LAB ASSIGNMENT 4

AIM: To understand Continuous integration and Jenkins installation.

LAB OUTCOME:
LO1, LO3 Mapped.

THEORY:

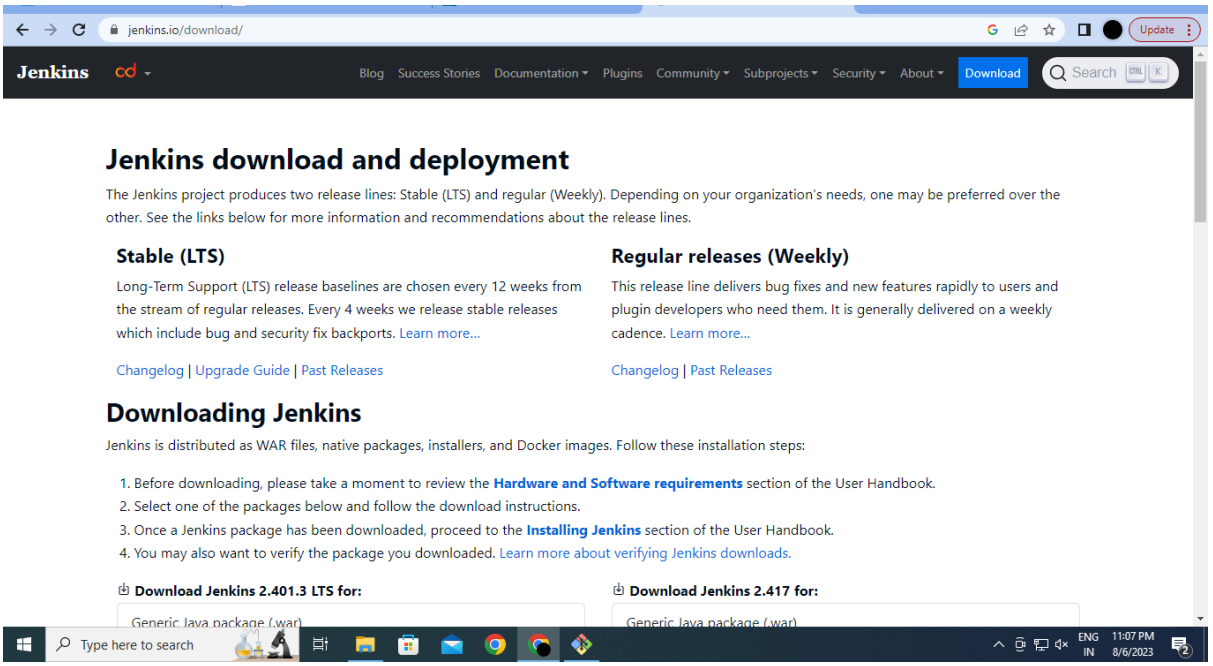
Continuous Integration (CI) is a software development practice that involves automatically integrating code changes from multiple contributors into a shared repository. The goal is to detect and address integration issues early, ensuring that new code doesn't break existing functionality. Jenkins is a popular open-source automation server used for implementing CI/CD (Continuous Integration/Continuous Deployment) pipelines.

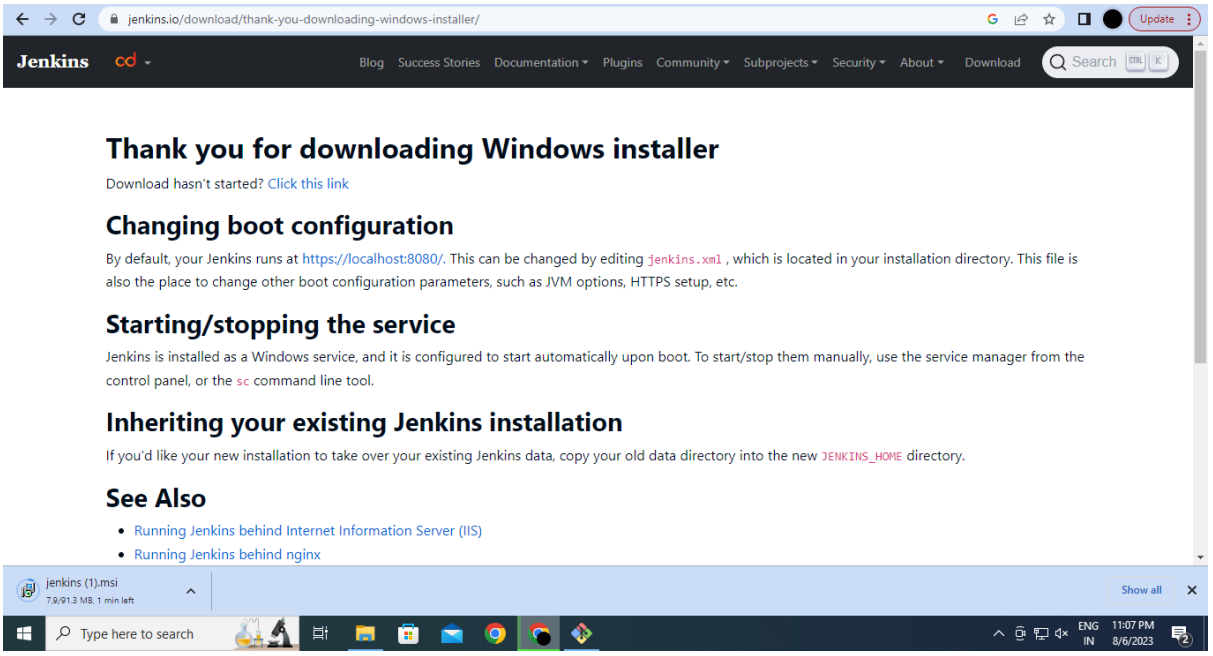
Jenkins is an open-source automation server that facilitates Continuous Integration (CI) and Continuous Delivery (CD) in software development. It automates the process of building, testing, and deploying code changes, helping development teams streamline their workflows and ensure software quality. Jenkins provides a platform for creating and managing pipelines, which are a series of steps that outline how software changes should be built, tested, and delivered. These pipelines are often defined using a domain-specific language (DSL) or through a graphical interface.

Steps for Jenkins Installation on Windows:

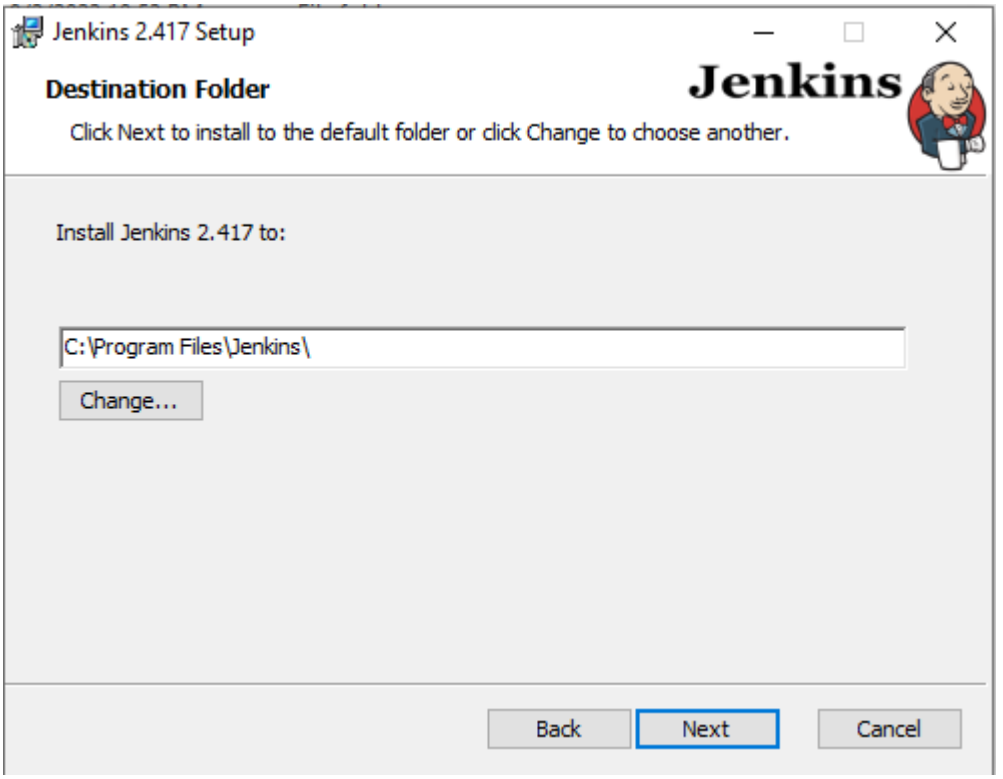
1. Install Java: Make sure Java is installed on the system.
2. Download Jenkins: Visit the official Jenkins website (https://www.jenkins.io/) and download the Windows installer.
3. Run Installer: Execute the downloaded Jenkins installer.
4. Follow Setup: Follow the on-screen instructions to complete the installation.
5. Start Jenkins: If it doesn't start automatically, initiate Jenkins as a service.
6. Access Web Interface: Open a web browser and go to http://localhost:8080.
7. Initial Admin Password: Check the Jenkins logs for the initial admin password.
8. Complete Setup: Follow prompts to install plugins and set up an admin user.
9. Install Plugins: If needed, install additional plugins for integration.
10. Create Pipelines: Configure CI/CD pipelines to automate tasks.
11. Remember, Jenkins on Windows operates on port 8080 by default. Make sure Java is properly configured and accessible from the command line.

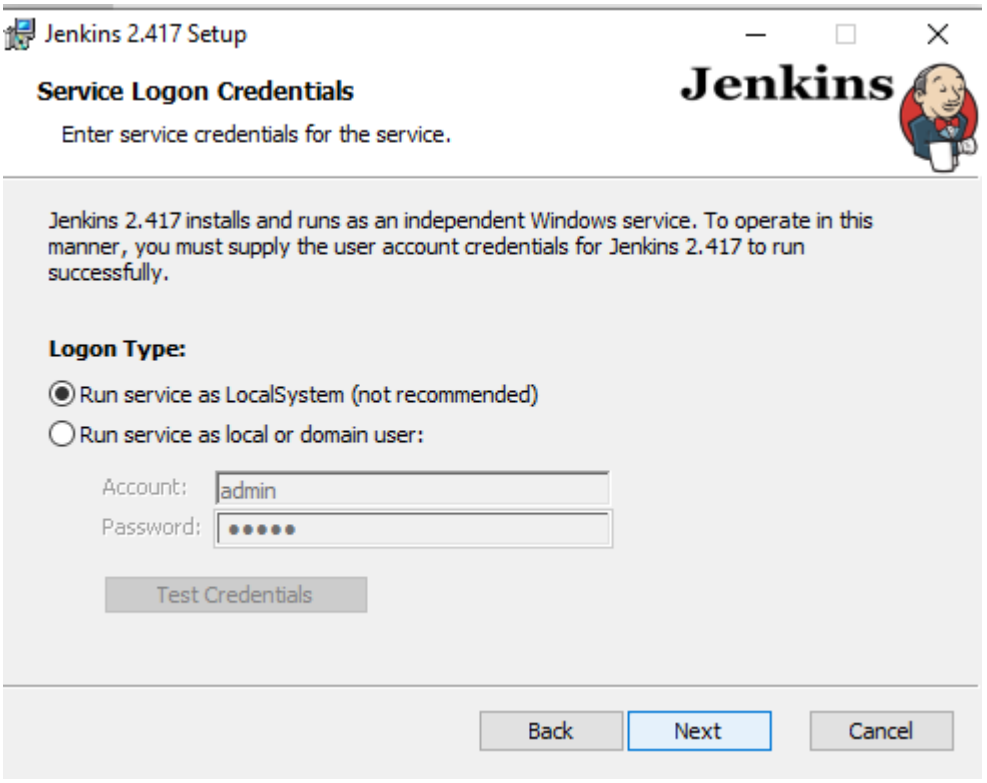
SCREENSHOTS:

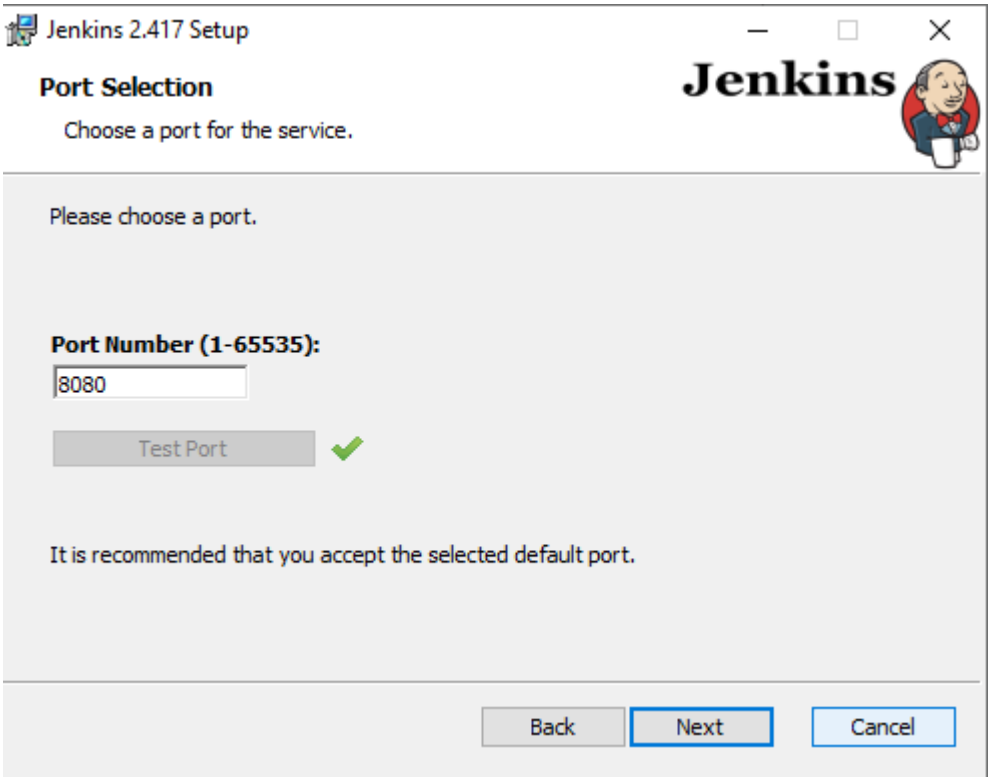


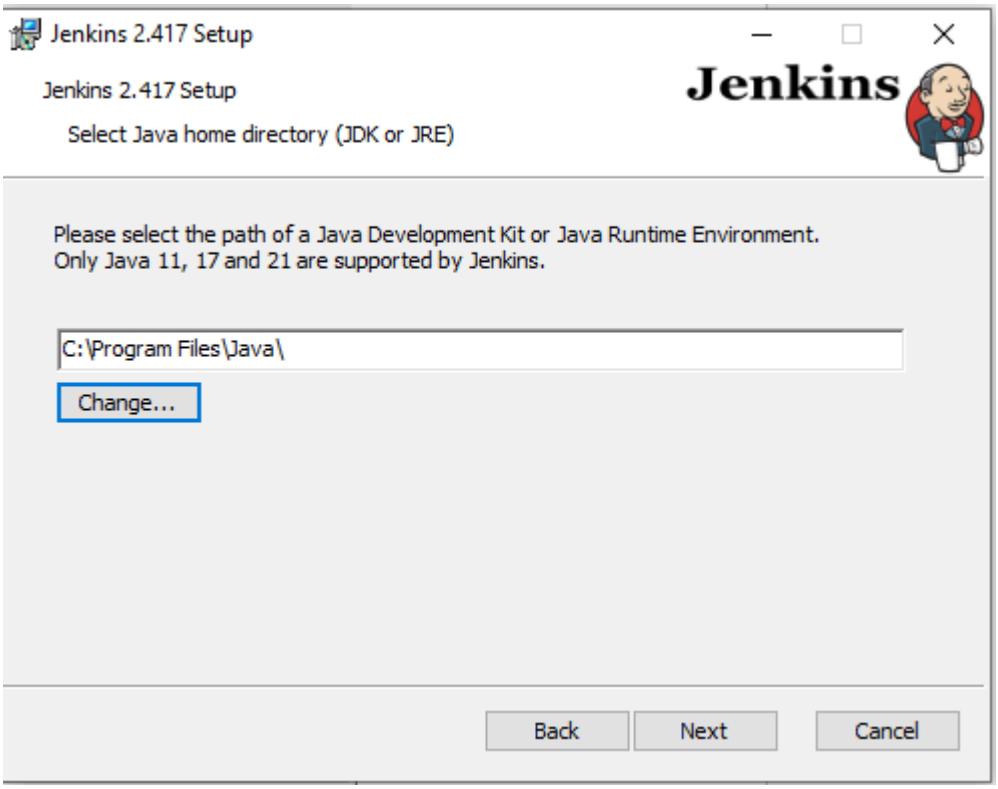


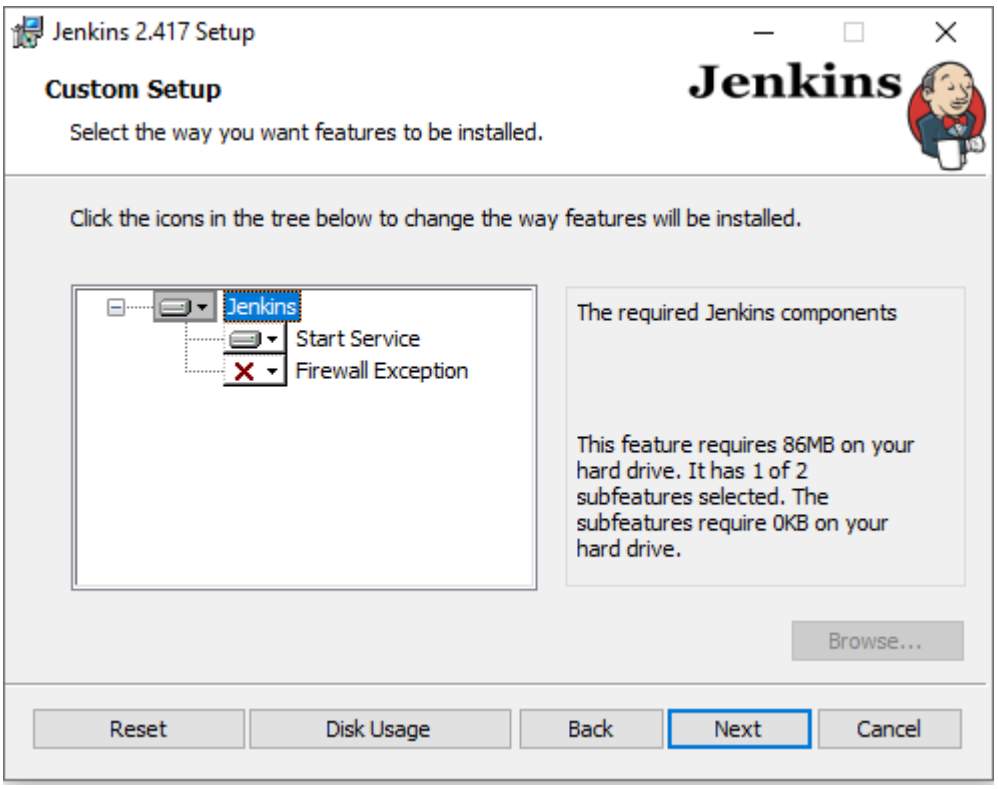

Jenkins 2.417 Setup
Welcome to the Jenkins 2.417 Setup Wizard
The Setup Wizard will install Jenkins 2.417 on your computer.
Click Next to continue or Cancel to exit the Setup Wizard.
Back
Next
Cancel

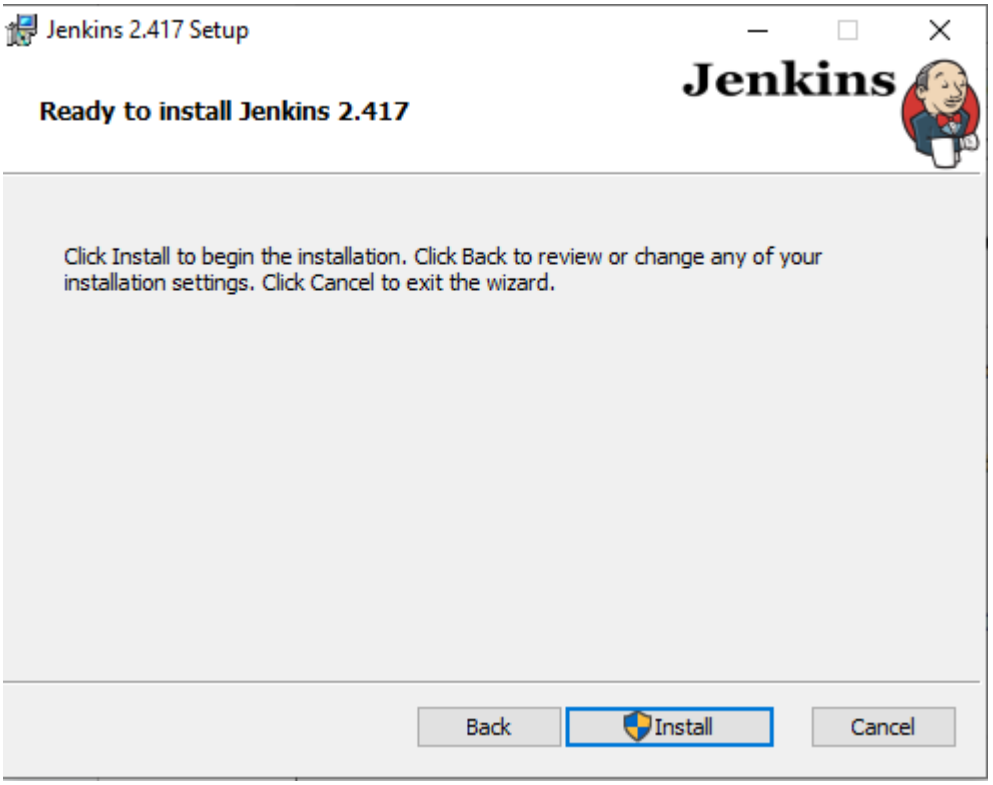

Jenkins 2.417 Setup
Destination Folder
Click Next to install to the default folder or click Change to choose another.
Jenkins
Install Jenkins 2.417 to:
C:\Program Files\Jenkins\
Change...
Back
Next
Cancel

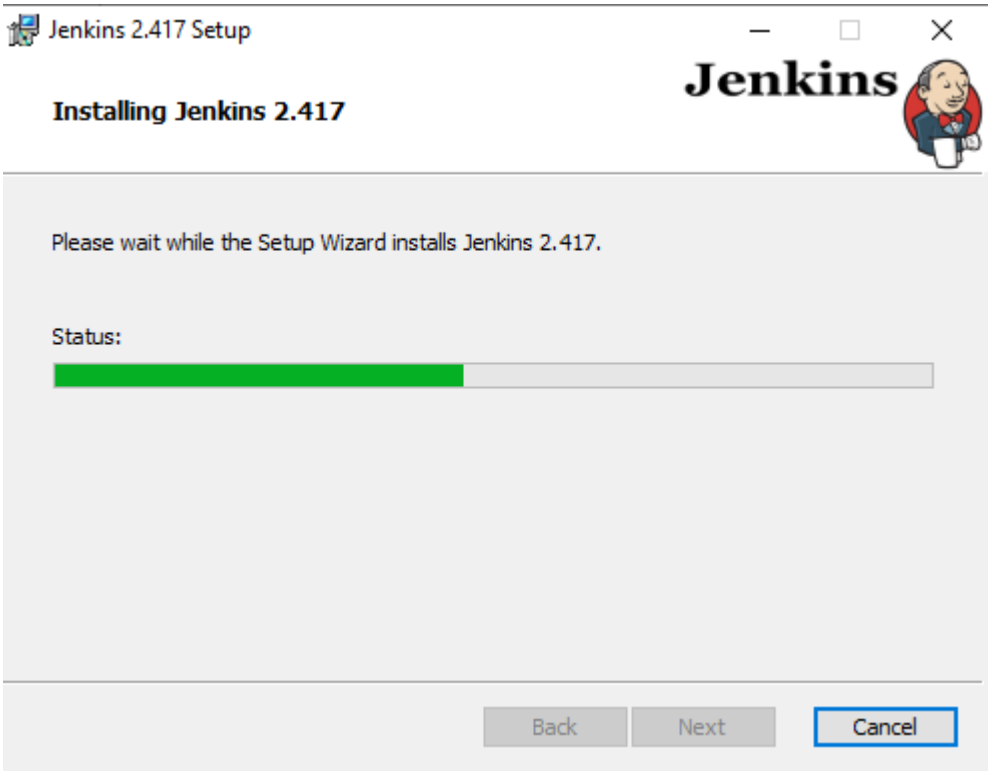

Jenkins 2.417 Setup
Service Logon Credentials
Enter service credentials for the service.
Jenkins
Jenkins 2.417 installs and runs as an independent Windows service. To operate in this manner, you must supply the user account credentials for Jenkins 2.417 to run successfully.
Logon Type:
Run service as LocalSystem (not recommended)
Run service as local or domain user:
Account:
admin
Password:
Test Credentials
Back
Next
Cancel


Jenkins 2.417 Setup
Port Selection
Choose a port for the service.
Jenkins
Please choose a port.
Port Number (1-65535):
8080
Test Port
It is recommended that you accept the selected default port.
Back
Next
Cancel


Jenkins 2.417 Setup
Jenkins 2.417 Setup
Select Java home directory (JDK or JRE)
Jenkins
Please select the path of a Java Development Kit or Java Runtime Environment.
Only Java 11, 17 and 21 are supported by Jenkins.
C:\Program Files\Java\
Change...
Back
Next
Cancel


Jenkins 2.417 Setup
Custom Setup
Select the way you want features to be installed.
Jenkins
Click the icons in the tree below to change the way features will be installed.
Jenkins
Start Service
Firewall Exception
The required Jenkins components
This feature requires 86MB on your hard drive. It has 1 of 2 subfeatures selected. The subfeatures require 0KB on your hard drive.
Browse...
Reset
Disk Usage
Back
Next
Cancel


Jenkins 2.417 Setup
Ready to install Jenkins 2.417
Jenkins
Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.
Back
Install
Cancel


Jenkins 2.417 Setup
Installing Jenkins 2.417
Jenkins
Please wait while the Setup Wizard installs Jenkins 2.417.
Status:
Back
Next
Cancel

Jenkins 2.417 Setup

Completed the Jenkins 2.417 Setup Wizard

Click the Finish button to exit the Setup Wizard.

Back | Finish | Cancel

Getting Started

Unlock Jenkins

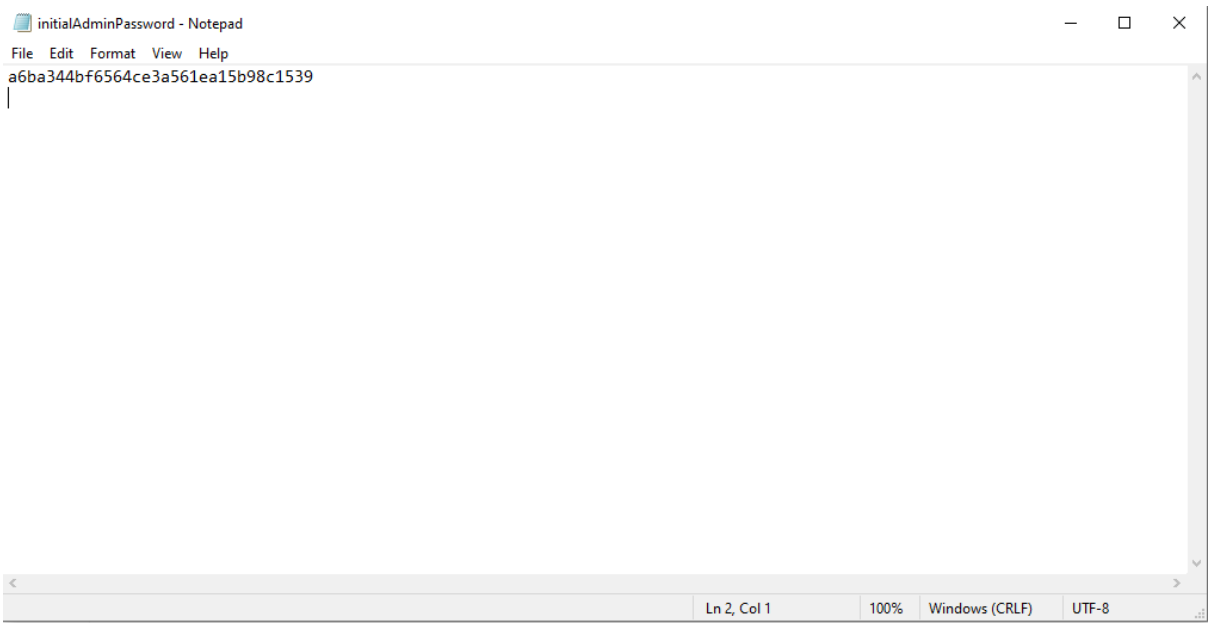
To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:

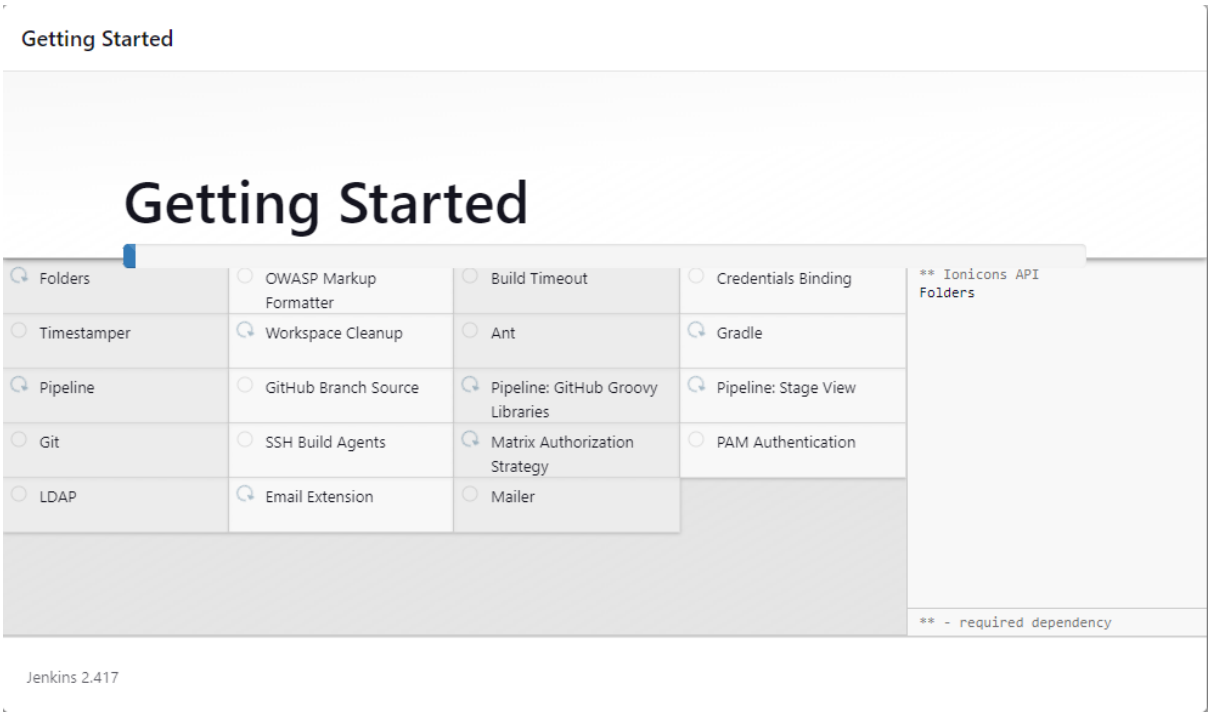
`C:\ProgramData\Jenkins\.jenkins\secrets\initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password

Continue





CONCLUSION:

Through this assignment, I have learnt the concept of Continuous Integration and successfully installed Jenkins on aWindows System.

LAB ASSIGNMENT 5

AIM: To build a Java program using Jenkins.

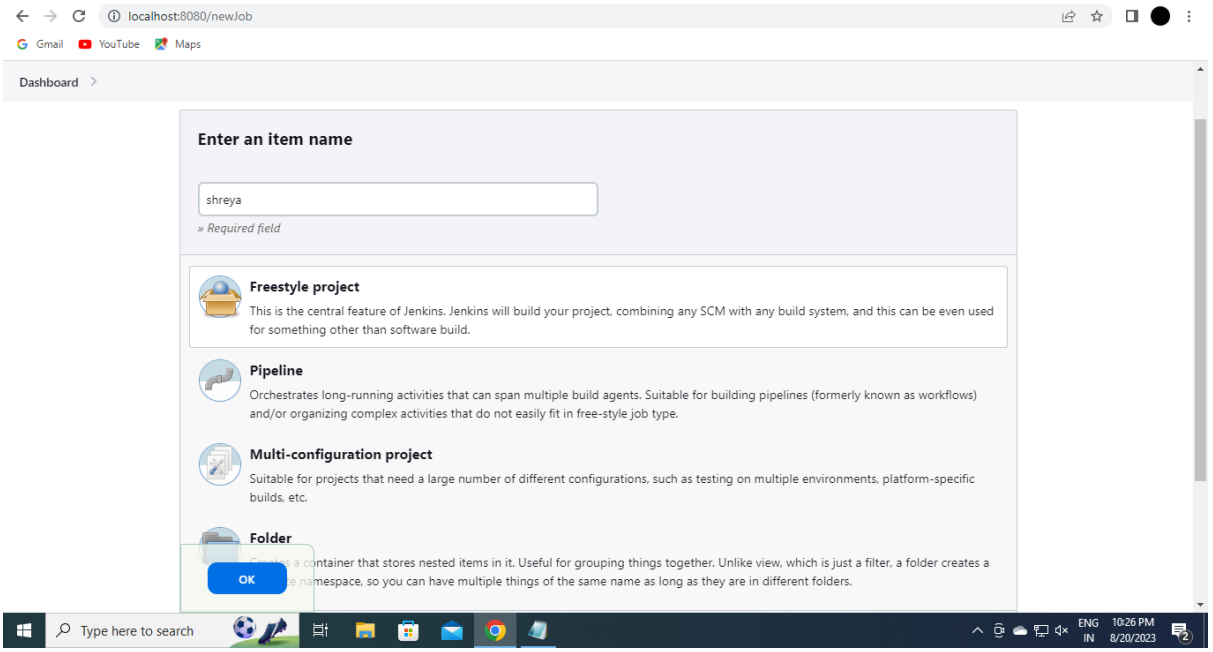
LAB OUTCOME:
LO1, LO3 Mapped.

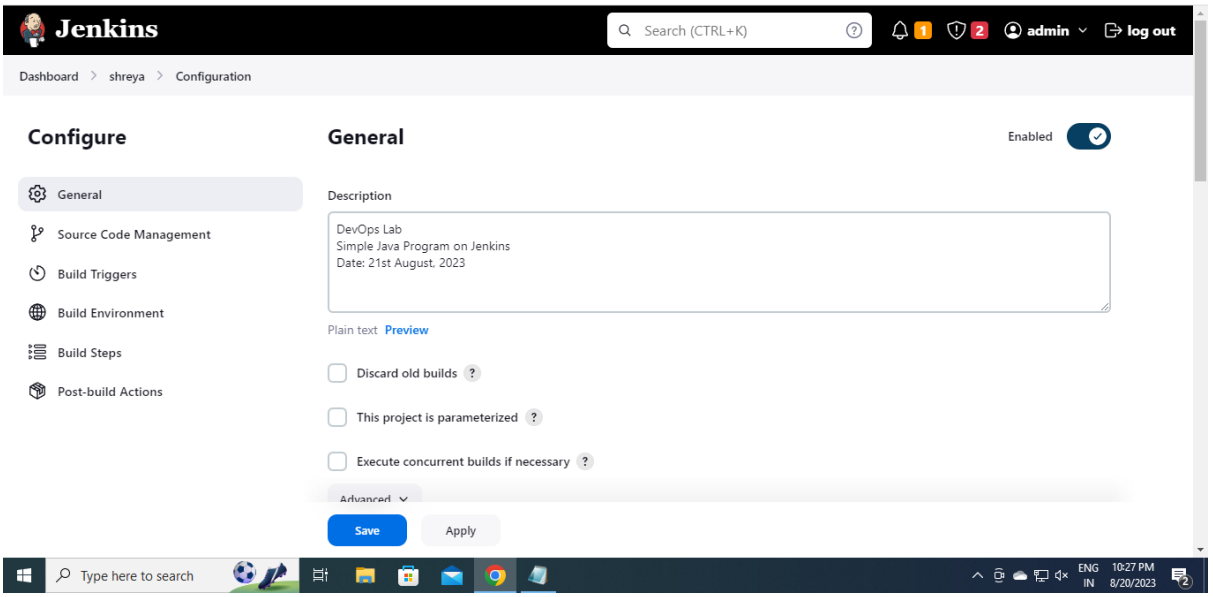
THEORY:
Building programs using Jenkins involves automating the development workflow, particularly for Java applications. Through Jenkins, developers create a structured process that automatically manages tasks such as code compilation, testing, and potential deployment.

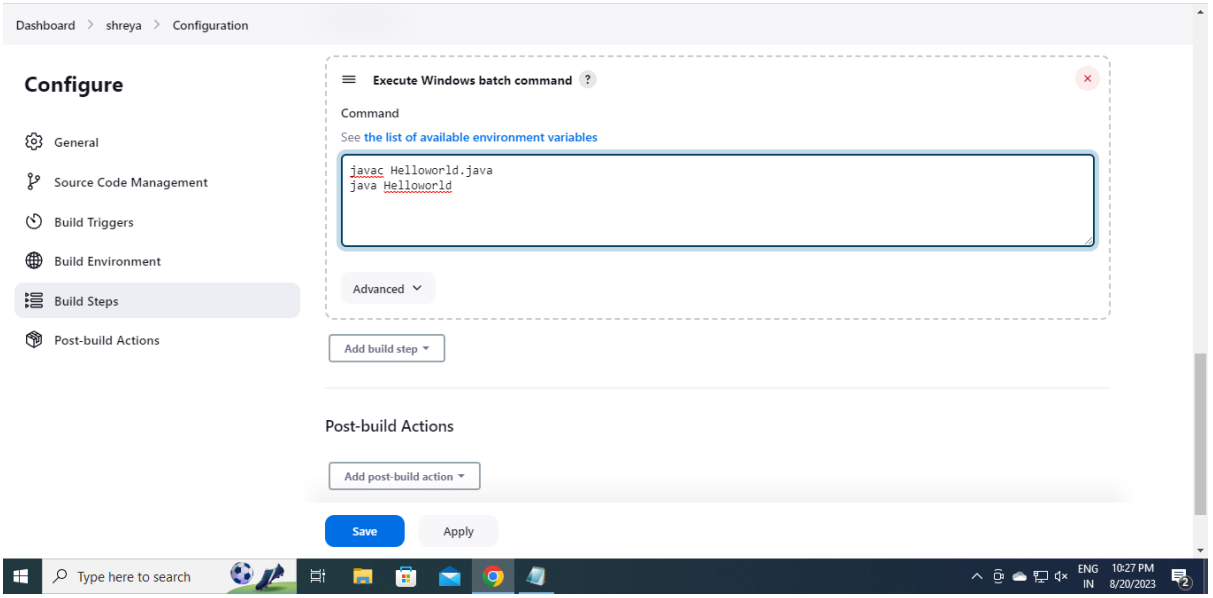
When a Jenkins job is established, it constructs a framework that guides the progression of software development activities. Jenkins can be configured to monitor version control repositories, subsequently triggering a build each time code changes are committed. This preemptive identification of errors during automated builds aids in identifying and addressing issues before they propagate further within the development cycle.

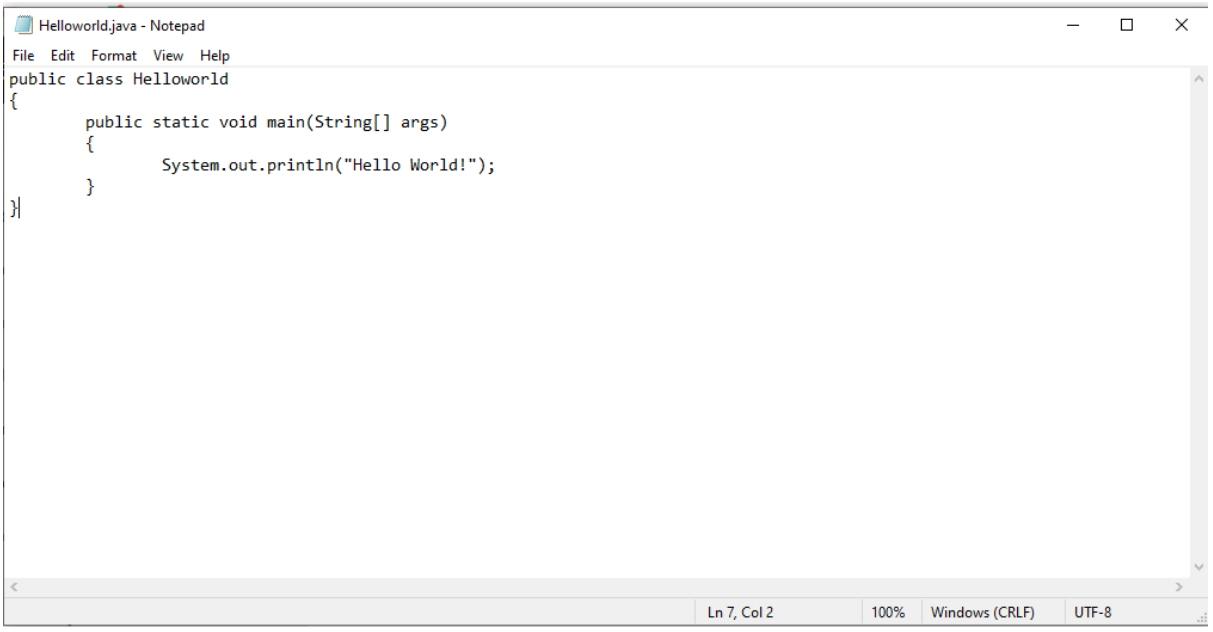
Steps to build Java Programs using Jenkins:

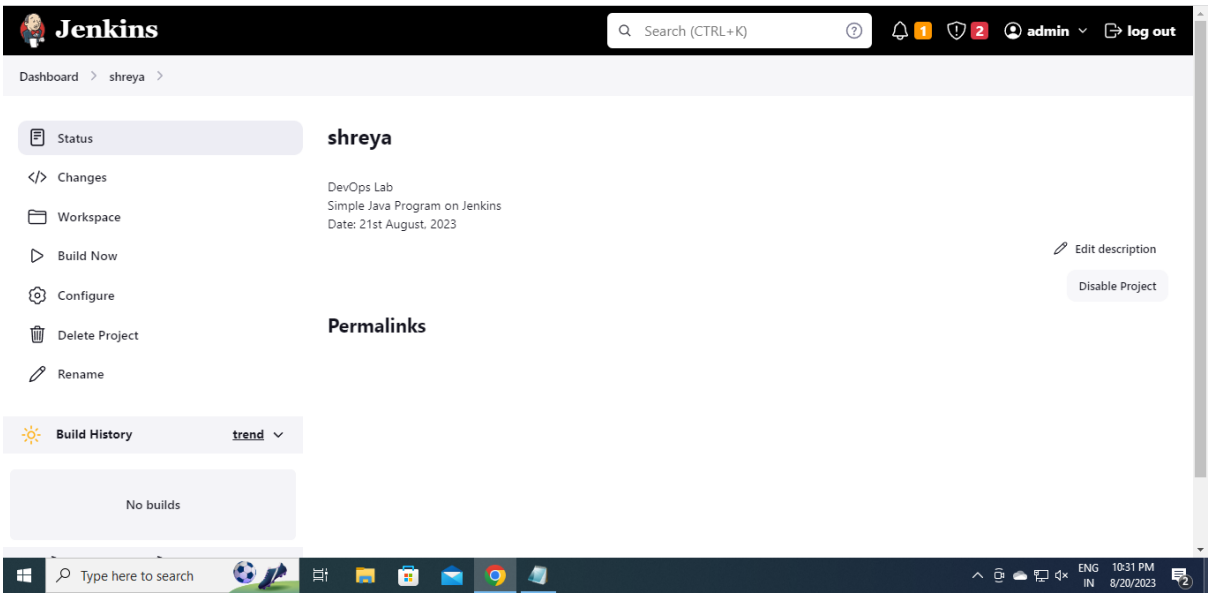
1. Install Jenkins: Install Jenkins on the system.
2. Create Job: Make a new job in Jenkins.
3. Setup Code: Configure version control (e.g., Git) for your job.
4. Build Steps: Add steps to compile your Java program, e.g., use "Execute shell" with javac.
5. Post-Build: Optionally, add post-build actions like archiving artefacts.
6. Save and Build: Save the job and trigger a build.
7. Check Results: Review build results, including console output and test reports.
8. Test Steps: If applicable, add test steps using tools like JUnit.
9. Automate: Set up auto-build triggers for continuous integration.

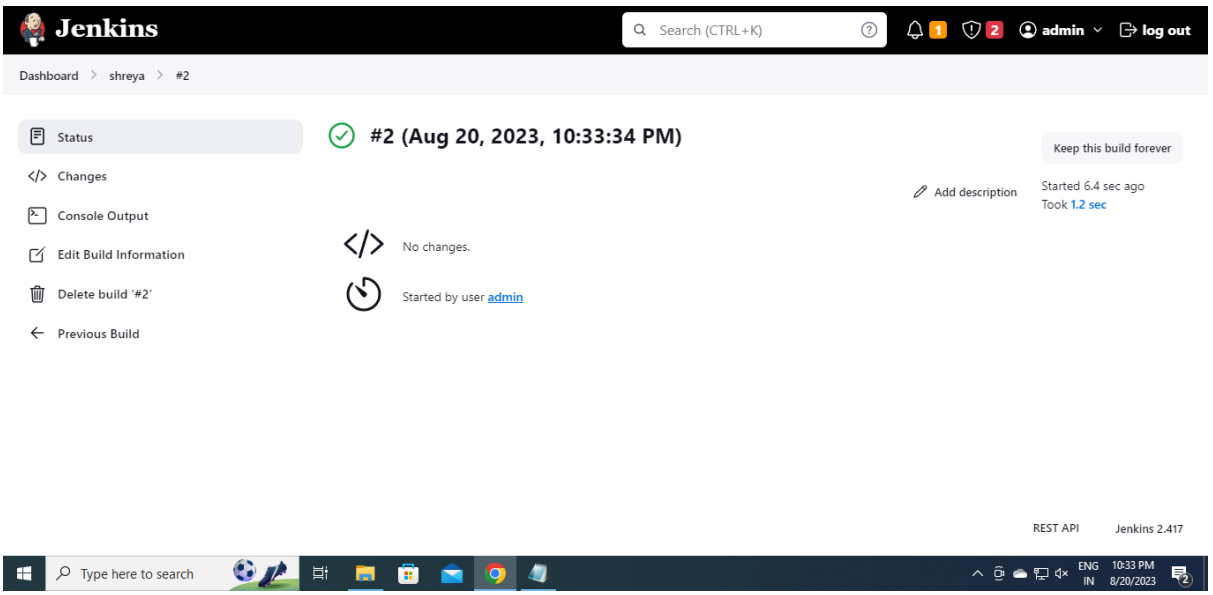

localhost:8080/newJob
Gmail
YouTube
Maps
Dashboard
Enter an item name
shreya
» Required field
Freestyle project
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.
Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
Multi-configuration project
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.
Folder
OK
Type here to search
ENG
IN
10:26 PM
8/20/2023


Jenkins
Search (CTRL+K)
admin
log out
Dashboard
shreya
Configuration
Configure
General
Source Code Management
Build Triggers
Build Environment
Build Steps
Post-build Actions
General
Enabled
Description
DevOps Lab
Simple Java Program on Jenkins
Date: 21st August, 2023
Plain text
Preview
Discard old builds
This project is parameterized
Execute concurrent builds if necessary
Advanced
Save
Apply
Type here to search
ENG
IN
10:27 PM
8/20/2023

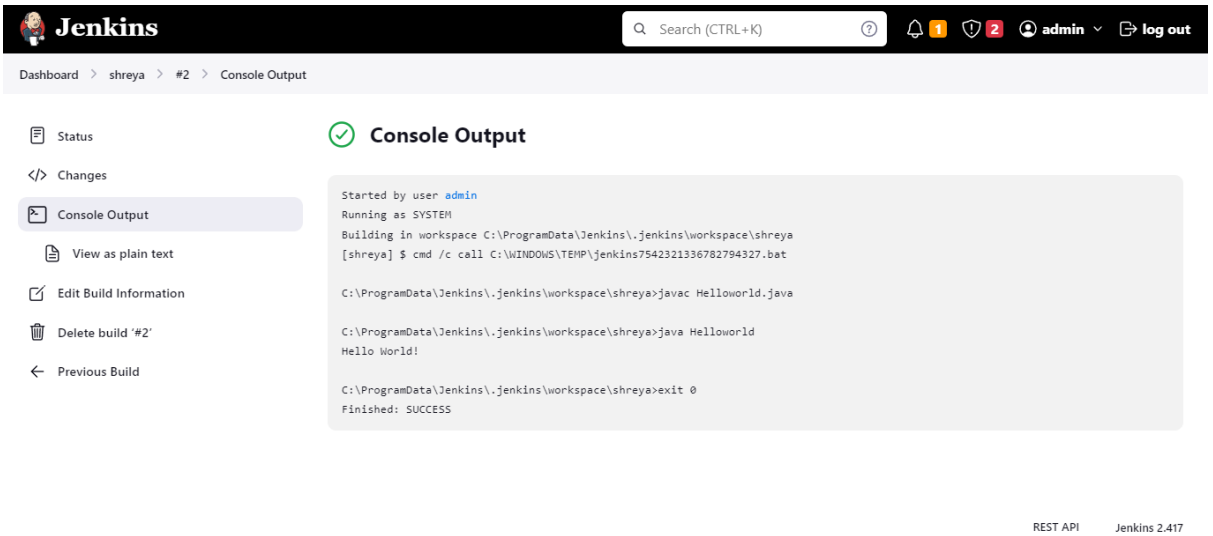

Dashboard > shreya > Configuration
Configure
General
Source Code Management
Build Triggers
Build Environment
Build Steps
Post-build Actions
Execute Windows batch command
Command
See the list of available environment variables
javac Helloworld.java
java Helloworld
Advanced
Add build step
Post-build Actions
Add post-build action
Save
Apply
Type here to search
ENG IN 10:27 PM 8/20/2023


Helloworld.java - Notepad
File Edit Format View Help
public class Helloworld
{
public static void main(String[] args)
{
System.out.println("Hello World!");
}
}
Ln 7, Col 2
100%
Windows (CRLF)
UTF-8

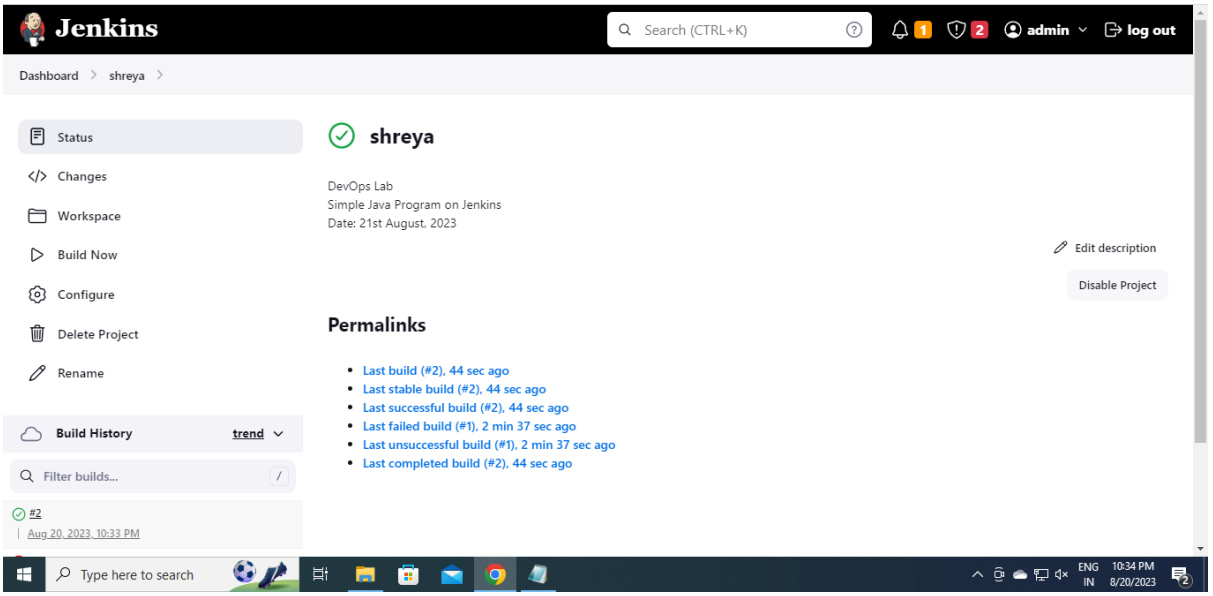

Jenkins
Search (CTRL+K)
admin
log out
Dashboard > shreya >
Status
Changes
Workspace
Build Now
Configure
Delete Project
Rename
Build History
trend
No builds
shreya
DevOps Lab
Simple Java Program on Jenkins
Date: 21st August, 2023
Edit description
Disable Project
Permalinks
Type here to search
ENG IN 10:31 PM 8/20/2023


Jenkins
Search (CTRL+K)
admin
log out
Dashboard
shreya
#2
Status
Changes
Console Output
Edit Build Information
Delete build '#2'
Previous Build
#2 (Aug 20, 2023, 10:33:34 PM)
Keep this build forever
Add description
Started 6.4 sec ago
Took 1.2 sec
No changes.
Started by user admin
REST API
Jenkins 2.417

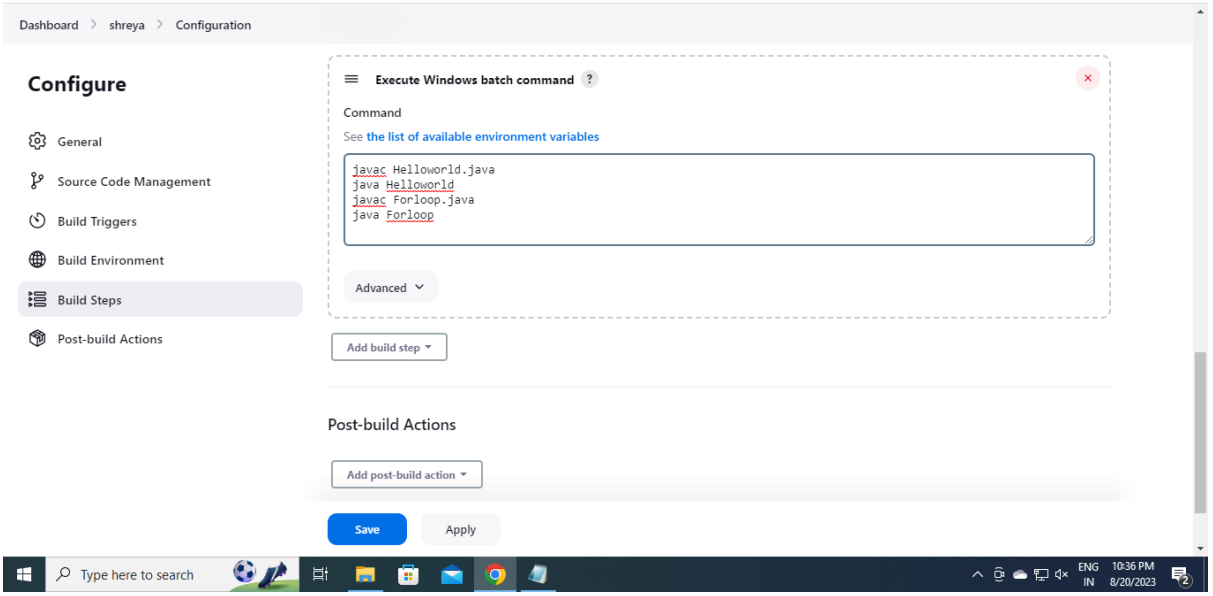
Type here to search
ENG
IN
10:33 PM
8/20/2023

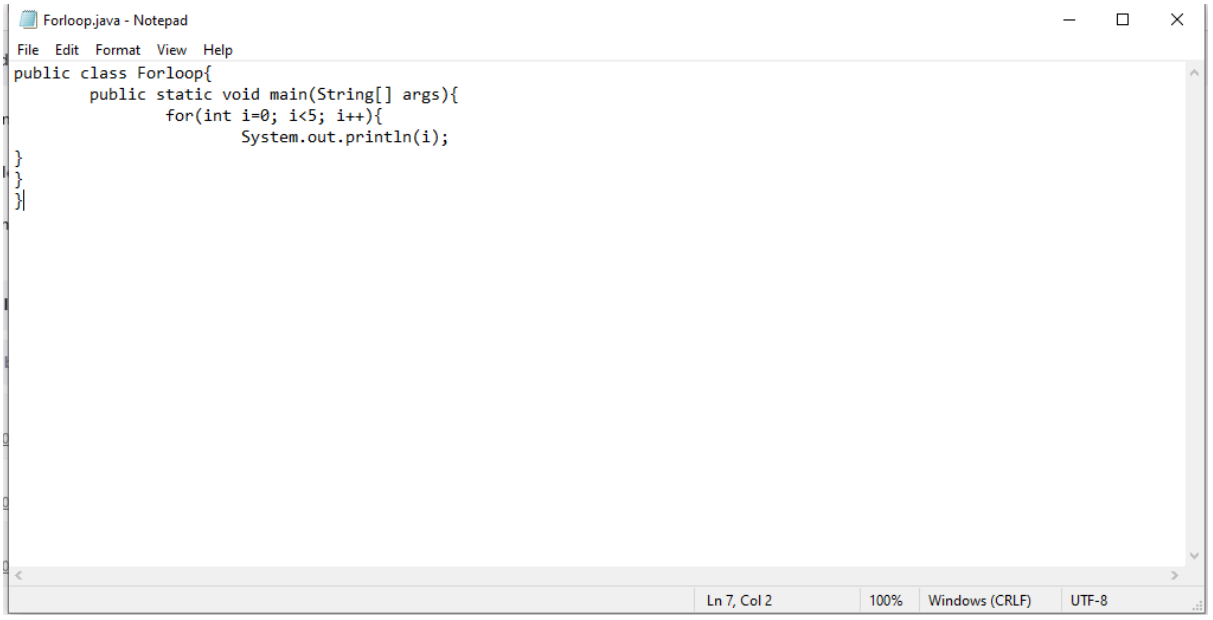

Jenkins
Search (CTRL+K)
admin
log out
Dashboard
shreya
#2
Console Output
Status
Changes
Console Output
View as plain text
Edit Build Information
Delete build '#2'
Previous Build
Console Output
Started by user admin
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\shreya
[shreya] $ cmd /c call C:\WINDOWS\TEMP\jenkins7542321336782794327.bat
C:\ProgramData\Jenkins\.jenkins\workspace\shreya>javac Helloworld.java
C:\ProgramData\Jenkins\.jenkins\workspace\shreya>java Helloworld
Hello World!
C:\ProgramData\Jenkins\.jenkins\workspace\shreya>exit 0
Finished: SUCCESS
REST API
Jenkins 2.417

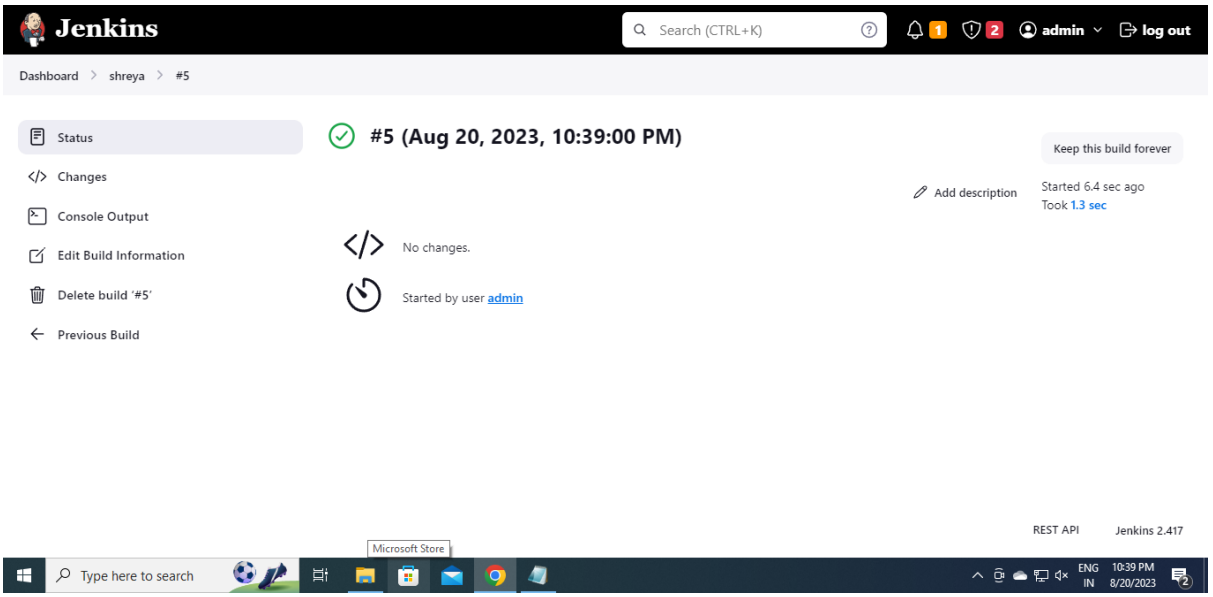

Type here to search
ENG
IN
10:33 PM
8/20/2023

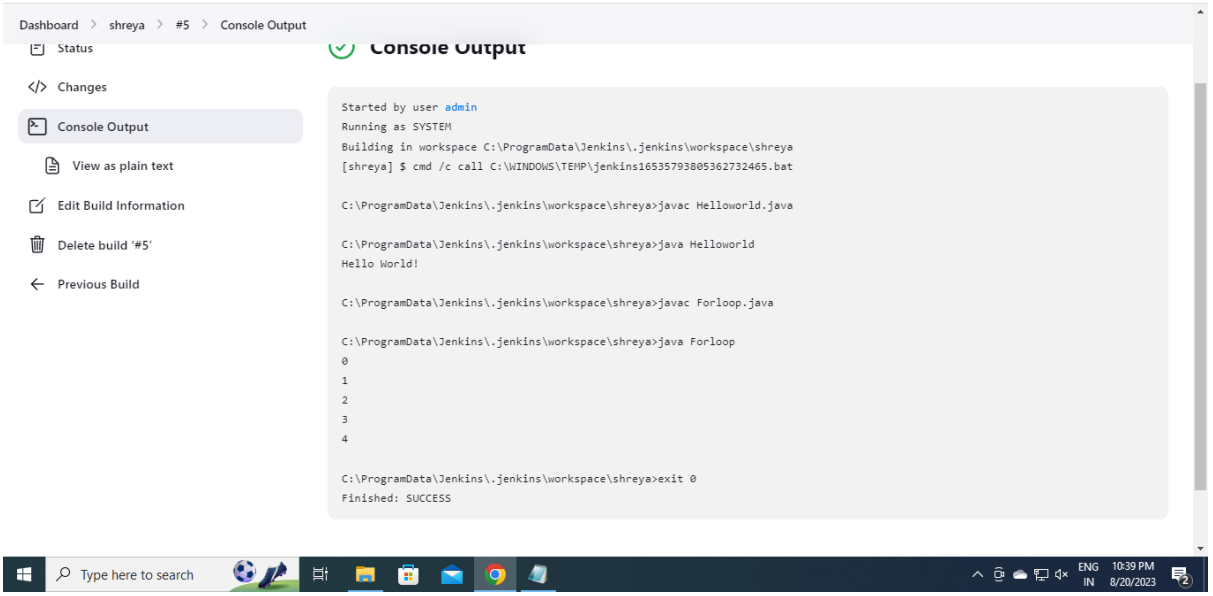

Jenkins
Search (CTRL+K)
admin
log out
Dashboard
shreya
Status
Changes
Workspace
Build Now
Configure
Delete Project
Rename
Build History
trend
Filter builds...
#2
Aug 20, 2023, 10:33 PM
shreya
DevOps Lab
Simple Java Program on Jenkins
Date: 21st August, 2023
Edit description
Disable Project
Permalinks
Last build (#2), 44 sec ago
Last stable build (#2), 44 sec ago
Last successful build (#2), 44 sec ago
Last failed build (#1), 2 min 37 sec ago
Last unsuccessful build (#1), 2 min 37 sec ago
Last completed build (#2), 44 sec ago

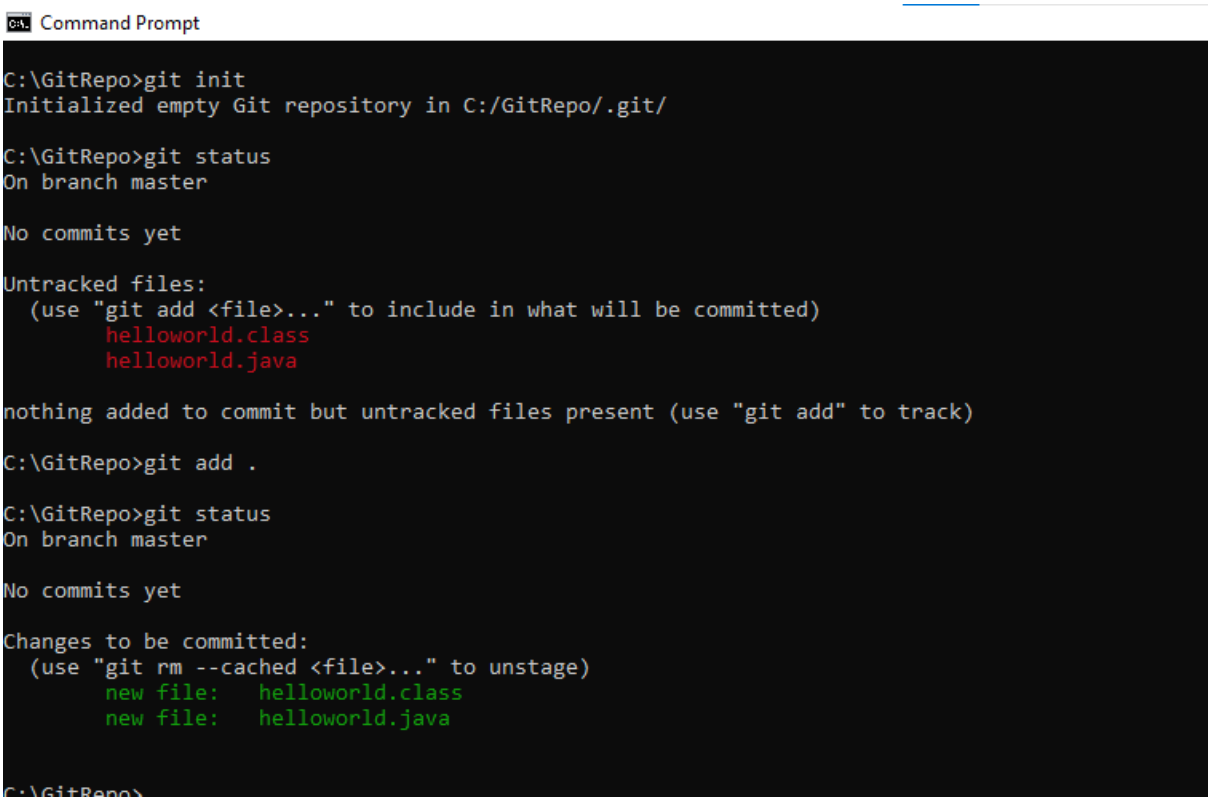
Type here to search
ENG
IN
10:34 PM
8/20/2023


Dashboard > shreya > Configuration
Configure
General
Source Code Management
Build Triggers
Build Environment
Build Steps
Post-build Actions
Execute Windows batch command
Command
See the list of available environment variables
javac Helloworld.java
java Helloworld
javac Forloop.java
java Forloop
Advanced
Add build step
Post-build Actions
Add post-build action
Save
Apply
Type here to search
ENG
IN
10:36 PM
8/20/2023


Forloop.java - Notepad
File Edit Format View Help
public class Forloop{
public static void main(String[] args){
for(int i=0; i<5; i++){
System.out.println(i);
}
}
}
Ln 7, Col 2
100%
Windows (CRLF)
UTF-8


Jenkins
Search (CTRL+K)
admin
log out
Dashboard > shreya > #5
Status
Changes
Console Output
Edit Build Information
Delete build '#5'
Previous Build
#5 (Aug 20, 2023, 10:39:00 PM)
Keep this build forever
Add description
Started 6.4 sec ago
Took 1.3 sec
No changes.
Started by user admin
REST API
Jenkins 2.417
Microsoft Store
Type here to search
ENG
IN
10:39 PM
8/20/2023





CONCLUSION:

Hence, through this assignment, I have successfully built a Hello World and a program with for loops in Java using Jenkins.