



UNIVERSITY WITH A PURPOSE

**UNIVERSITY OF PETROLEUM & ENERGY STUDIES**

**Dehradun**

**CONTINUOUS INTEGRATION  
AND  
CONTINUOUS DELIVERY**

**Assignment-2**

**Name: Rakshit Kapoor**

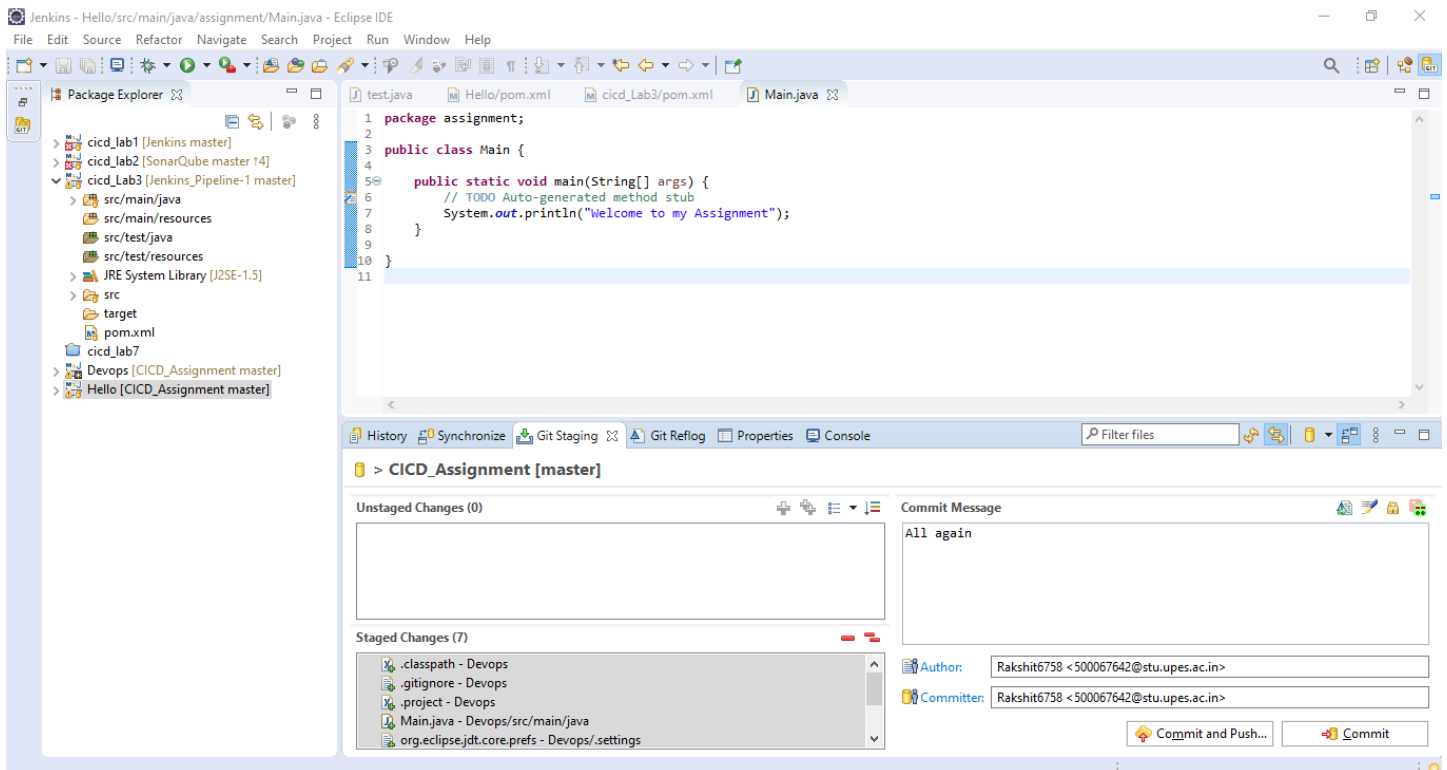
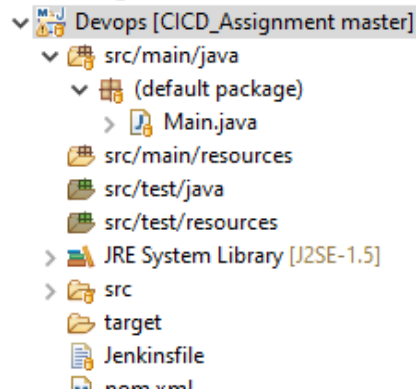
**Course: B. TECH CSE DevOps (2018-22)**

**Roll no.: R171218082**

**Sapid: 500067642**

# Assignment

## Step 1: Create a maven project using Eclipse



## Step 2: Push the project to GitHub using eclipse.

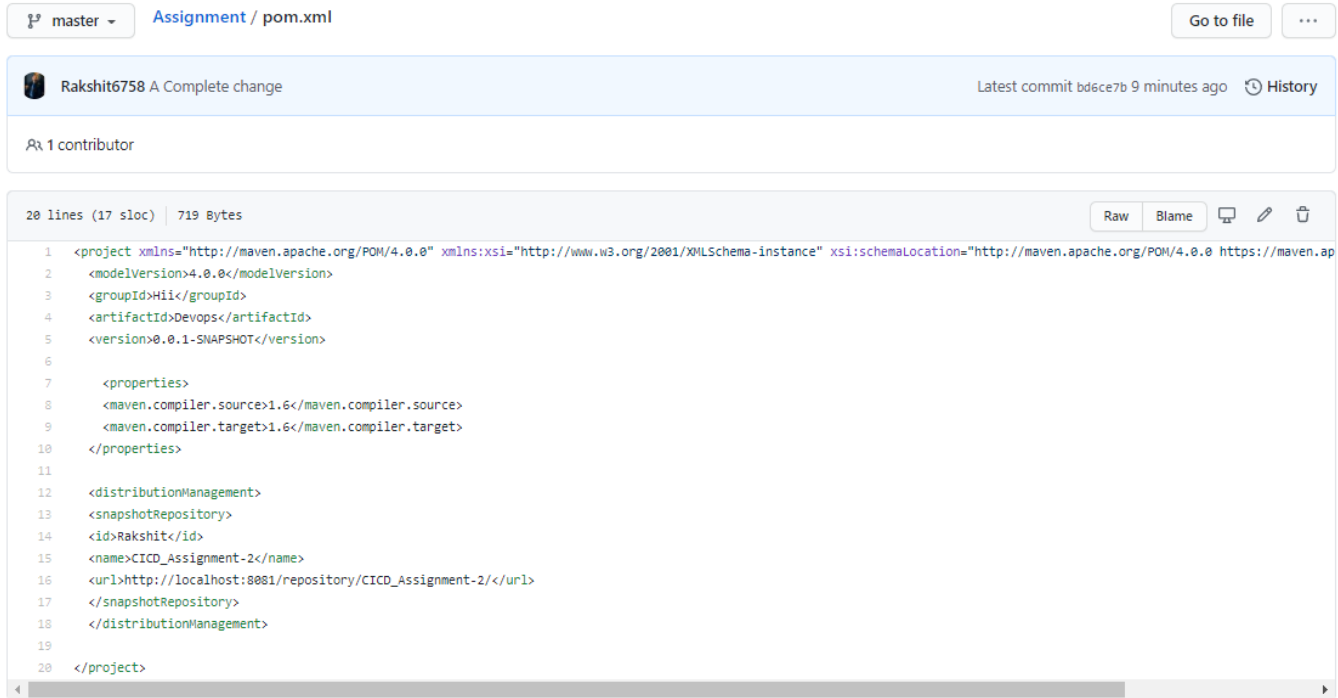
The screenshot shows the GitHub interface for a repository named 'Rakshit6758 / Assignment'. The top navigation bar includes links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. Below the repository name, there are buttons for 'Unwatch', 'Star', and 'Fork'. The main content area shows a list of files and folders in the repository, including '.settings', 'src/main/java', '.classpath', '.gitignore', '.project', 'Jenkinsfile', and 'pom.xml'. The 'Jenkinsfile' is highlighted as the latest change, committed 8 minutes ago.

File/Folder	Change	Time
..		
.settings	All again	11 minutes ago
src/main/java	All again	11 minutes ago
.classpath	All again	11 minutes ago
.gitignore	All again	11 minutes ago
.project	All again	11 minutes ago
Jenkinsfile	A Complete change	8 minutes ago
pom.xml	All again	11 minutes ago

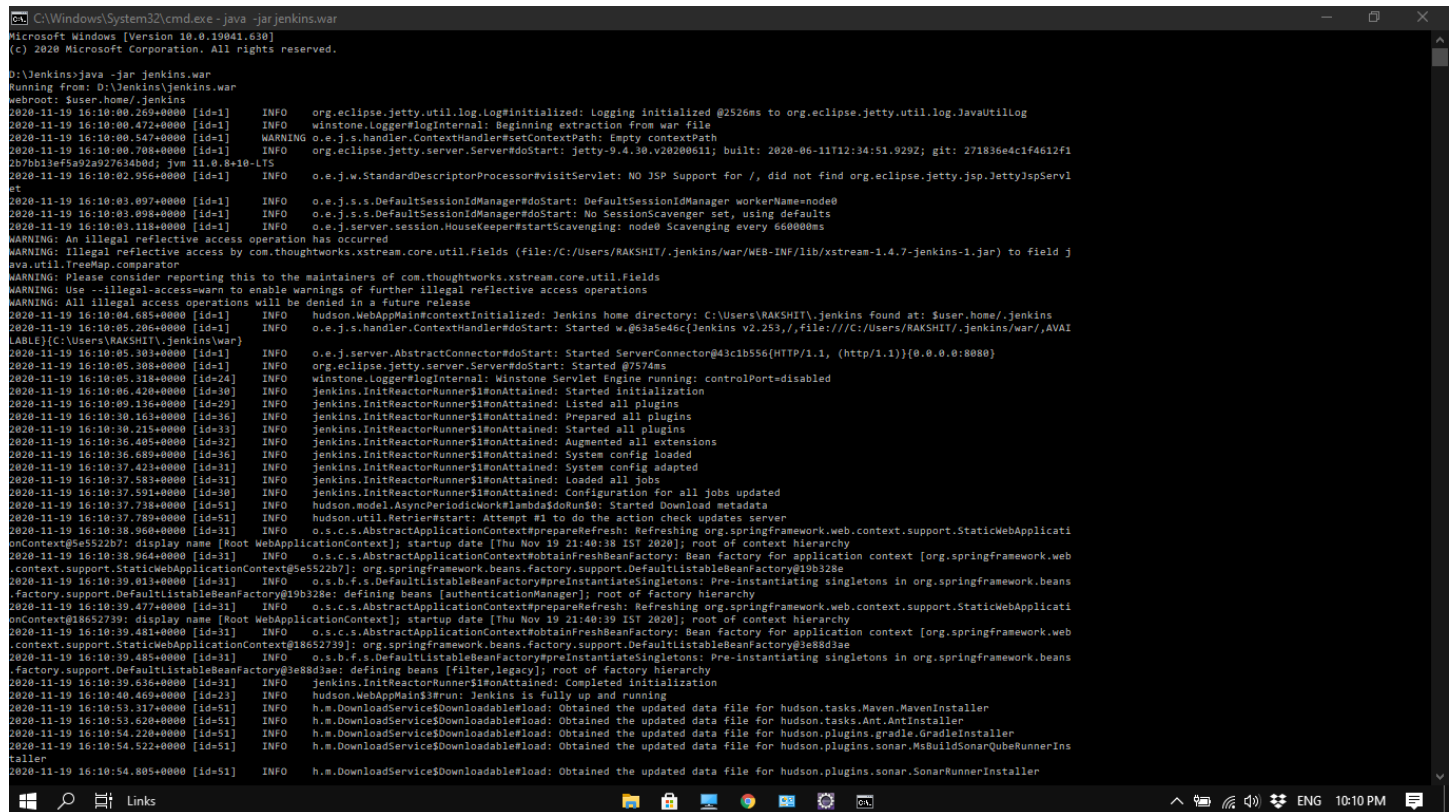
## Step 3: Create a Jenkinsfile on GitHub and make changes to pom.xml file.

The screenshot shows a Jenkinsfile on GitHub, committed by 'Rakshit6758' 8 minutes ago. The file contains a pipeline definition with three stages: 'clean', 'test', and 'deploy'. Each stage has a single step with a specific command.

```
1 pipeline{
2   agent any
3
4   stages{
5
6     stage('clean')
7     { steps{
8       bat 'mvn clean'
9     }
10  }
11
12
13
14    stage('test')
15    { steps{
16      bat 'mvn test'
17    }
18  }
19
20
21
22    stage('deploy')
23    { steps{
24      bat 'mvn deploy'
25    }
26  }
27
28
29  }
30
31 }
```



Step 4: Start Jenkins server using **java -jar Jenkins.war** on command line and type **localhost:8080** on the browser to start Jenkins server.



S	W	Name	Last Success	Last Failure	Last Duration	Fav
		Blue_Ocean_Jenkins	2 mo 5 days - log	N/A	3.4 sec	
		CICD-Lab1	2 mo 28 days - #6	2 mo 28 days - #5	16 sec	
		CICD-Lab10	1 mo 14 days - #1	N/A	41 sec	
		CICD-Lab2	2 mo 27 days - #3	2 mo 27 days - #1	36 sec	
		CICD-Lab3	2 mo 26 days - #2	N/A	23 sec	
		CICD-Lab3-Pipeline	2 mo 26 days - #16	2 mo 26 days - #15	6.5 sec	
		CICD-Lab5	2 mo 8 days - #1	N/A	48 sec	
		GitHub	N/A	N/A	N/A	
		Jenkins_BlueOcean	1 mo 13 days - log	N/A	3.4 sec	
		Jenkins_Maven	1 mo 12 days - #1	N/A	31 sec	

Step 5: Start Nexus server using **nexus.exe /run** on command line and type **localhost:8081** on the browser to start Jenkins server.

```

C:\Windows\System32\cmd.exe - nexus.exe/run
Microsoft Windows [Version 10.0.19041.630]
(c) 2020 Microsoft Corporation. All rights reserved.

D:\Nexus\nexus-3.18.1-01\bin\nexus.exe/run
2020-11-19 22:25:03,097+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.pax.logging.NexusLogActivator - start
2020-11-19 22:25:08,432+0530 WARN [FelixStartLevel] *SYSTEM uk.org.lidalia.sysoutslf4j.context.SysOutOverSLF4JInitialiser - Your logging framework class org.ops4j.pax.
logging.slf4j.Slf4jLogger is not known - if it needs
access to the standard println methods on the console you will need to register it by calling registerLoggingSystem
Package
2020-11-19 22:25:08,433+0530 INFO [FelixStartLevel] *SYSTEM uk.org.lidalia.sysoutslf4j.context.SysOutOverSLF4J - Package org.ops4j.pax.logging.slf4j registered; all cl
asses within it or subpackages of
it will be allowed
2020-11-19 22:25:08,451+0530 INFO [FelixStartLevel] *SYSTEM uk.org.lidalia.sysoutslf4j.context.SysOutOverSLF4J - Replaced standard System.out and System.err PrintStrea
ms with SLF4JPrintStreams
2020-11-19 22:25:08,455+0530 INFO [FelixStartLevel] *SYSTEM uk.org.lidalia.sysoutslf4j.context.SysOutOverSLF4J - Redirected System.out and System.err to SLF4J for this
context
2020-11-19 22:25:08,497+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - Properties:
2020-11-19 22:25:08,510+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - application-host='0.0.0.0'
2020-11-19 22:25:08,519+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - application-port='8081'
2020-11-19 22:25:08,520+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - fabric.etc='D:\Nexus\nexus-3.18.1-01/etc/fabric'
2020-11-19 22:25:08,523+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - jetty.etc='D:\Nexus\nexus-3.18.1-01/etc/jetty'
2020-11-19 22:25:08,525+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - karaf.base='D:\Nexus\nexus-3.18.1-01'
2020-11-19 22:25:08,537+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - karaf.data='D:\Nexus\sonatype-work\nexus3'
2020-11-19 22:25:08,538+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - karaf.etc='D:\Nexus\nexus-3.18.1-01/etc/karaf'
2020-11-19 22:25:08,540+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - karaf.home='D:\Nexus\nexus-3.18.1-01'
2020-11-19 22:25:08,544+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - karaf.instances='D:\Nexus\sonatype-work\nexus3\instan
ces'
2020-11-19 22:25:08,546+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - logback.etc='D:\Nexus\nexus-3.18.1-01/etc/logback'
2020-11-19 22:25:08,553+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - nexus-args='D:\Nexus\nexus-3.18.1-01/etc/jetty/jetty.
xml,D:\Nexus\nexus-3.18.1-01/etc/jetty/jetty-http.xml,D:\Nexus\nexus-3.18.1-01/etc/jetty/jetty-requestlog.xml'
2020-11-19 22:25:08,558+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - nexus-context-path='/'
2020-11-19 22:25:08,562+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - nexus-edition='nexus-pro-edition'
2020-11-19 22:25:08,564+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - nexus-features='nexus-pro-feature'
2020-11-19 22:25:08,566+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - nexus.hazelcast.discovery.isEnabled='true'
2020-11-19 22:25:08,573+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.ConfigurationBuilder - ssl.etc='D:\Nexus\nexus-3.18.1-01/etc/ssl'
2020-11-19 22:25:08,581+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.Launcher - Java: 1.8.0_192, OpenJDK 64-Bit Server VM, Azul Systems, Inc., 25.1
92-b01
2020-11-19 22:25:08,583+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.Launcher - OS: Windows 10, 10.0, amd64
2020-11-19 22:25:08,585+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.Launcher - User: RAKSHIT, en, C:\Users\RAKSHIT
2020-11-19 22:25:08,595+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.Launcher - CWD: D:\Nexus\nexus-3.18.1-01
2020-11-19 22:25:08,609+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.Launcher - TMP: D:\Nexus\sonatype-work\nexus3\tmp
2020-11-19 22:25:08,621+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.jetty.JettyServer - Starting
2020-11-19 22:25:08,653+0530 INFO [FelixStartLevel] *SYSTEM org.eclipse.jetty.util.log - Logging initialized @22389ms to org.eclipse.jetty.util.log.Slf4jLog
2020-11-19 22:25:08,685+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.jetty.JettyServer - Applying configuration: file:D:/Nexus/nexus-3.18.1-01/etc
/jetty/jetty.xml
2020-11-19 22:25:09,047+0530 INFO [FelixStartLevel] *SYSTEM org.sonatype.nexus.bootstrap.jetty.JettyServer - Applying configuration: file:D:/Nexus/nexus-3.18.1-01/etc

```

Sonatype Nexus Repository Manager  
OSS 3.18.1-01

Welcome Learn about Sonatype Nexus Repository Manager

**Warning**

This version of Nexus Repository Manager is vulnerable to a critical remote code execution security vulnerability. We recommend [immediate upgrade](#) to 3.25.1 or later, especially if this is a public instance.

Search components

admin Sign out

Browse

Welcome

Search

Browse

Upload

Step 6: Click on new item and provide the name and select pipeline

Jenkins

search

Rakshit Kapoor log out

Jenkins All

Enter an item name

CICD-Assignment2

\* 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.

**Maven project**  
Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.

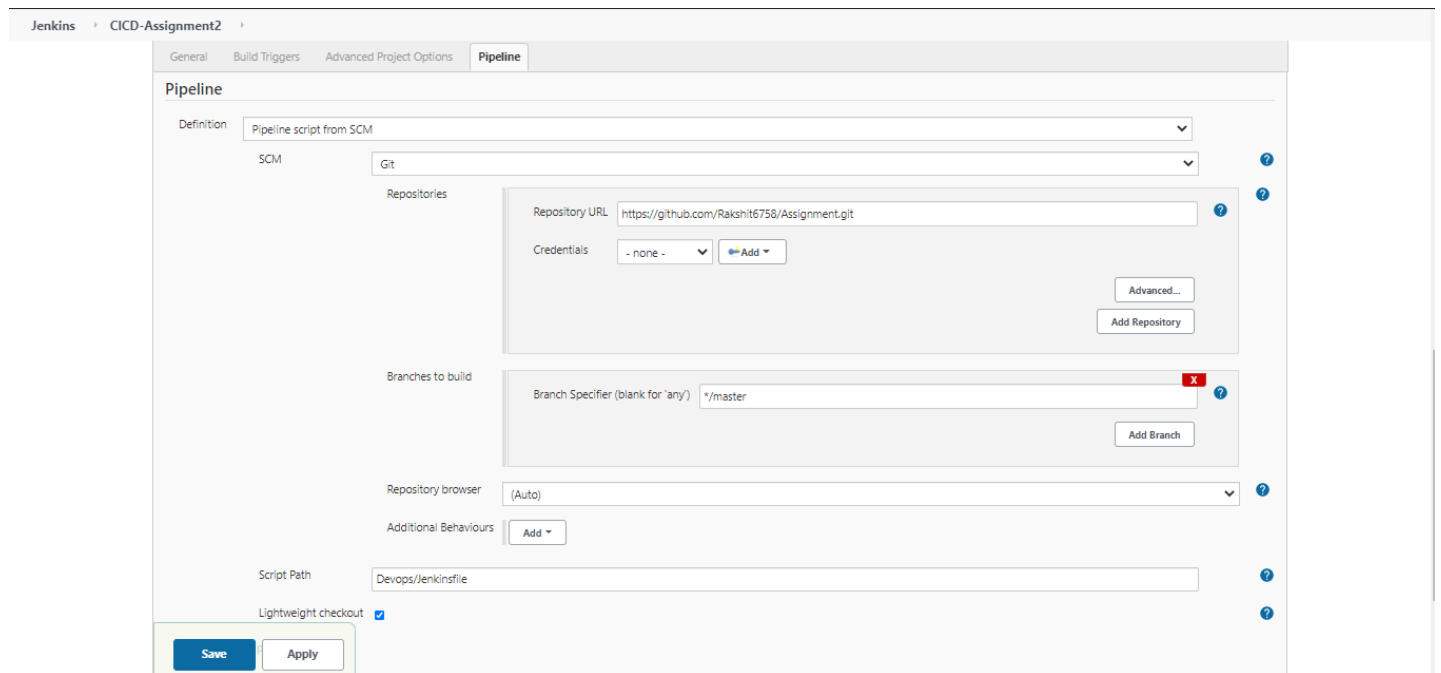
**Pipeline**  
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**  
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

OK

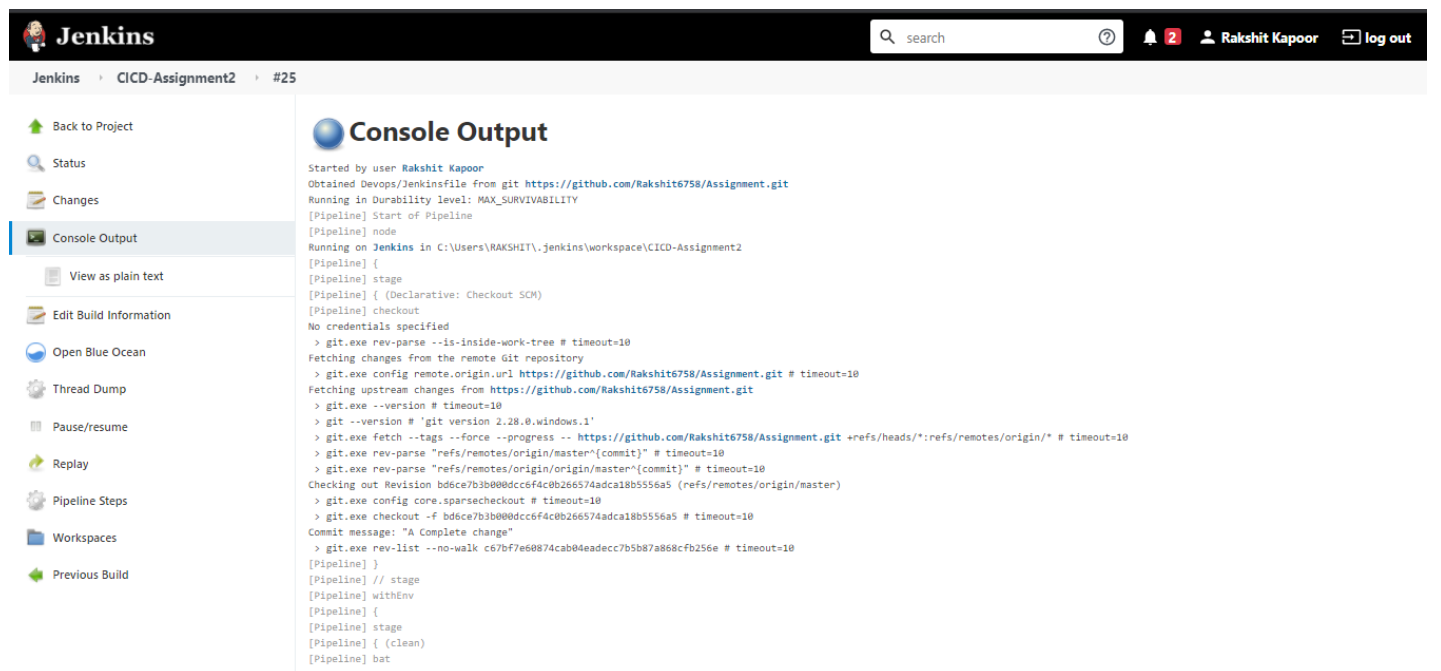
Set Team/Project  
Bitbucket Cloud Team (or Bitbucket Server Project) for all repositories matching some defined markers.

Step 7: Provide the path of the repository and Jenkinsfile as well and click on save.



The image shows the Jenkins Pipeline configuration page for a project named 'CICD-Assignment2'. The 'Pipeline' tab is selected, and the 'Definition' is set to 'Pipeline script from SCM'. The 'SCM' is set to 'Git'. The 'Repository URL' is 'https://github.com/Rakshit6758/Assignment.git'. The 'Credentials' are set to 'none'. The 'Branches to build' section has a 'Branch Specifier (blank for 'any')' set to '\*/master'. The 'Repository browser' is set to '(Auto)'. The 'Script Path' is 'Devops/Jenkinsfile'. The 'Lightweight checkout' checkbox is checked. The 'Save' button is highlighted.

Step 8: Click on build now and see the results at console output.



The image shows the Jenkins console output for a build. The console output displays the following information:

```
Started by user Rakshit Kapoor
Obtained Devops/Jenkinsfile from git https://github.com/Rakshit6758/Assignment.git
Running in Durability Level: MAX_SURVIVABILITY
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
No credentials specified
> git.exe rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
> git.exe config remote.origin.url https://github.com/Rakshit6758/Assignment.git # timeout=10
Fetching upstream changes from https://github.com/Rakshit6758/Assignment.git
> git.exe --version # timeout=10
> git --version # 'git version 2.28.0.windows.1'
> git.exe fetch --tags --force --progress -- https://github.com/Rakshit6758/Assignment.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10
> git.exe rev-parse "refs/remotes/origin/origin/master^{commit}" # timeout=10
Checking out Revision bd6ce7b3b00dccc6f4c0b266574adca18b5556a5 (refs/remotes/origin/master)
> git.exe config core.sparsecheckout # timeout=10
> git.exe checkout -f bd6ce7b3b00dccc6f4c0b266574adca18b5556a5 # timeout=10
Commit message: "A Complete change"
> git.exe rev-list --no-walk c67bf7e60874cab04eadecc7b5b87a868cfb256e # timeout=10
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (clean)
[Pipeline] bat
```

```
C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2>mvn clean
[INFO] Scanning for projects...
[INFO]
[INFO] -----< Hii:Devops >-----
[INFO] Building Devops 0.0.1-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ Devops ---
[INFO] Deleting C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2\target
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.720 s
[INFO] Finished at: 2020-11-20T18:29:59+05:30
[INFO] -----
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (test)
[Pipeline] bat

C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2>mvn test
[INFO] Scanning for projects...
[INFO]
[INFO] -----< Hii:Devops >-----
[INFO] Building Devops 0.0.1-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ Devops ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ Devops ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ Devops ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ Devops ---
```

```
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 2.991 s
[INFO] Finished at: 2020-11-20T18:30:02+05:30
[INFO] -----
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (deploy)
[Pipeline] bat

C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2>mvn deploy
[INFO] Scanning for projects...
[INFO]
[INFO] -----< Hii:Devops >-----
[INFO] Building Devops 0.0.1-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ Devops ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2\src\main\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ Devops ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ Devops ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2\src\test\resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ Devops ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ Devops ---
[INFO] No tests to run.
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ Devops ---
[WARNING] JAR will be empty - no content was marked for inclusion!
[INFO] Building jar: C:\Users\RAKSHIT\.jenkins\workspace\CICD-Assignment2\target\Devops-0.0.1-SNAPSHOT.jar
[INFO]
```



Jenkins > CICD-Assignment2 > #25

```
SNAPSHOT.jar
[INFO] Installing C:\Users\RAKSHIT\workspace\CICD-Assignment2\pom.xml to C:\Users\RAKSHIT\.m2\repository\Hi1\Devops\0.0.1-SNAPSHOT\Devops-0.0.1-SNAPSHOT.pom
[INFO]
[INFO] --- maven-deploy-plugin:2.7:deploy (default-deploy) @ Devops ---
Downloading from Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/maven-metadata.xml
Uploading to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/Devops-0.0.1-20201120.130012-1.jar

Uploaded to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/Devops-0.0.1-20201120.130012-1.jar (1.4 kB at 3.8 kB/s)
Uploading to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/Devops-0.0.1-20201120.130012-1.pom
Progress (1): 738 B

Uploaded to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/Devops-0.0.1-20201120.130012-1.pom (738 B at 2.3 kB/s)
Downloading from Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/maven-metadata.xml
Uploading to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/maven-metadata.xml
Progress (1): 759 B

Uploaded to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/0.0.1-SNAPSHOT/maven-metadata.xml (759 B at 2.4 kB/s)
Uploading to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/maven-metadata.xml
Progress (1): 269 B

Uploaded to Rakshit: http://localhost:8081/repository/CICD_Assignment-2/Hi1/Devops/maven-metadata.xml (269 B at 1.1 kB/s)
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 6.517 s
[INFO] Finished at: 2020-11-20T18:30:13+05:30
[INFO] -----
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

REST API Jenkins 2.53

Jenkins

search

2

Rakshit Kapoor

log out

Jenkins > CICD-Assignment2 >

Back to Dashboard

Status

Changes

Build Now

Configure

Delete Pipeline

Full Stage View

Open Blue Ocean

Rename

Pipeline Syntax

Build History

trend

find

#25 Nov 20, 2020, 6:29 PM

#24 Nov 20, 2020, 6:28 PM

#23 Nov 20, 2020, 6:14 PM

#22 Nov 20, 2020, 6:11 PM

Pipeline CICD-Assignment2

add description

Disable Project

Recent Changes

Stage View

Average stage times:  
(Average full run time: ~33s)

	Declarative: Checkout SCM	clean	test	deploy
#25 Nov 20 18:29 2 commits	4s	5s	6s	10s
#24 Nov 20 18:28 No Changes				
#23 Nov 20 18:14 No Changes	2s	6s	5s	8s
#22 Nov 20 18:11 No Changes	2s	6s	5s	12s

Step 9: The generated build gets pushed on the nexus server as well as.

