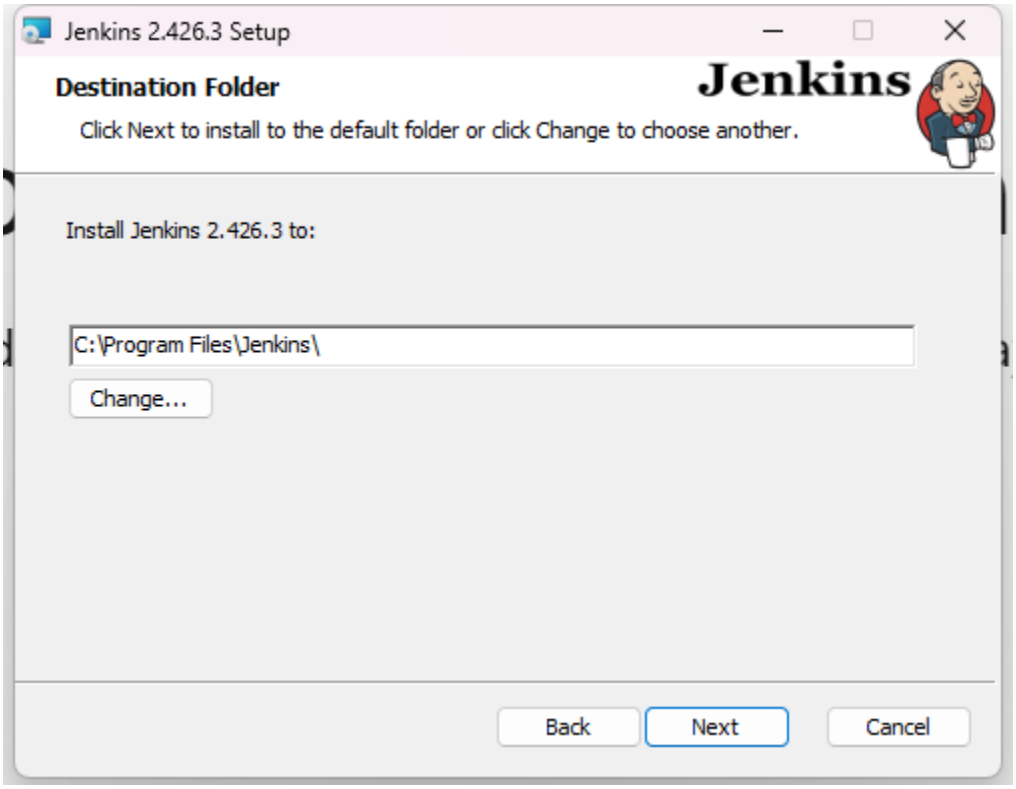
EXP 04

KALPESH JANGIR
T13/45

Aim: The aim of setting up Continuous Integration (CI) using Jenkins with Maven/Ant/Gradle is to automate the process of integrating code changes into a shared repository, thus enabling frequent and reliable builds. By automating the build process, CI helps in detecting and fixing integration errors early in the development cycle, ensuring the stability and quality of the software.

Theory:



1. Continuous Integration (CI): CI is a software development practice where members of a team integrate their work frequently, typically multiple times a day. Each integration is verified by an automated build to detect integration errors as quickly as possible.

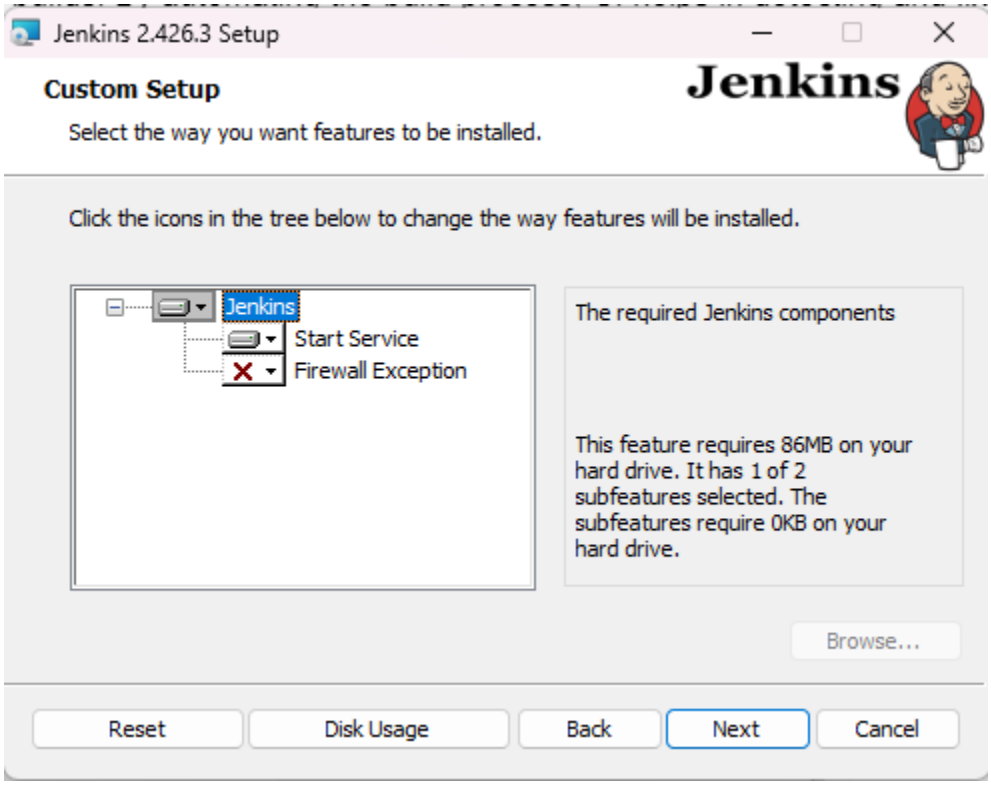
2. Jenkins: Jenkins is an open-source automation server that facilitates CI and continuous delivery (CD) pipelines. It enables developers to automate the building, testing, and deployment of software.

3. Maven/Ant/Gradle: These are popular build automation tools used in Java and other JVM-based projects.
   - Maven: Maven is a build automation tool primarily used for Java projects. It provides a set of conventions and plugins for building Java projects, managing dependencies, and creating deployment artifacts.
   - Ant: Ant is another build automation tool, similar to Maven but based on XML configuration files. It is highly flexible and can be used for building any type of project, not limited to Java.

- Gradle: Gradle is a build automation tool that combines the flexibility of Ant with the dependency management and conventions of Maven. It uses a Groovy-based DSL (Domain Specific Language) for build configuration.

4. Setting up a Build Job in Jenkins:
- Install Jenkins on a server or local machine.
- Configure Jenkins with necessary plugins for Maven/Ant/Gradle support.
- Create a new Jenkins job and configure it to pull the source code from the version control system (e.g., Git).
- Specify the build steps in the Jenkins job configuration, such as invoking Maven/Ant/Gradle commands to build the project.
- Configure post-build actions, such as archiving artifacts, triggering downstream jobs, or sending notifications.
- Save the job configuration and trigger the build manually or set up periodic builds.

conclusion: Continuous Integration with Jenkins and build automation tools like Maven/Ant/Gradle streamlines the software development process by automating the building, testing, and deployment of code changes. It improves collaboration among team members, reduces integration errors, and accelerates the delivery of high-quality software. By setting up CI, teams can achieve faster feedback loops, increase productivity, and deliver software with greater reliability and stability.



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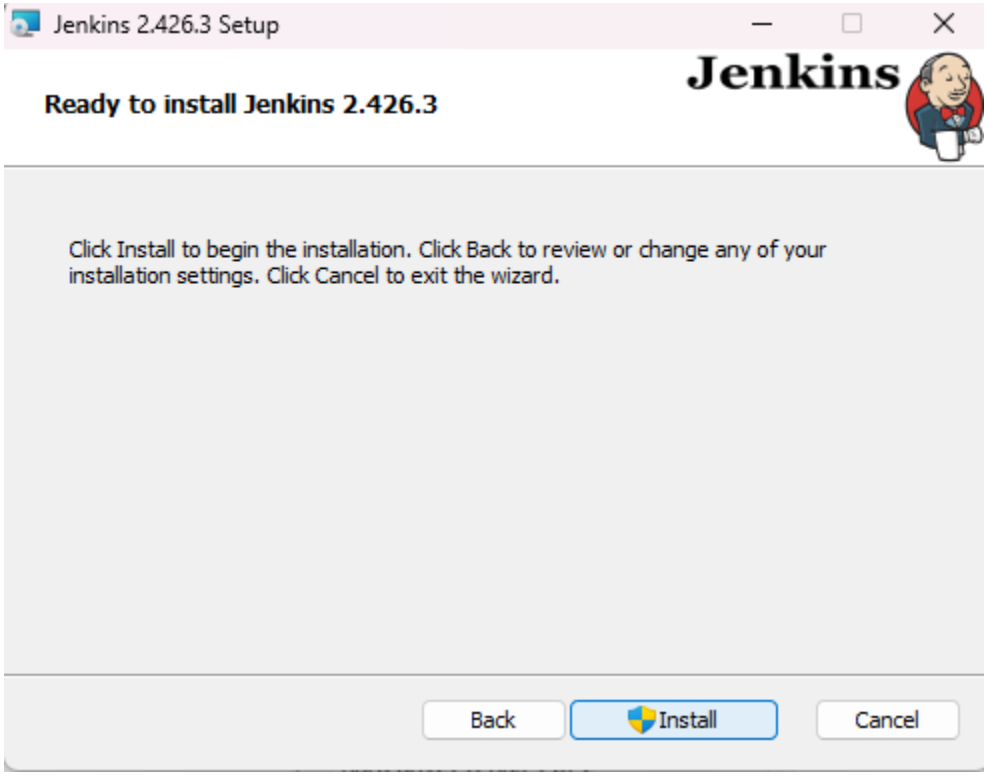

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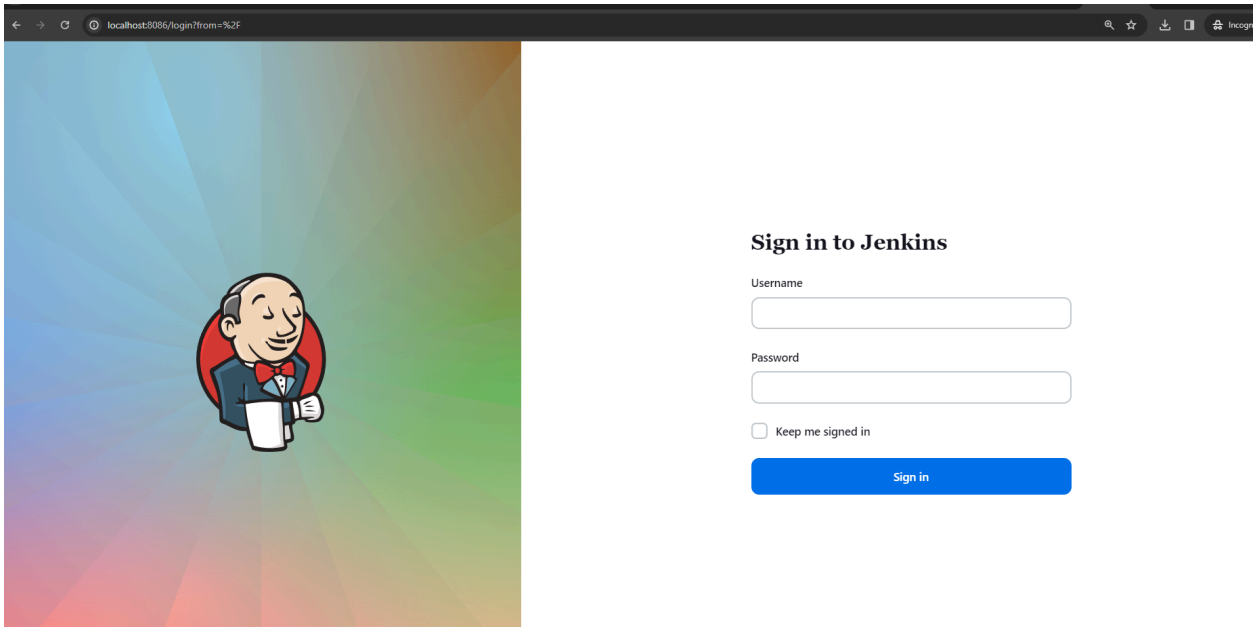

Conclusion:
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