

# Project 01

## Project Overview

Your organization is implementing continuous integration (CI) practices to streamline the software development lifecycle. As part of this initiative, you will create a Jenkins declarative pipeline for building a simple Maven project hosted on GitHub. This project aims to automate the build process, ensure code quality, and facilitate continuous delivery (CD).

## Objectives

- Create a Jenkins pipeline script using declarative syntax.
- Clone a Maven project from a specified GitHub repository.
- Execute the build process and run unit tests.
- Archive build artifacts.
- Provide clear feedback on build status through Jenkins' UI and console output.

## Instructions

1. **Setup Jenkins Job**
  - Create a new Jenkins pipeline job.
  - Configure the job to pull the Jenkinsfile from the GitHub repository.
2. **Create Jenkinsfile**
  - Write a declarative pipeline script (**Jenkinsfile**) that includes the following stages:
    - **Clone Repository**: Clone the Maven project from the GitHub repository.
    - **Build**: Execute the Maven build process (**mvn clean install**).
    - **Test**: Run unit tests as part of the Maven build.
    - **Archive Artifacts**: Archive the build artifacts for future use.
3. **Configure Pipeline Parameters**
  - Allow the pipeline to accept parameters such as Maven goals and options for flexibility.
  - Ensure the pipeline can be easily modified for different build configurations.
4. **Run the Pipeline**
  - Trigger the Jenkins pipeline job manually or set up a webhook for automatic triggering on GitHub repository changes.
  - Monitor the build process through Jenkins' UI and console output.
5. **Deliverables**
  - **Jenkinsfile**: A declarative pipeline script with the defined stages and steps.
  - **Jenkins Job Configuration**: Configured Jenkins job that uses the Jenkinsfile from the GitHub repository.
  - **Build Artifacts**: Successfully built and archived artifacts stored in Jenkins.
  - **Build Reports**: Output of the build process, including unit test results, displayed in Jenkins.
  - **Pipeline Visualization**: Visual representation of the pipeline stages and steps in Jenkins, showing the flow and status of each build stage.
  - **Documentation**: Detailed documentation outlining the pipeline setup process, including prerequisites, configuration steps, and instructions for modifying the pipeline.

## Jenkinsfile

```
Jenkinsfile x  Untitled-1  nmx
Jenkinsfile
1 pipeline {
2   agent any
3
4   environment {
5     MAVEN_HOME = tool 'Maven-3.9.0' // Ensure this matches your Maven tool name
6   }
7
8   stages {
9     stage('Checkout') {
10      steps {
11        // Checkout code from GitHub repository
12        git url: 'https://github.com/02Poonam/private-repo.git', branch: 'main', credentialsId: 'poonam02'
13      }
14    }
15    You, 18 hours ago • Added Jenkinsfile
16    stage('Build') {
17      steps {
18        // Build the project using Maven
19        script {
20          withEnv(["PATH+MAVEN=${MAVEN_HOME}/bin"]) {
21            sh 'mvn clean install'
22          }
23        }
24      }
25    }
26
27    stage('Test'){
28      steps {
29        // Test the project using Maven
30        script {
31          withEnv(["PATH+MAVEN=${MAVEN_HOME}/bin"]) {
32            sh 'mvn test'
33          }
34        }
35      }
36    }
37
38
39    stage('Archive Artifacts') {
40      steps {
41        // Archive the built artifacts
42        archiveArtifacts artifacts: '**/target/*.jar', allowEmptyArchive: true
43      }
44    }
45  }
46
47  post {
48    always {
49      echo 'Pipeline finished.'
50    }
51    success {
52      echo 'Pipeline succeeded.'
53    }
54    failure {
55      echo 'Pipeline failed.'
56    }
57  }
58 }
```

## Jenkins Job Configuration

The screenshot shows the Jenkins Pipeline configuration page for a job named 'new\_pipeline'. The left sidebar has three tabs: 'General', 'Advanced Project Options', and 'Pipeline', with 'Pipeline' being the active tab. The main content area is titled 'Pipeline' and contains a 'Definition' dropdown set to 'Pipeline script from SCM'. Below this is the 'SCM' section, which has a dropdown set to 'Git'. Underneath is a 'Repositories' section containing a 'Repository URL' field with the value 'https://github.com/02Poonam/private-repo.git' and a 'Credentials' dropdown set to 'poonam/\*\*\*\*\*'. There is a '+ Add' button below the credentials. At the bottom of the configuration area are 'Save' and 'Apply' buttons.

new\_pipeline Config [Je x +]

localhost:8080/job/new\_pipeline/configure

Dashboard > new\_pipeline > Configuration

### Configure

- General
- Advanced Project Options
- Pipeline**

### Pipeline

Definition

Pipeline script from SCM

SCM ?

Git

Repositories ?

Repository URL ?

https://github.com/02Poonam/private-repo.git

Credentials ?

poonam/\*\*\*\*\*

+ Add

Save Apply

This screenshot shows the same Jenkins Pipeline configuration page, but with different settings. The 'Repository browser' dropdown is now set to '(Auto)'. The 'Script Path' field is set to 'Jenkinsfile'. The 'Lightweight checkout' checkbox is checked. The 'Add Branch' button is visible above the 'Repository browser' dropdown. The 'Additional Behaviours' section has an 'Add' button. The 'Pipeline Syntax' link is at the bottom of the configuration area. The 'Save' and 'Apply' buttons remain at the bottom.

new\_pipeline Config [Je x +]

localhost:8080/job/new\_pipeline/configure

Dashboard > new\_pipeline > Configuration

### Configure

- General
- Advanced Project Options
- Pipeline**

### Pipeline

\*/main

Add Branch

Repository browser ?

(Auto)

Additional Behaviours

Add

Script Path ?

Jenkinsfile

☒ Lightweight checkout ?

[Pipeline Syntax](#)

Save Apply

# Built Artifacts

localhost:8080/job/new\_pipeline/19/pipeline-console/?selected-node=47

Jenkins

Search (CTRL+K)

2

Poonam Mahesh Bhavsar

log out

Dashboard > new\_pipeline > #19 > Pipeline Console

✓ < Build #19

Rebuild

Overview

Configure

Success 1 hr 17 min ago in 1 min 21 sec

Checkout SCM

Checkout

Build

Test

Archive Artifacts

Post Actions

Stage 'Archive Artifacts'

Started 1 hr 16 min ago

Queued 0 ms

Took 0.4 sec

Success

View as plain text

✓ Archive the artifacts

0.24 sec

Jenkins 2.452.3

localhost:8080/job/new\_pipeline/19/pipeline-graph/

Jenkins

Search (CTRL+K)

2

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log out

Dashboard > new\_pipeline > #19 > Pipeline Overview

✓ < Build #19

Rebuild

Console

Configure

Pipeline

Start Checkout SCM Checkout Build Test Archive Artifacts Post Actions E

Details

Manually run by Poonam Mahesh Bhavsar

Started 5 min 23 sec ago

Queued 17 ms


Took 1 min 21 sec


Jenkins 2.452.3

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localhost:8080/job/new\_pipeline/19/console


☆ 👤 ⋮


 **Jenkins**


 2 👤 Poonam Mahesh Bhavsar log out


Dashboard > new\_pipeline > #19


 Status


 Changes


 **Console Output**


 View as plain text


 Edit Build Information


 Delete build '#19'


 Timings


 Git Build Data

 Pipeline Overview

 Pipeline Console

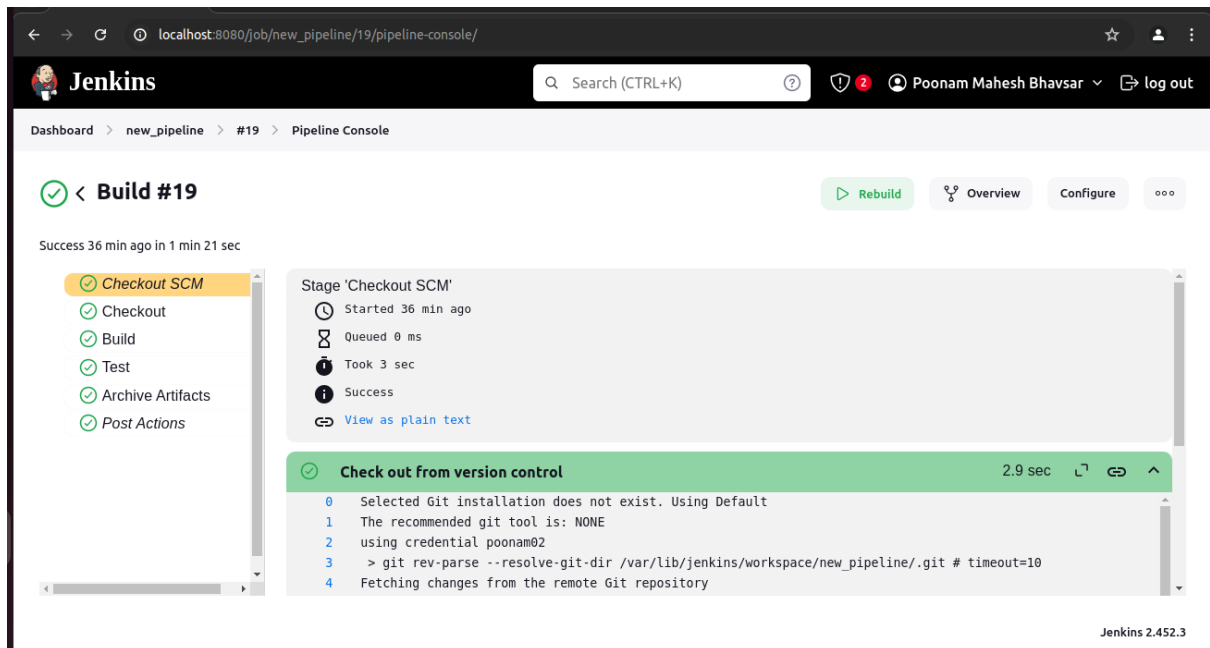
 Restart from Stage

 Replay

 **Console Output**

Started by user [Poonam Mahesh Bhavsar](#)  
Obtained Jenkinsfile from git <https://github.com/02Poonam/private-repo.git>  
[Pipeline] Start of Pipeline  
[Pipeline] node ([hide](#))  
Running on [Jenkins](#) in /var/lib/jenkins/workspace/new\_pipeline  
[Pipeline] {  
[Pipeline] stage  
[Pipeline] { (Declarative: Checkout SCM)  
[Pipeline] checkout  
Selected Git installation does not exist. Using Default  
The recommended git tool is: NONE  
using credential poonam02  
  > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/new\_pipeline/.git # timeout=10  
  Fetching changes from the remote Git repository  
  > git config remote.origin.url <https://github.com/02Poonam/private-repo.git> # timeout=10  
  Fetching upstream changes from <https://github.com/02Poonam/private-repo.git>  
  > git --version # timeout=10  
  > git --version # 'git version 2.34.1'  
  using GIT\_ASKPASS to set credentials  
  > git fetch --tags --force --progress -- <https://github.com/02Poonam/private-repo.git>

## Build Reports



The screenshot shows the Jenkins Pipeline Console for Build #19. The left sidebar lists the pipeline stages: Checkout SCM, Checkout, Build, Test, Archive Artifacts, and Post Actions. The main panel displays the 'Checkout SCM' stage, which started 36 minutes ago and took 3 seconds to complete successfully. Below the stage summary, a log entry titled 'Check out from version control' shows the execution of a Git checkout command, which took 2.9 seconds. The log text indicates that the selected Git installation does not exist, so the default is used, and the recommended git tool is NONE. The command executed is 'git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/new\_pipeline/.git # timeout=10', followed by 'Fetching changes from the remote Git repository'. The Jenkins version 2.452.3 is noted at the bottom right.

localhost:8080/job/new\_pipeline/19/pipeline-console/

Jenkins

Search (CTRL+K)

Poonam Mahesh Bhavsar log out

Dashboard > new\_pipeline > #19 > Pipeline Console

Build #19

Success 36 min ago in 1 min 21 sec

Rebuild Overview Configure

Checkout SCM

Checkout

Build

Test

Archive Artifacts

Post Actions

Stage 'Checkout SCM'

Started 36 min ago

Queued 0 ms

Took 3 sec

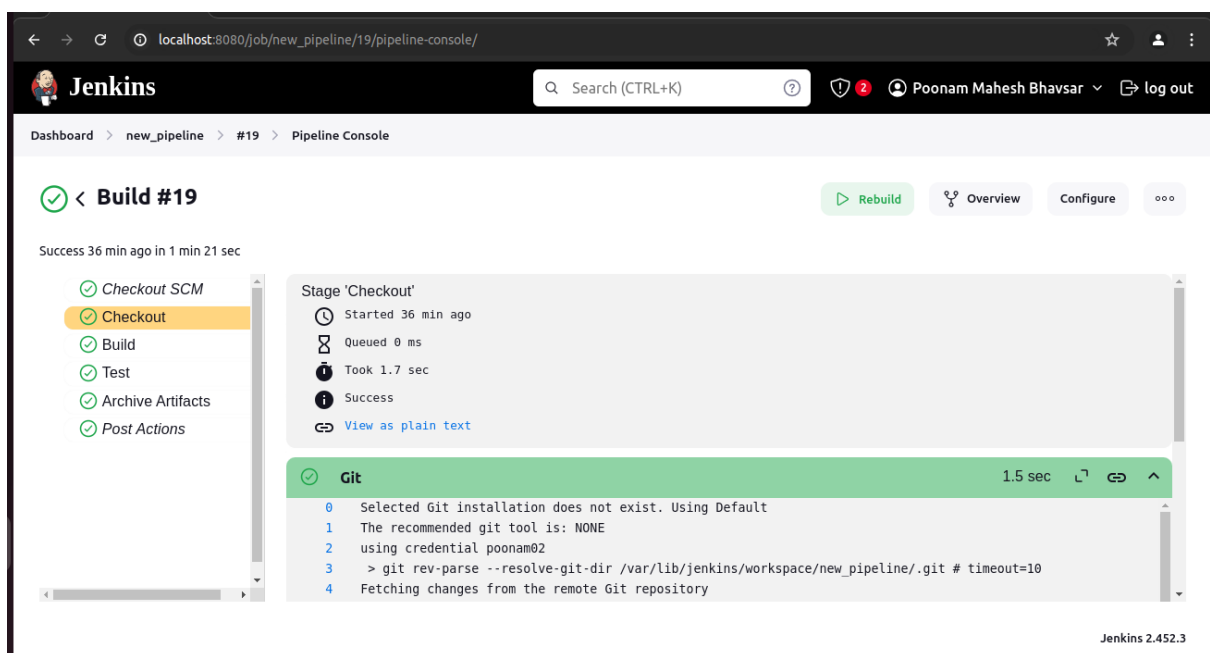
Success

View as plain text

Check out from version control 2.9 sec

```
0 Selected Git installation does not exist. Using Default
1 The recommended git tool is: NONE
2 using credential poonam02
3 > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/new_pipeline/.git # timeout=10
4 Fetching changes from the remote Git repository
```

Jenkins 2.452.3



The screenshot shows the Jenkins Pipeline Console for Build #19, focusing on the 'Checkout' stage. The left sidebar lists the pipeline stages: Checkout SCM, Checkout, Build, Test, Archive Artifacts, and Post Actions. The main panel displays the 'Checkout' stage, which started 36 minutes ago and took 1.7 seconds to complete successfully. Below the stage summary, a log entry titled 'Git' shows the execution of a Git checkout command, which took 1.5 seconds. The log text indicates that the selected Git installation does not exist, so the default is used, and the recommended git tool is NONE. The command executed is 'git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/new\_pipeline/.git # timeout=10', followed by 'Fetching changes from the remote Git repository'. The Jenkins version 2.452.3 is noted at the bottom right.

localhost:8080/job/new\_pipeline/19/pipeline-console/

Jenkins

Search (CTRL+K)

Poonam Mahesh Bhavsar log out

Dashboard > new\_pipeline > #19 > Pipeline Console

Build #19

Success 36 min ago in 1 min 21 sec

Rebuild Overview Configure

Checkout SCM

Checkout

Build

Test

Archive Artifacts

Post Actions

Stage 'Checkout'

Started 36 min ago

Queued 0 ms

Took 1.7 sec


Success

View as plain text



Git 1.5 sec

```
0 Selected Git installation does not exist. Using Default
1 The recommended git tool is: NONE
2 using credential poonam02
3 > git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/new_pipeline/.git # timeout=10
4 Fetching changes from the remote Git repository
```

Jenkins 2.452.3

 Jenkins

Search (CTRL+K)

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log out

Dashboard > new\_pipeline > #19 > Pipeline Console

✓ < Build #19

Rebuild Overview Configure

Success 1 hr 17 min ago in 1 min 21 sec

✓ Checkout SCM

✓ Checkout

✓ Build


✓ Test

✓ Archive Artifacts



✓ Post Actions

Shell Script51 sec

Progress (1): 63/136 kB  
Progress (1): 81/136 kB  
Progress (1): 98/136 kB  
Progress (1): 114/136 kB  
Progress (1): 131/136 kB  
Progress (1): 136 kB  
  
Downloaded from central: <https://repo.maven.apache.org/maven2/org/eclipse/aether/aether-api/1.0.0.v20140518/aether-api-1.0.0.v20140518.jar> (136 kB at 129 kB/s)  
[INFO] Installing /var/lib/jenkins/workspace/new\_pipeline/pom.xml to /var/lib/jenkins/.m2/repository/com/edurekademo/tutorial/addressbook/2.0/addressbook-2.0.pom  
[INFO] Installing /var/lib/jenkins/workspace/new\_pipeline/target/addressbook.war to /var/lib/jenkins/.m2/repository/com/edurekademo/tutorial/addressbook/2.0/addressbook-2.0.war  
[INFO] -----  
[INFO] BUILD SUCCESS

 Jenkins

Search (CTRL+K)

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log out

Dashboard > new\_pipeline > #19 > Pipeline Console

✓ < Build #19

Rebuild Overview Configure

Success 1 hr 17 min ago in 1 min 21 sec

✓ Checkout SCM

✓ Checkout

✓ Build


✓ Test

✓ Archive Artifacts



✓ Post Actions

64 Cause:at com.edurekademo.utilities.ExceptionThrower.doCheck(ExceptionThrower.java:43)  
65 Cause:at com.edurekademo.utilities.TestLogger.testGetErrorMessage5(TestLogger.java:75)  
66 Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.085 sec - in com.edurekademo.utilities.TestLogger  
67 Running com.edurekademo.utilities.TestGenericComparator  
68 Tests run: 14, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.056 sec - in com.edurekademo.utilities.TestGenericComparator  
69  
70 Results :  
71  
72 Tests run: 23, Failures: 0, Errors: 0, Skipped: 0  
73  
74 [INFO] -----  
75 [INFO] BUILD SUCCESS  
76 [INFO] -----

localhost:8080/job/new\_pipeline/19/pipeline-console/?selected-node=47

 Jenkins

Search (CTRL+K)

  Poonam Mahesh Bhavsar

log out

Dashboard > new\_pipeline > #19 > Pipeline Console

✓ < Build #19

Rebuild Overview Configure

Success 1 hr 23 min ago in 1 min 21 sec

✓ Checkout SCM

✓ Checkout





✓ Build

✓ Test

✓ Archive Artifacts

✓ Post Actions

Stage 'Archive Artifacts'

 Started 1 hr 21 min ago  
 Queued 0 ms  
 Took 0.4 sec  
 Success  
[View as plain text](#)

✓ Archive the artifacts0.24 sec

← → ↻ 📄 localhost:8080/job/new\_pipeline/19/pipeline-console/selected-node=47 ☆ 👤 ⋮

**Jenkins** 🔍 Search (CTRL+K) ? 🛡️ 2 👤 Poonam Mahesh Bhavsar ▾ 🚪 log out

Dashboard > new\_pipeline > #19 > Pipeline Console

✓ < **Build #19** ▶ Rebuild 🧑 Overview Configure ⋮

Success 1 hr 23 min ago in 1 min 21 sec

✓ Checkout SCM

✓ Checkout

✓ Build

✓ Test

✓ Archive Artifacts

✓ Post Actions

Stage 'Post Actions'

🕒 Started 1 hr 21 min ago

⌛ Queued 0 ms

⌚ Took 0.2 sec

🟢 Success

[View as plain text](#)

✓ **Pipeline finished.**

Print Message

90 ms ↻ 🔗 ▼

✓ **Pipeline succeeded.**

Print Message

52 ms ↻ 🔗 ▲

0 Pipeline succeeded.

Jenkins 2.452.3

## Pipeline Visualization

