Experiment 5 - Introduction to Jenkins: What is Jenkins? Installing Jenkins on Local or Cloud Environment, Configuring Jenkins for First Use.

Objective

To understand the fundamentals of Jenkins, install it on a local or cloud environment, and configure it for first-time use.

Introduction to Jenkins

What is Jenkins?

Jenkins is an open-source automation server used for:

✅ Continuous Integration (CI) – Automatically testing and integrating code changes
✅ Continuous Deployment (CD) – Automating application deployment
✅ Building Pipelines – Managing end-to-end software development workflows
✅ Plugin-Based Extensibility – Supporting tools like Maven, Gradle, Ansible, Docker, and Azure DevOps

Jenkins is an open-source automation server widely used in Continuous Integration (CI) and Continuous Delivery (CD). It allows developers to automate the building, testing, and deployment of software projects, making the development process more efficient and reliable.

Why Use Jenkins?

✓ Automates builds and tests
✓ Reduces manual intervention
✓ Improves software quality
✓ Works with multiple tools and platforms

2. Installing Jenkins

Jenkins can be installed using multiple methods:

- Windows Installer (.msi) – Recommended for Windows
- Linux Package Manager – Best for Linux Users
- Jenkins WAR File – Universal method using Java

Key features of Jenkins:

- CI/CD: Jenkins supports Continuous Integration and Continuous Deployment, allowing developers to integrate code changes frequently and automate the deployment of applications.
- Plugins: Jenkins has a vast library of plugins that can extend its capabilities. These plugins integrate Jenkins with version control systems (like Git), build tools (like Maven or Gradle), testing frameworks, deployment tools, and much more.
- Pipeline as Code: Jenkins allows the creation of pipelines using Groovy-based DSL scripts or YAML files, enabling version-controlled and repeatable pipelines.
- Cross-platform: Jenkins can run on various platforms such as Windows, Linux, macOS, and others.

Prerequisites to install Jenkin on the Windows platform:

Step 1: Check java is installed
Step 2: Download the Jenkins.war file (Jenkins.io)
Step 3: goto command prompt and run the command "Java -jar Jenkins.war --httpPort=8080"
Step 4: On the browser goto http://localhost:8080
Step 5: Provide an admin password and complete the setup.

Installing Jenkins:

Jenkins can be installed on local machines, in a cloud environment, or even in containers. Here's how you can install Jenkins in Windows local System environments:

1. Installing Jenkins Locally

Step-by-Step Guide (Window):

1. **Prerequisites:**
   - Ensure that Java (JDK) is installed on your system. Jenkins requires Java 21. If not then click here.
   - You can check if Java is installed by running the Java -version command in the terminal.

2. **Install Jenkins locally on Window System:**
   - Download the Jenkins Windows installer from the official Jenkins website (Jenkin.io)
   - Run the installer and follow the on-screen instructions. While installing, choose Login System: Run service as Local System (not recommended).
   - After that use the default port or you can configure your own port like I'm using port 3030 then click on test and next.
   - After that change the directory and choose java jdk-21 path look like C:\Program Files\Java\jdk-21\.
   - After that click next, then it will ask permission click on yes and it will start installing.
   - After successful installation, Jenkins will be run on port either in the default port or the chosen port like I chose port 3030 by default (you can access it in your browser at http://localhost:8080) or http://localhost:3030.

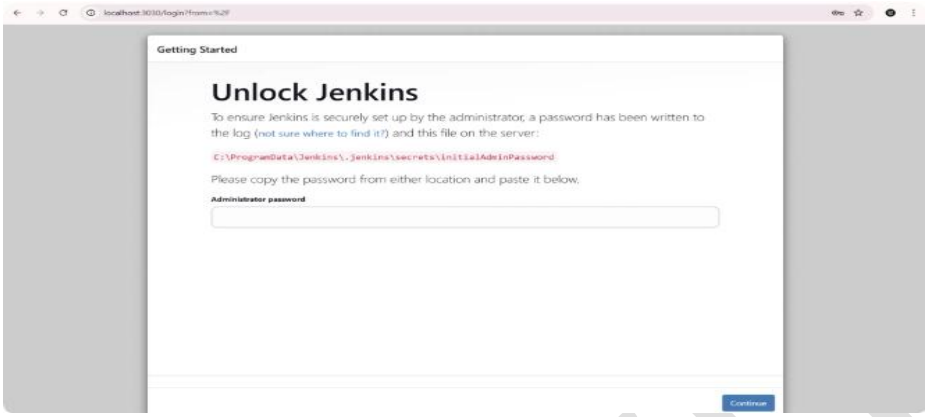
OR

Installing Jenkins Using WAR File (Works on Any OS)
This method allows you to run Jenkins without installing it as a service.

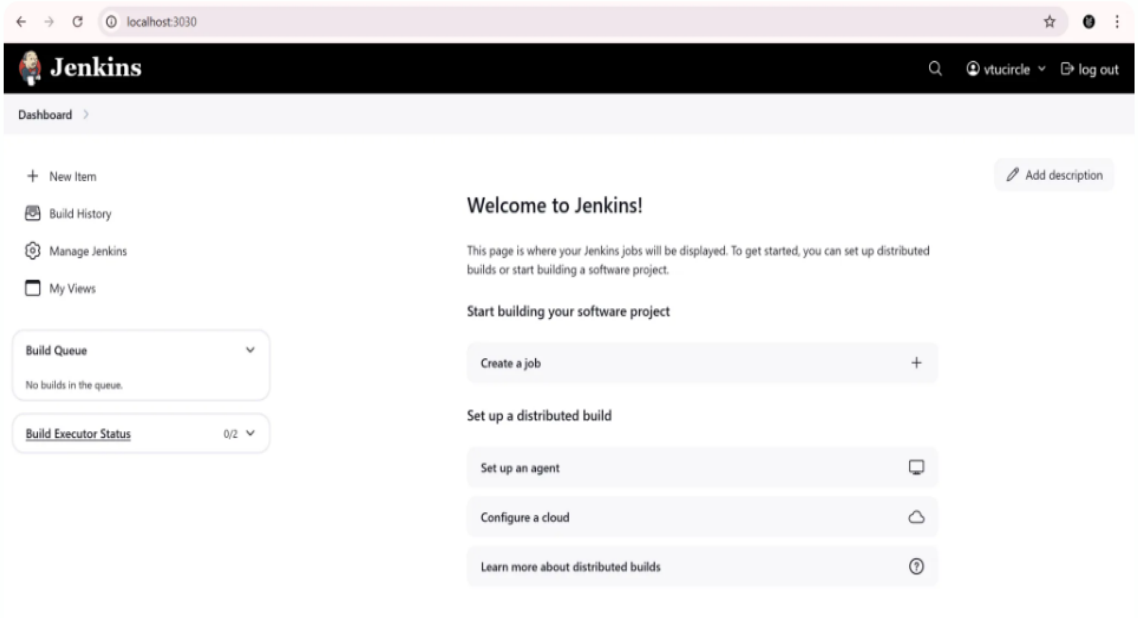
Step 1: Download the Jenkins WAR File
Download from: Download and deploy
Choose Generic Java Package (.war).
Step 2: Run Jenkins Using Java
Navigate to the folder where the .war file is downloaded and run:
This will start Jenkins on port 8080.
Step 3: Open Jenkins in Browser
Go to:
Step 4: Unlock Jenkins & Setup
Follow the same steps as the Windows/Linux installation:
✓ Find the initial password
✓ Install plugins
✓ Create an admin user
Jenkins is now running without installation!
To stop Jenkins, press CTRL + C in the terminal.

2. Jenkins Setup in browser:

- After opening the browser by visiting your local address the browser should look like the below screenshot.



- It will ask **administrator password** so you have to **navigate the above highlighted path** and open that **initial Admin Password in Notepad** or any software to **see the password**.
- Just c**opy that password and paste** it and **click on continue**.
- It will ask to **customize Jenkins** so **click on install suggested plugin** it will **automatically install all required plugins**.
- After creating **the admin profile** by **filling in all the details** then **click on save and continue to save and finish** after that **click on start using Jenkin**.



Assessment Questions

- What is **Jenkins** used for in DevOps?
- Explain the **difference** between CI and CD in Jenkins.
- How do you **install Jenkins** on Windows, using the WAR file?
- Where can you find the **initial Jenkins password** after installation?
- What are some **essential Jenkins plugins** for automation?