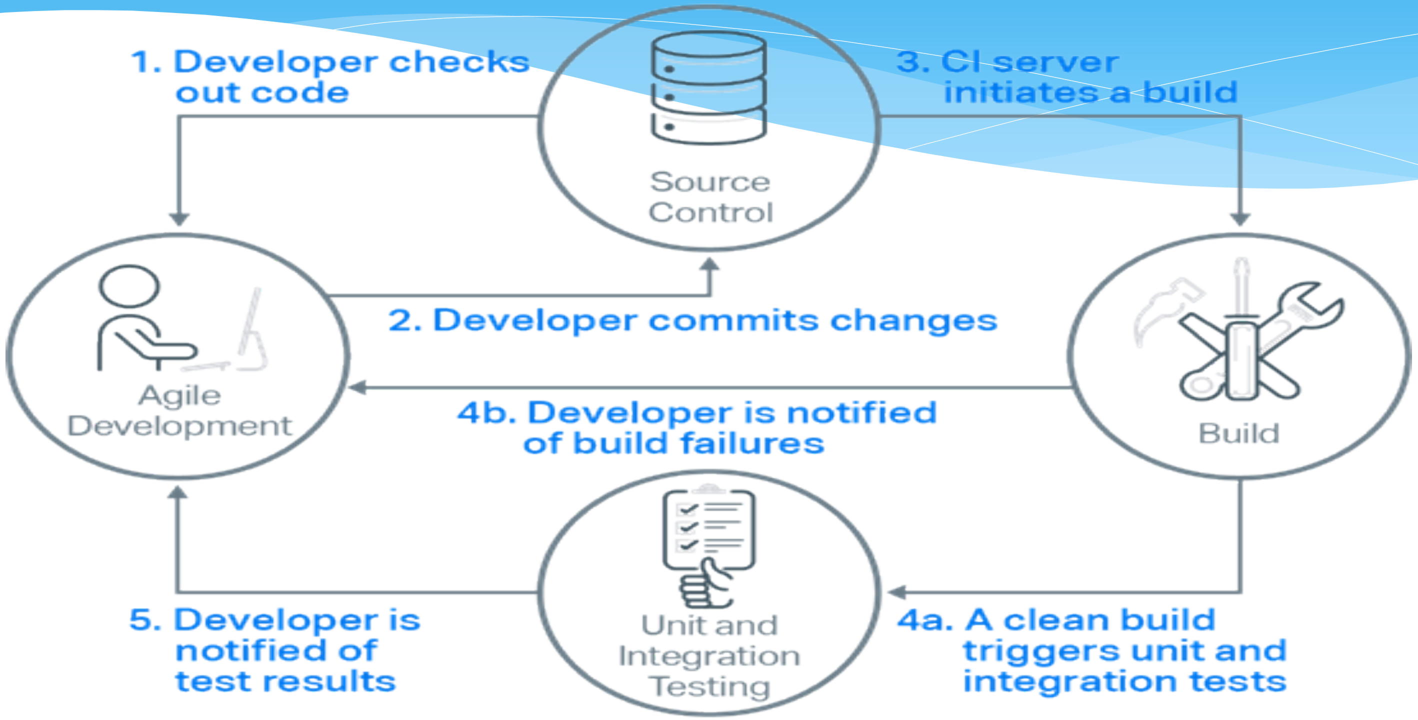
- What is CI/CD ?
- Jenkins Overview & Key Features
- Jenkins Installation & Configuration
- Jenkins Lab Exercise:
  - Maven Build Automation
  - Test Automation
  - Pipeline Creation
  - Trigger Jenkins job using Git Hook

What is CI?

Continuous Integration(CI) is a software development practice whereby members of team integrate, build, and test their code frequently in a development



CI WorkFlow



1. Developer checks out code

2. Developer commits changes

3. CI server initiates a build

4a. A clean build triggers unit and integration tests

4b. Developer is notified of build failures

5. Developer is notified of test results

CI Best Practices

- Single Source Code Repository
- Automate the build
- Make the build self-testing
- Every build should be on integration machine
- Fix broken builds immediately
- Keep the build fast
- Make it easy to get the latest executable for anyone
- Everyone can see what’s happening
- Automate Deployment

CI Benefits

- Code Quality
  - Bugs are spotted earlier
  - Can be fixed immediately
- Integration
  - Reduced risk, time and cost of integration
- Automation
  - Less error prone build process
  - No Manual steps

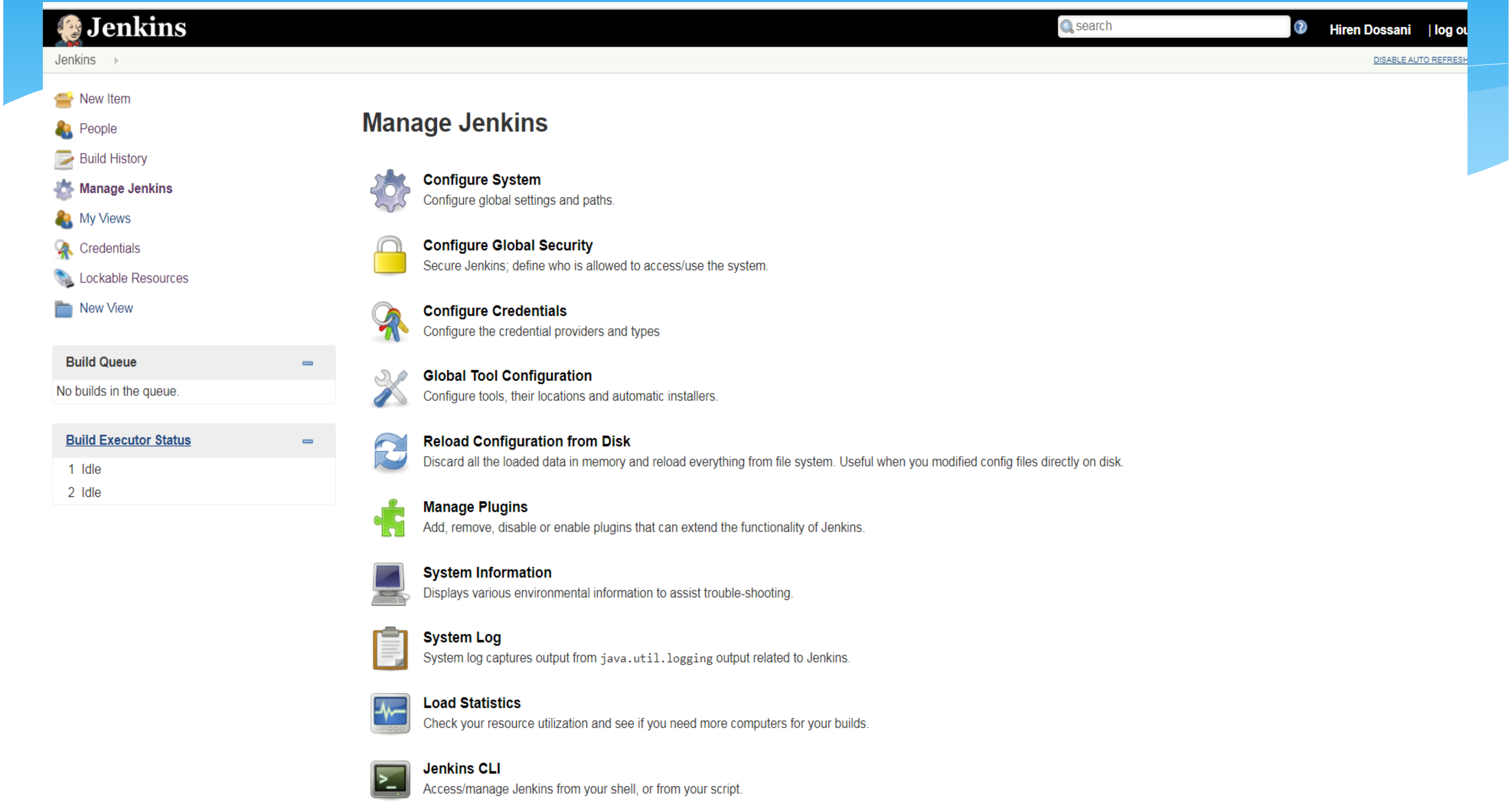
What is Jenkins ?

- Jenkins is an open source automation server
- Jenkins is one of the most popular Continuous Integration Server
- It is written in Java and runs on any operating system
- For detailed documentation: Jenkins.io
- Jenkins Uses:
  - Run tests and builds
  - Trigger Jobs Automatically
  - CI and CD

Jenkins Features

- Exploring Jenkins Dashboard
- Key Concepts in Jenkins
  - Job
  - Build
  - View
  - Plugin
- Jenkins Admin Console

Manage Jenkins



Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

Manage Jenkins

Configure System
Configure global settings and paths.

Configure Global Security
Secure Jenkins; define who is allowed to access/use the system.

Configure Credentials
Configure the credential providers and types

Global Tool Configuration
Configure tools, their locations and automatic installers.

Reload Configuration from Disk
Discard all the loaded data in memory and reload everything from file system. Useful when you modified config files directly on disk.

Manage Plugins
Add, remove, disable or enable plugins that can extend the functionality of Jenkins.

System Information
Displays various environmental information to assist trouble-shooting.

System Log
System log captures output from `java.util.logging` output related to Jenkins.

Load Statistics
Check your resource utilization and see if you need more computers for your builds.

Jenkins CLI
Access/manage Jenkins from your shell, or from your script.

Job Configuration

- How to configure and run a job ?
- Core Terminology
  - Build Trigger
  - Build & Post Build Actions
  - Workspace