# Continuous Integration and Deployment

## Assignment-2

Ques: Perform following steps using Git, Jenkins, Maven and Nexus.

Step 1: Create a Maven project using Eclipse.

Step2: Push the same running project on GitHub using Eclipse or IDE.

Step 3: Create a Jenkins Pipeline to generate build and push the generated build on Nexus Server using Jenkinsfile in GitHub.

## SOLUTION:

# 1. So, go to the directory where your jenkins.war file is present. Start the Jenkins service using the java -jar jenkins.war command in the command prompt in administrator mode.
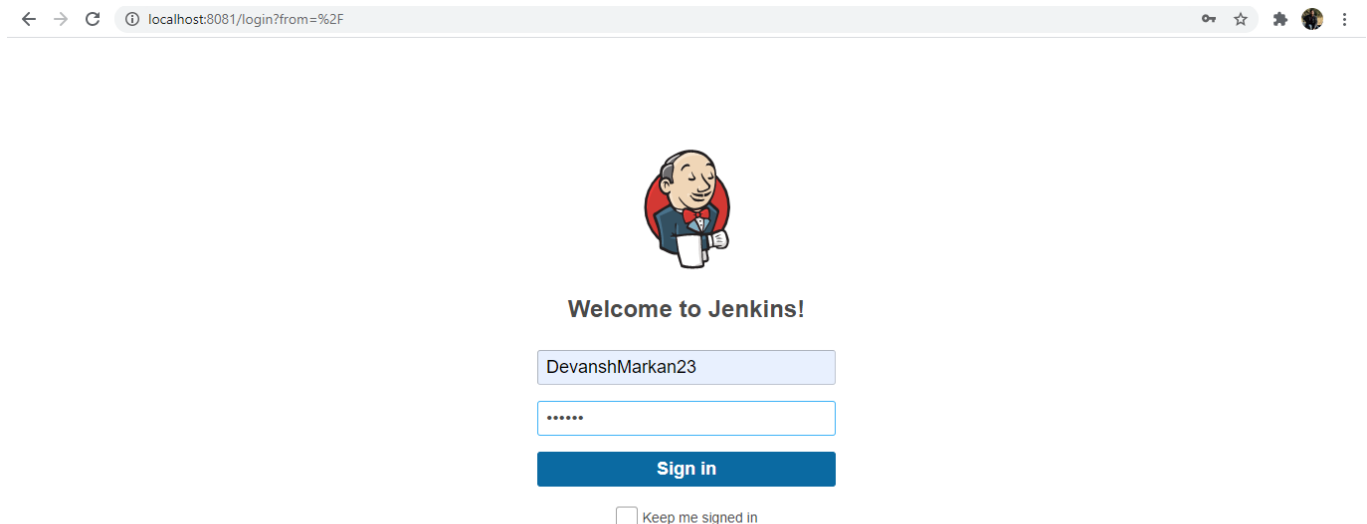
```
Administrator: Command Prompt - java -jar jenkins.war
Microsoft Windows [Version 10.0.18362.1082]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Program Files\Jenkins

C:\Program Files\Jenkins>java -jar jenkins.war
Running from: C:\Program Files\Jenkins\Jenkins.war
webroot: $user.home/.jenkins
2020-10-15 17:52:09.297+0000 [id=1]    INFO    org.eclipse.jetty.util.log.Log#initialized: Logging initialized @5070ms to org.ecli
2020-10-15 17:52:09.781+0000 [id=1]    INFO    winstone.Logger#logInternal: Beginning extraction from war file
2020-10-15 17:52:10.085+0000 [id=1]    WARNING o.e.j.s.handler.ContextHandler#setContextPath: Empty contextPath
2020-10-15 17:52:10.493+0000 [id=1]    INFO    org.eclipse.jetty.server.Server#doStart: jetty-9.4.30.v20200611; built: 2020-06-11T
2b7bb13ef5a92a927634b0d; jvm 11.0.8+10-LTS
2020-10-15 17:52:17.628+0000 [id=1]    INFO    o.e.j.w.StandardDescriptorProcessor#visitServlet: NO JSP Support for /, did not fin
et
2020-10-15 17:52:18.237+0000 [id=1]    INFO    o.e.j.s.s.DefaultSessionIdManager#doStart: DefaultSessionIdManager workerName=node0
2020-10-15 17:52:18.237+0000 [id=1]    INFO    o.e.j.s.s.DefaultSessionIdManager#doStart: No SessionScavenger set, using defaults
2020-10-15 17:52:18.329+0000 [id=1]    INFO    o.e.j.server.session.HouseKeeper#startScavenging: node0 Scavenging every 600000ms
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.thoughtworks.xstream.core.util.Fields (file:/C:/Users/91935/.jenkins/war/WEB-INF/lib/xstr
a.util.TreeMap.comparator
WARNING: Please consider reporting this to the maintainers of com.thoughtworks.xstream.core.util.Fields
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
2020-10-15 17:52:20.268+0000 [id=1]    INFO    hudson.WebAppMain#contextInitialized: Jenkins home directory: C:\Users\91935\.jenki
2020-10-15 17:52:22.092+0000 [id=1]    INFO    o.e.j.s.handler.ContextHandler#doStart: Started w.@1bb9aa43{Jenkins v2.255,/,file:/
BLE}{C:\Users\91935\.jenkins\war}
2020-10-15 17:52:22.421+0000 [id=1]    INFO    o.e.j.server.AbstractConnector#doStart: Started ServerConnector@17f7cd29{HTTP/1.1,
2020-10-15 17:52:22.429+0000 [id=1]    INFO    org.eclipse.jetty.server.Server#doStart: Started @18268ms
2020-10-15 17:52:22.434+0000 [id=24]   INFO    winstone.Logger#logInternal: Winstone Servlet Engine running: controlPort=disabled
2020-10-15 17:52:23.799+0000 [id=31]   INFO    jenkins.InitReactorRunner$1#onAttained: Started initialization
2020-10-15 17:52:23.930+0000 [id=36]   INFO    jenkins.InitReactorRunner$1#onAttained: Listed all plugins
2020-10-15 17:52:26.675+0000 [id=30]   INFO    jenkins.InitReactorRunner$1#onAttained: Prepared all plugins
2020-10-15 17:52:26.698+0000 [id=34]   INFO    jenkins.InitReactorRunner$1#onAttained: Started all plugins
2020-10-15 17:52:26.709+0000 [id=35]   INFO    jenkins.InitReactorRunner$1#onAttained: Augmented all extensions
2020-10-15 17:52:27.258+0000 [id=29]   INFO    jenkins.InitReactorRunner$1#onAttained: System config loaded
2020-10-15 17:52:27.259+0000 [id=29]   INFO    jenkins.InitReactorRunner$1#onAttained: System config adapted
2020-10-15 17:52:27.259+0000 [id=36]   INFO    jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2020-10-15 17:52:27.259+0000 [id=29]   INFO    jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2020-10-15 17:52:27.622+0000 [id=49]   INFO    hudson.model.AsyncPeriodicWork#lambda$doRun$0: Started Download metadata
2020-10-15 17:52:27.712+0000 [id=49]   INFO    hudson.util.Retrier#start: Attempt #1 to do the action check updates server
2020-10-15 17:52:30.662+0000 [id=36]   INFO    o.s.c.s.AbstractApplicationContext#prepareRefresh: Refreshing org.springframework.w
onContext@4c9a547b: display name [Root WebApplicationContext]; startup date [Thu Oct 15 23:22:30 IST 2020]; root of context hierarc
2020-10-15 17:52:30.662+0000 [id=36]   INFO    o.s.c.s.AbstractApplicationContext#obtainFreshBeanFactory: Bean factory for applica
```

```
2020-10-15 17:52:26.698+0000 [id=34]   INFO    jenkins.InitReactorRunner$1#onAttained: Started all plugins
2020-10-15 17:52:26.709+0000 [id=35]   INFO    jenkins.InitReactorRunner$1#onAttained: Augmented all extensions
2020-10-15 17:52:27.258+0000 [id=29]   INFO    jenkins.InitReactorRunner$1#onAttained: System config loaded
2020-10-15 17:52:27.259+0000 [id=29]   INFO    jenkins.InitReactorRunner$1#onAttained: System config adapted
2020-10-15 17:52:27.259+0000 [id=36]   INFO    jenkins.InitReactorRunner$1#onAttained: Loaded all jobs
2020-10-15 17:52:27.259+0000 [id=29]   INFO    jenkins.InitReactorRunner$1#onAttained: Configuration for all jobs updated
2020-10-15 17:52:27.622+0000 [id=49]   INFO    hudson.model.AsyncPeriodicWork#lambda$doRun$0: Started Download metadata
2020-10-15 17:52:27.712+0000 [id=49]   INFO    hudson.util.Retrier#start: Attempt #1 to do the action check updates server
2020-10-15 17:52:30.662+0000 [id=36]   INFO    o.s.c.s.AbstractApplicationContext#prepareRefresh: Refreshing org.springframework.web.con
onContext@4c9a547b: display name [Root WebApplicationContext]; startup date [Thu Oct 15 23:22:30 IST 2020]; root of context hierarchy
2020-10-15 17:52:30.662+0000 [id=36]   INFO    o.s.c.s.AbstractApplicationContext#obtainFreshBeanFactory: Bean factory for application c
.context.support.StaticWebApplicationContext@4c9a547b: org.springframework.beans.factory.support.DefaultListableBeanFactory@188d7ca
2020-10-15 17:52:30.679+0000 [id=36]   INFO    o.s.b.f.s.DefaultListableBeanFactory#preInstantiateSingletons: Pre-instantiating singleton
.factory.support.DefaultListableBeanFactory@188d7ca: defining beans [authenticationManager]; root of factory hierarchy
2020-10-15 17:52:31.081+0000 [id=36]   INFO    o.s.c.s.AbstractApplicationContext#prepareRefresh: Refreshing org.springframework.web.con
onContext@682d18cd: display name [Root WebApplicationContext]; startup date [Thu Oct 15 23:22:31 IST 2020]; root of context hierarchy
2020-10-15 17:52:31.083+0000 [id=36]   INFO    o.s.c.s.AbstractApplicationContext#obtainFreshBeanFactory: Bean factory for application c
.context.support.StaticWebApplicationContext@682d18cd: org.springframework.beans.factory.support.DefaultListableBeanFactory@221cbaf3
2020-10-15 17:52:31.084+0000 [id=36]   INFO    o.s.b.f.s.DefaultListableBeanFactory#preInstantiateSingletons: Pre-instantiating singleton
.factory.support.DefaultListableBeanFactory@221cbaf3: defining beans [filter,legacy]; root of factory hierarchy
2020-10-15 17:52:31.194+0000 [id=36]   INFO    jenkins.InitReactorRunner$1#onAttained: Completed initialization
2020-10-15 17:52:31.313+0000 [id=23]   INFO    hudson.WebAppMain$3#run: Jenkins is fully up and running
```

## 2. Now, go to the Jenkins dashboard at localhost:8080 and Jenkins will open and will ask for your username and password.
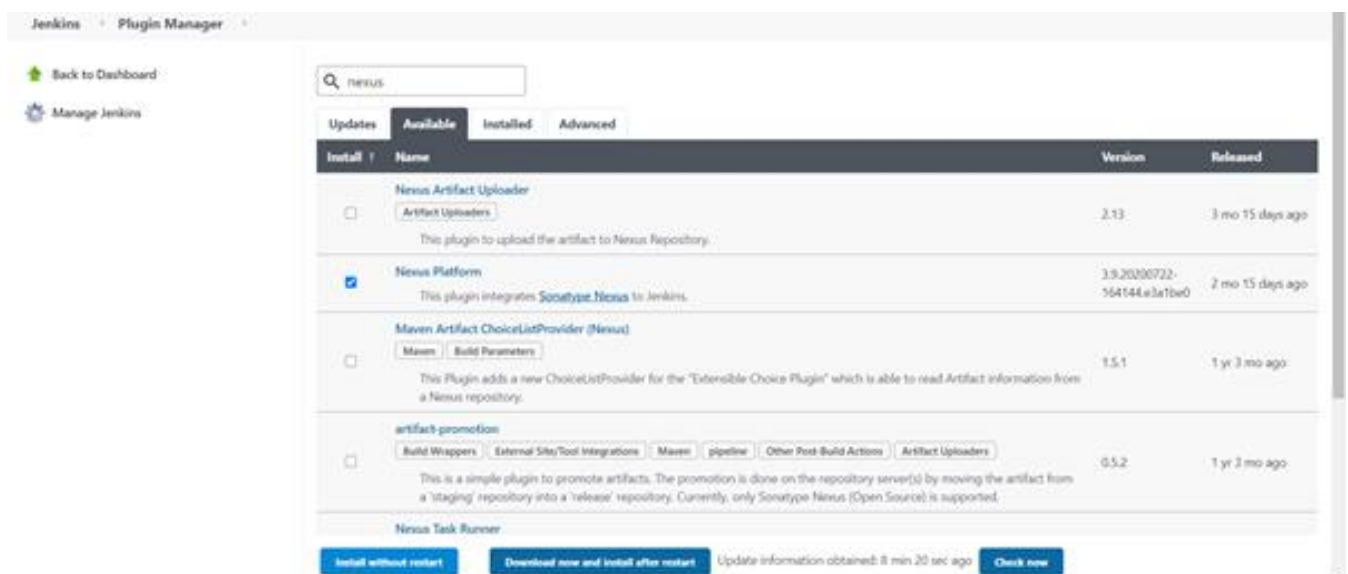


## 3. In global tools configuration, both Maven and JDKs are installed previously. Now, we have to install Nexus Plugin in Jenkins. So, Go to Manage PlugIn option-

## 4. Now, after that, Click on add option displayed in front of credentials. You will get a similar window. Provide your Nexus Server credentials here.

**Jenkins Credentials Provider: Jenkins**

**Add Credentials**

| Domain | Global credentials (unrestricted) | |
|---|---|---|
| Kind | Username with password | |
| | Scope | Global (Jenkins, nodes, items, all child items, etc) |
| | Username | admin |
| | Password | ••••• |
| | ID | |
| | Description | |

Add    Cancel

## 5. Now, using Jenkins, upload a maven project on Github and create a JenkinsFile in it. This JenkinsFile will be used by Jenkins.

## So, this is the content of JenkinsFile (File)

```
1   pipeline{
2       agent any
3       stages{
4         stage('Clean'){
5             steps{
6             bat 'mvn clean'
7             }
8         }
9         stage('Deploy'){
10            steps{
11            bat 'mvn deploy'
12            }
13        }
14      }
15   }
```

## 6. Now, Move to the location where Nexus is installed. Find nexus.exe file which will be in bin folder.
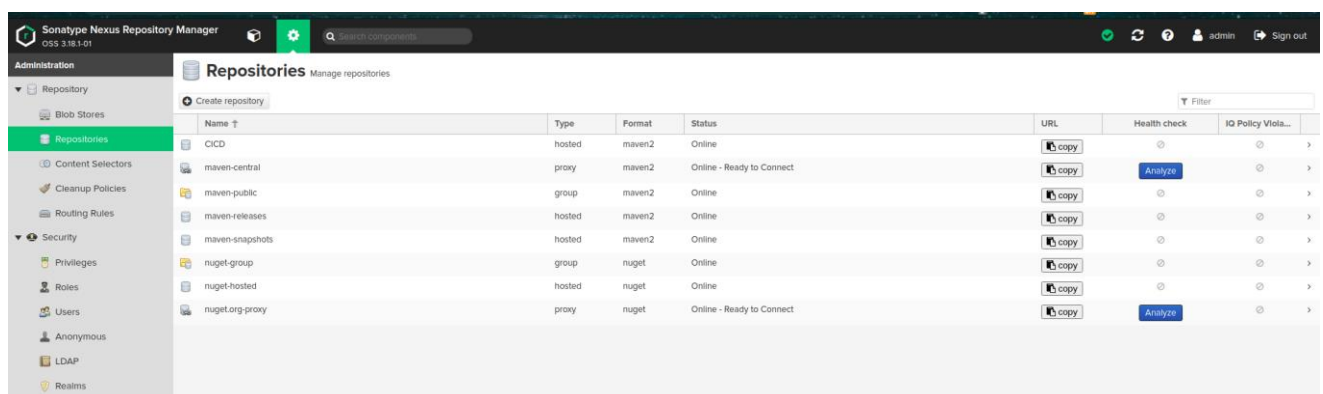
## 7. Open command prompt in administrator mode in the same folder and run the following command : Nexus.exe /run
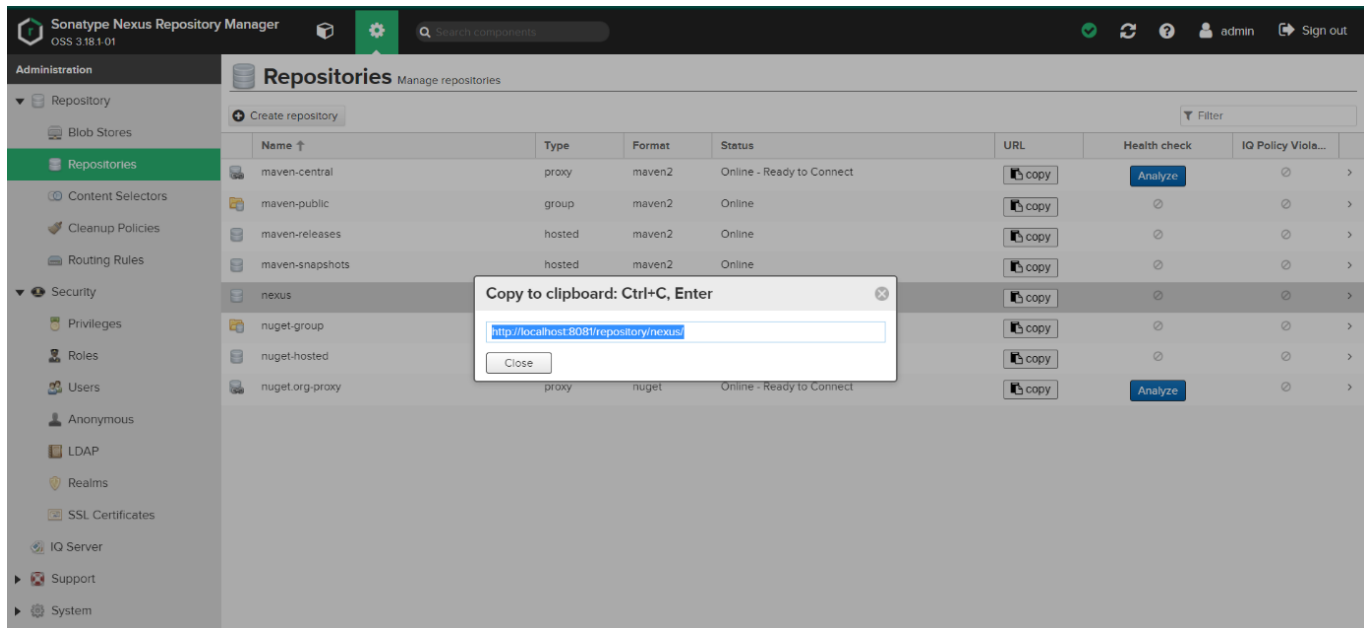


## 8. After this command is successful and Nexus Server is up, you have to open Nexus. Nexus will be accessible to localhost at port 8081 by default.

So, initially, for the first time, Nexus requests the password which is in the file that comes with the installation kit.

Find the default password at the sonatype-works/nexus3/ folder and the file name is admin.password.

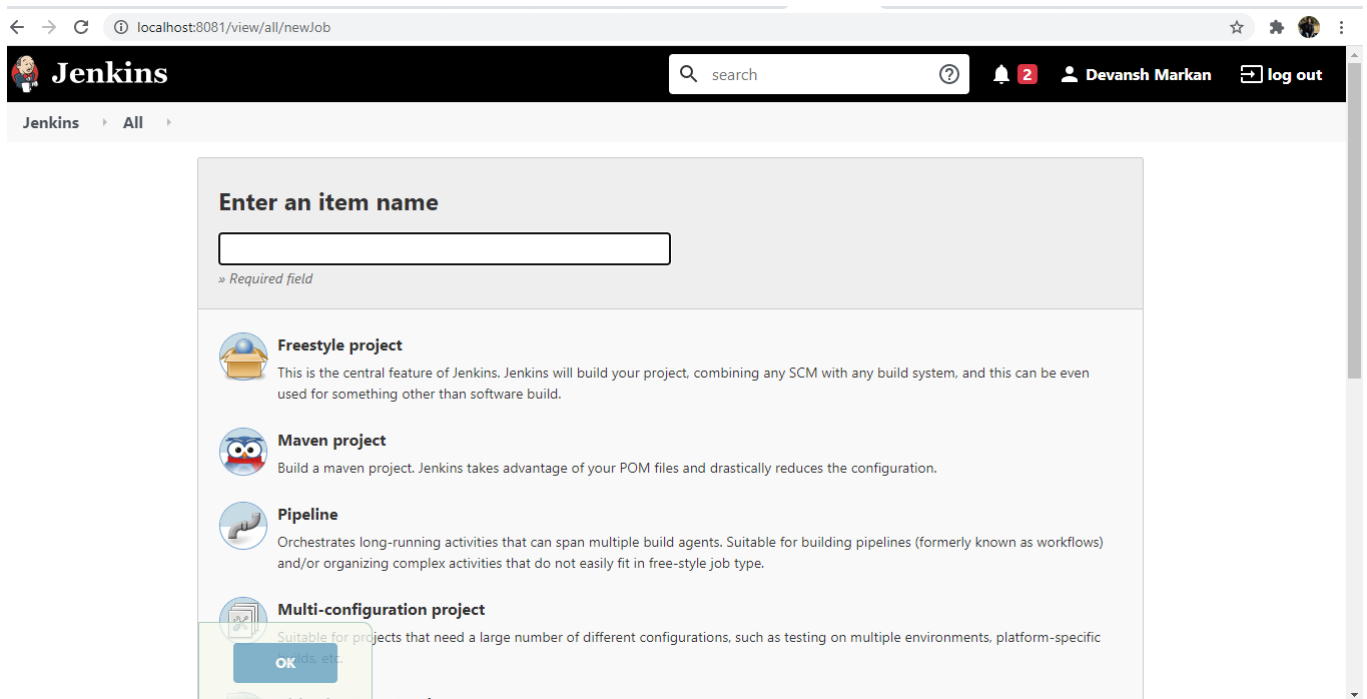# 9. Now create a new repository in Nexus. Copy the URL of the repository.



# 10. Now, open the pom.xml of the Maven project to be published to Nexus. Make the required changes as below-

**Jenkins**

search
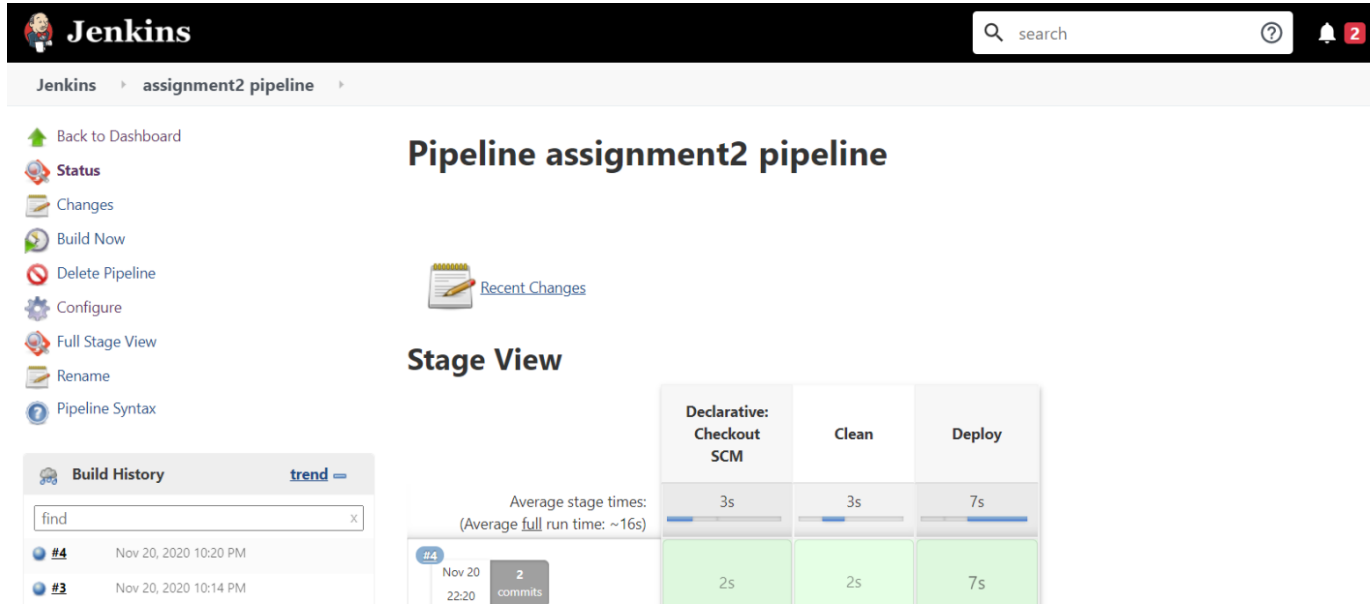
Devansh Markan    log out

Jenkins    All

## Enter an item name

» 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 ds, etc.

OK

## 11. In the pipeline section, Select "Pipeline Script from Source Code Management" and provide the Github URL and click on save and apply.

General    Source Code Management    Build Triggers    Build Environment    Pre Steps    Build    Post Steps    Build Settings

Post-build Actions

☐ Execute concurrent builds if necessary

☐ Restrict where this project can be run

Advanced...

### Source Code Management

○ None

● Git

Repositories

Repository URL    https://github.com/markandevansh99/Integration_Maven.git

Credentials    - none -    🔑 Add ▾

Advanced...

Add Repository

**Save**    **Apply**

Waiting for localhost...

## 12. Now, the dashboard will look like this! All we have to do now is click on BUILD NOW option and it will starting building it.



## 13. Run "mvn deploy" to deploy the built jar on the Nexus server.

**You will see that your Maven repository is deployed at the specified nexus server URL. So this shows that the project is successful. Again to check the Repo, we can do it like this:**
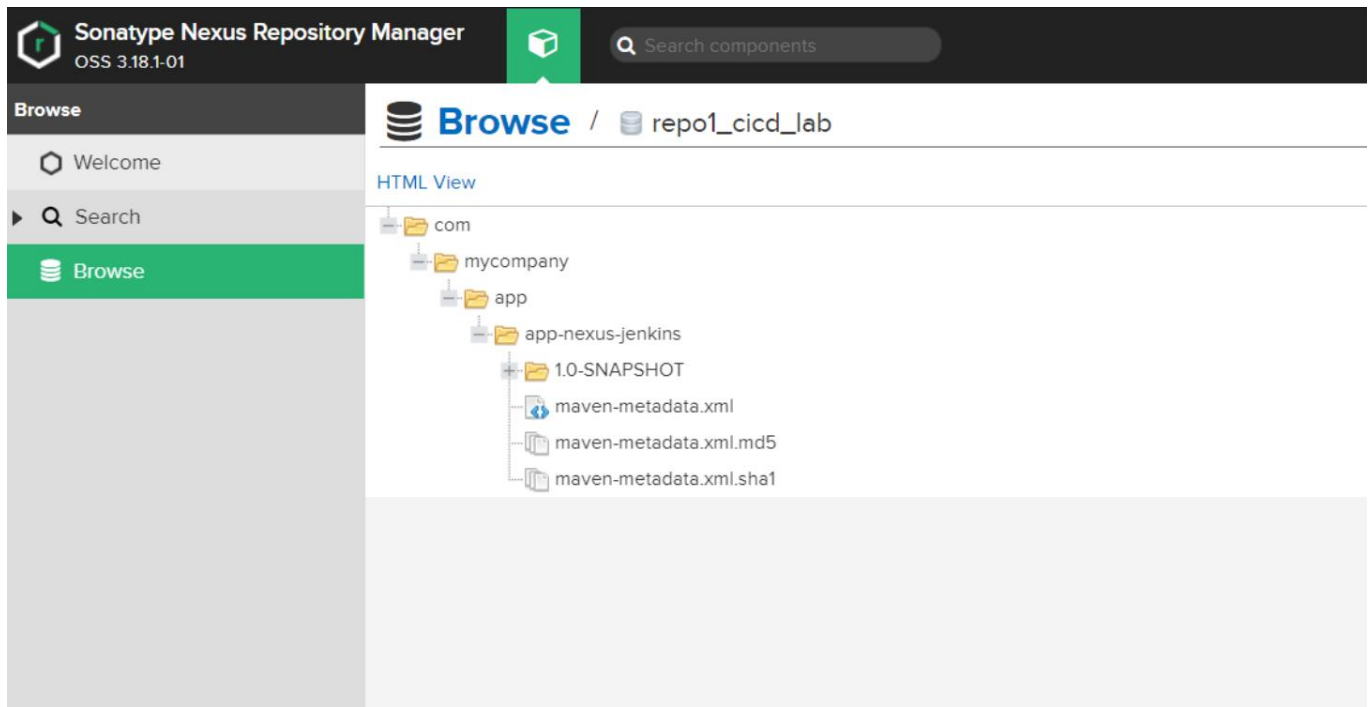
This shows that it is successful.