

Module 2: Jenkins Plugins

Demo Document - 2

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Problem Statement

You are working as a DevOps Engineer in a company named Sanders & Fresco Pvt Ltd. You have been asked by your manager to create a Maven Project using Jenkins and build a war file of that project. As a proof of concept, you have been given a web application to build. And once done with building the war file, deploy it over the tomcat server.

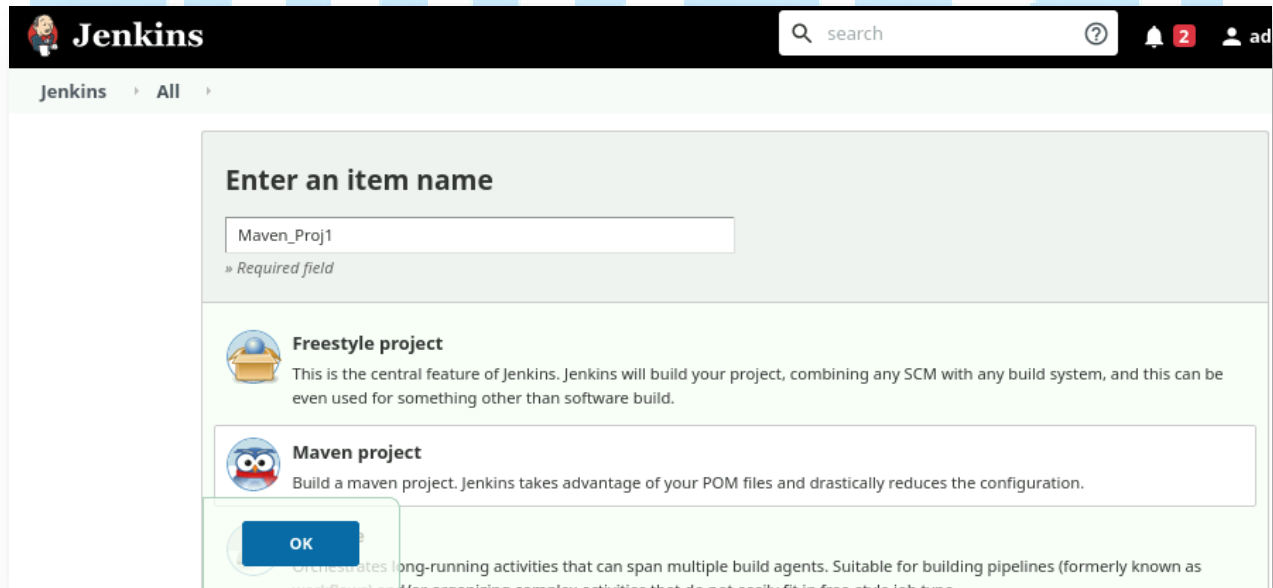
Steps to solve:

- Open Jenkins and create a Maven project using it.
- You will have to create the following jobs, which are as follow:
 - Compile
 - Code Review
 - Unit test
 - Package
 - Deploy

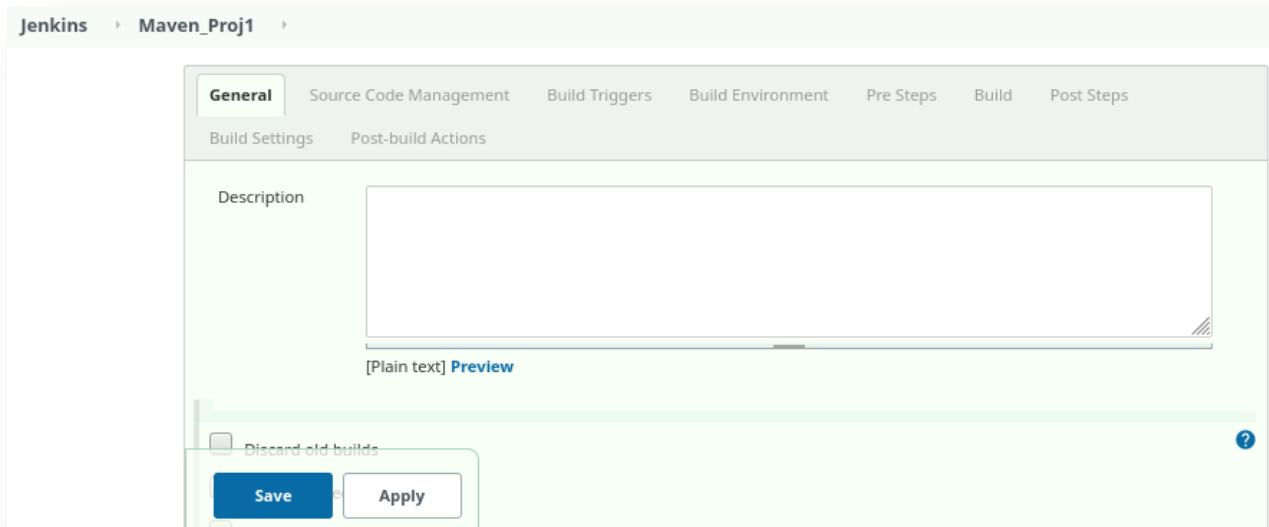
Solution

Step 1: Go to Jenkins Dashboard and click on the new item.

Step 2: Enter the project name and select Maven Project.

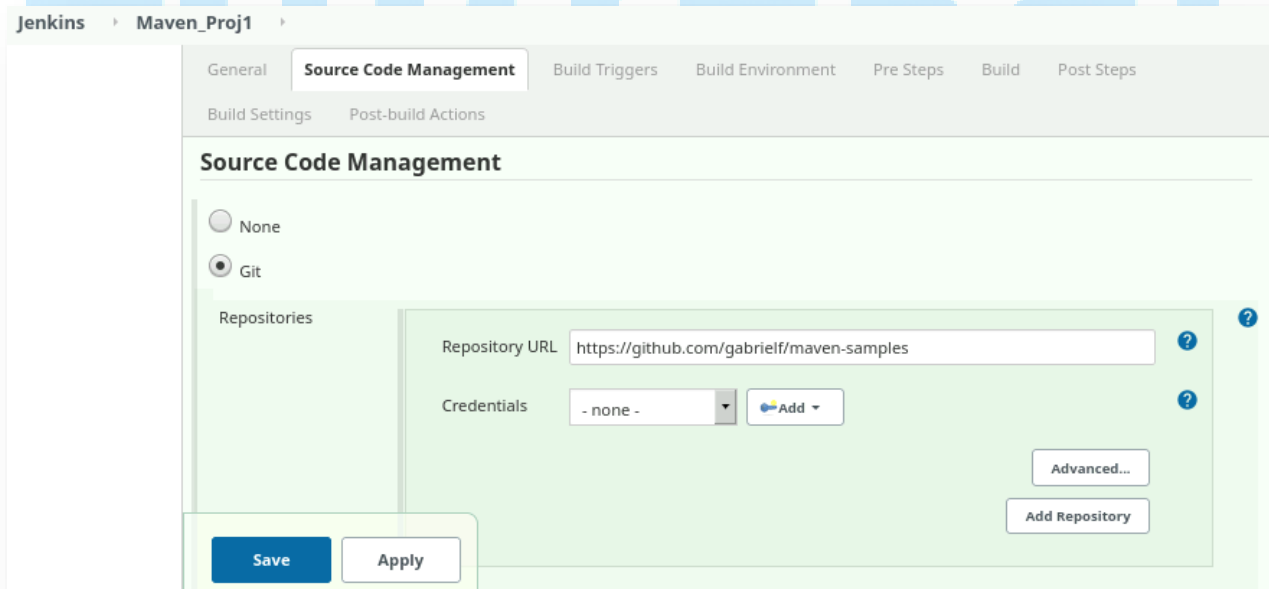


Step 3: Go to configure and start configuring your job.



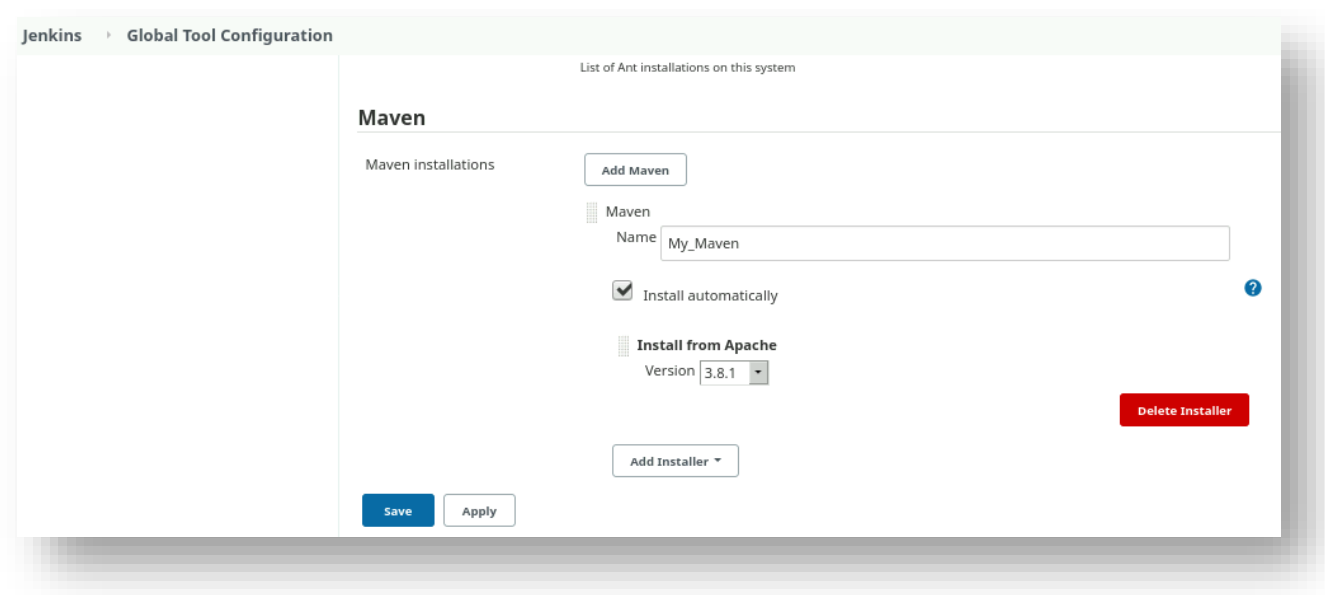
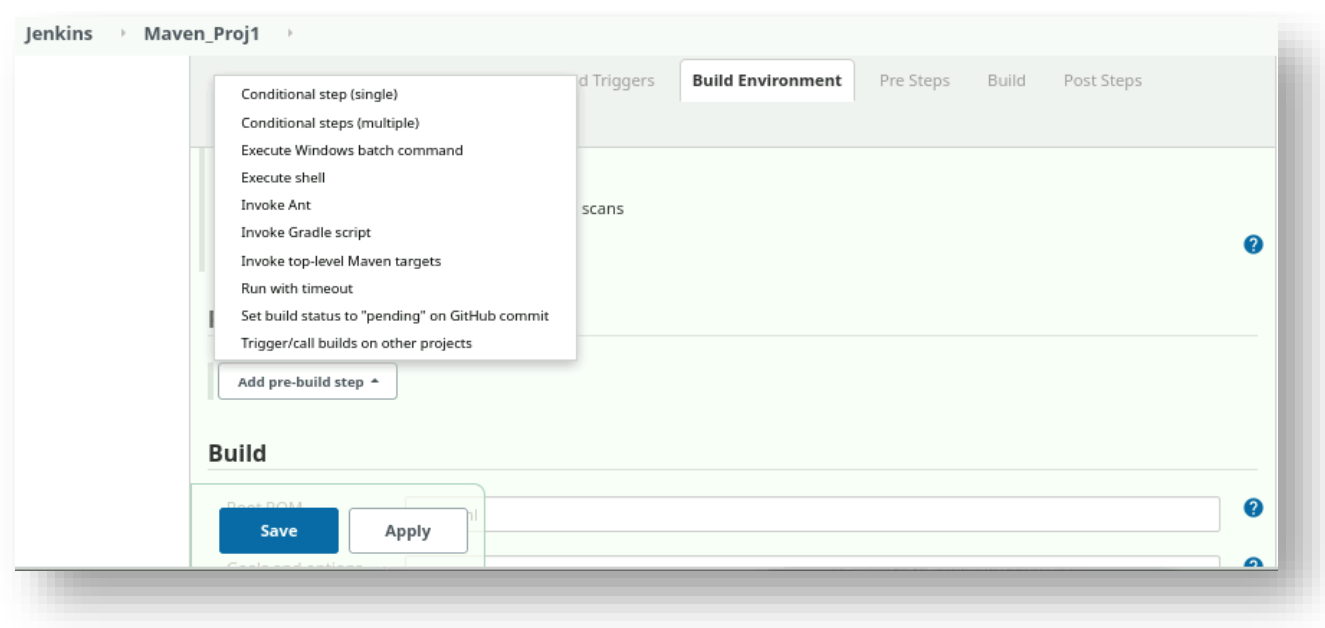
The screenshot shows the Jenkins configuration page for a job named 'Maven_Proj1'. The 'General' tab is selected, showing a 'Description' text area and a 'Discard old builds' checkbox. The 'Save' and 'Apply' buttons are at the bottom.

Step 4: Go to Source Code Management and select the git option and provide the repository path from where you are pulling the code.



The screenshot shows the Jenkins configuration page for 'Maven_Proj1' with the 'Source Code Management' tab selected. The 'Git' option is chosen. The 'Repository URL' is set to 'https://github.com/gabrielf/maven-samples'. The 'Credentials' dropdown is set to '- none -'. The 'Add Repository' button is visible at the bottom right.

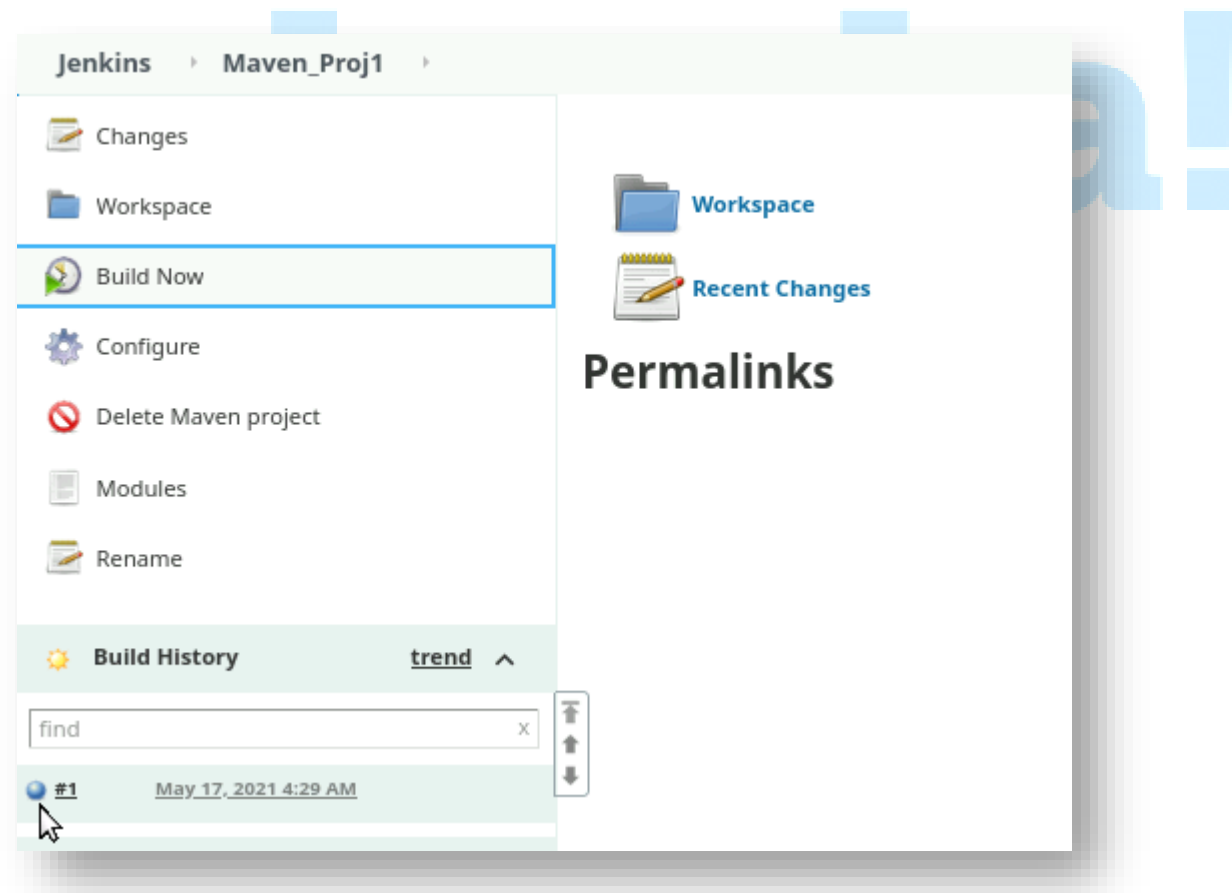
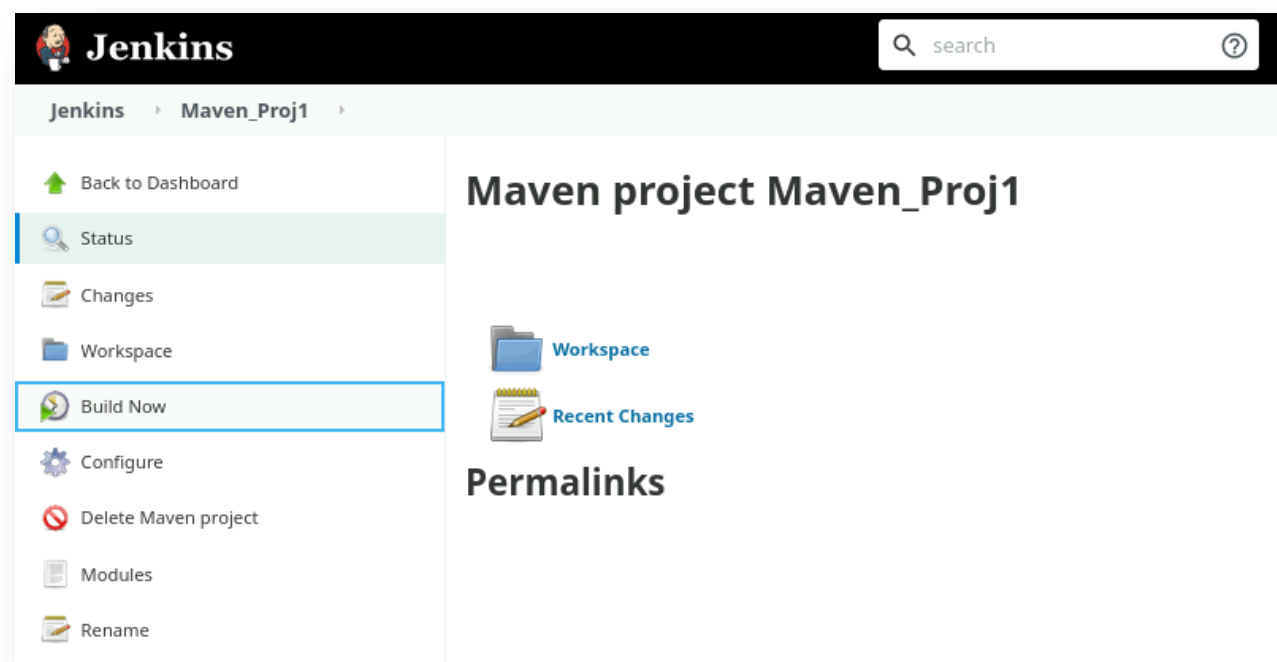
Step 5: Click on invoke top-level Maven targets and define the maven goal for your job. If you have not downloaded the Maven plugin, then go to manage plugin → Global tool configuration, and download the Maven plugin for your Jenkins.



The screenshot shows the Jenkins web interface for configuring a build job named 'Maven_Proj1'. The 'Pre Steps' tab is selected in the top navigation bar. Below the navigation bar, there are tabs for 'General', 'Source Code Management', 'Build Triggers', 'Build Environment', 'Pre Steps', 'Build', and 'Post Steps'. Under the 'Pre Steps' tab, there are sub-tabs for 'Build Settings' and 'Post-build Actions'. The main content area is titled 'Pre Steps' and contains a section 'Invoke top-level Maven targets'. This section has a 'Maven Version' dropdown menu set to 'My Maven' and a 'Goals' text input field containing 'compile'. There is an 'Advanced...' button to the right of the 'Goals' field. At the bottom of the 'Pre Steps' section, there is an 'Add pre-build step' button. At the very bottom of the configuration page, there are 'Save' and 'Apply' buttons.

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Step 6: Go to build now and then check your console output by clicking on the blue or red dot, whichever comes after the build. Blue is a sign for a successful build, whereas red is for build failure.



Jenkins › Maven_Proj1 › #1

- Back to Project
- Status
- Changes
- Console Output
- View as plain text
- Edit Build Information
- Delete build '#1'
- Git Build Data
- Redeploy Artifacts
- Test Result

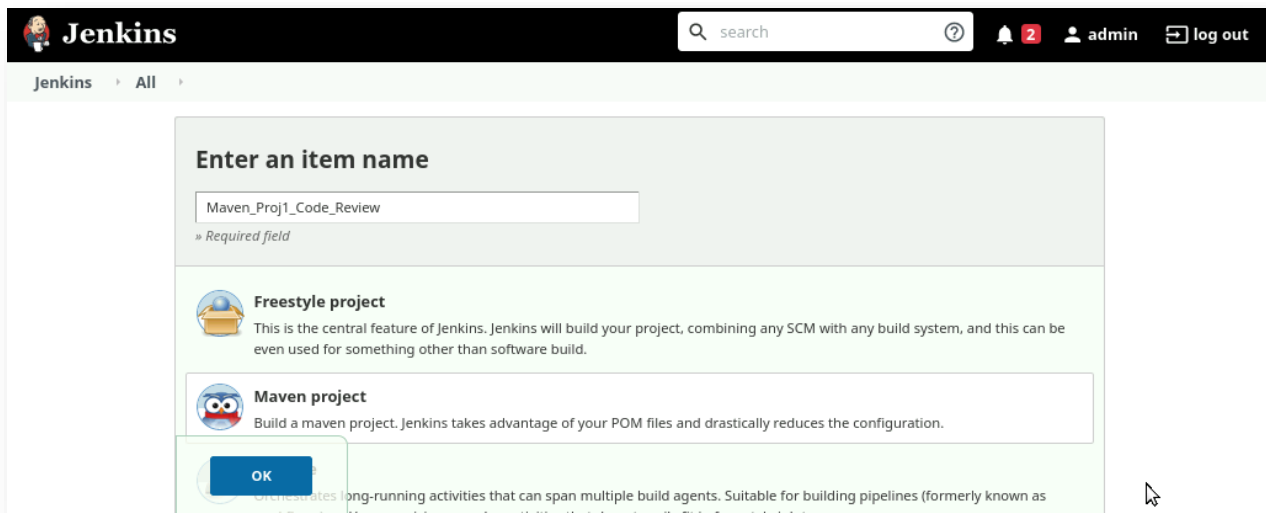
Console Output

Started by user [admin](#)
 Running as SYSTEM
 Building on master in workspace /var/lib/jenkins/workspace/Maven_Proj1
 The recommended git tool is: NONE
 No credentials specified
 Cloning the remote Git repository
 Cloning repository <https://github.com/gabrielf/maven-samples>
 > git init /var/lib/jenkins/workspace/Maven_Proj1 # timeout=10
 Fetching upstream changes from <https://github.com/gabrielf/maven-samples>
 > git --version # timeout=10
 > git --version # 'git version 2.17.1'
 > git fetch --tags --progress -- <https://github.com/gabrielf/maven-samples> +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git config remote.origin.url <https://github.com/gabrielf/maven-samples> # timeout=10
 > git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
 Avoid second fetch
 > git rev-parse refs/remotes/origin/master^{commit} # timeout=10
 Checking out Revision 4d47c7d9bd4ca5ea765d78c76020dd71cf133e8b (refs/remotes/origin/master)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 4d47c7d9bd4ca5ea765d78c76020dd71cf133e8b # timeout=10

Jenkins › Maven_Proj1 › #1

```
[INFO] Total time: 18.424 s
[INFO] Finished at: 2021-05-17T04:29:52Z
[INFO] -----
Waiting for Jenkins to finish collecting data
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/single-module/pom.xml to com.example.maven-samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/single-module/target/single-module-project.jar to com.example.maven-samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.jar
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/multi-module/pom.xml to com.example.maven-samples/multi-module-parent/1.0-SNAPSHOT/multi-module-parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/pom.xml to com.example.maven-samples/parent/1.0-SNAPSHOT/parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/multi-module/webapp/pom.xml to com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/multi-module/webapp/target/webapp.war to com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.war
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/multi-module/server/pom.xml to com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1/multi-module/server/target/server.jar to com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.jar
channel stopped
Finished: SUCCESS
```

Step 7: Now, create a new job, and it will also be a Maven project.

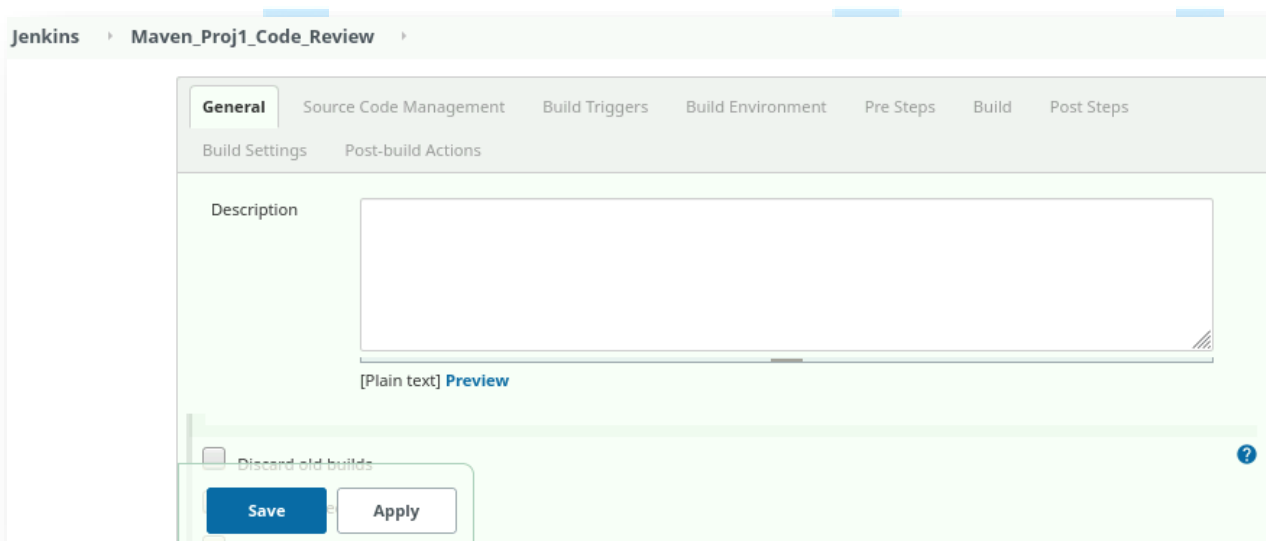


The image shows the Jenkins 'Enter an item name' dialog box. At the top, there's a search bar and user information (admin, log out). Below the title 'Enter an item name', there's a text input field containing 'Maven_Proj1_Code_Review'. A red asterisk and the text '» Required field' are below the input. There are two options: 'Freestyle project' with a description '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.' and 'Maven project' with a description 'Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.' An 'OK' button is at the bottom left.

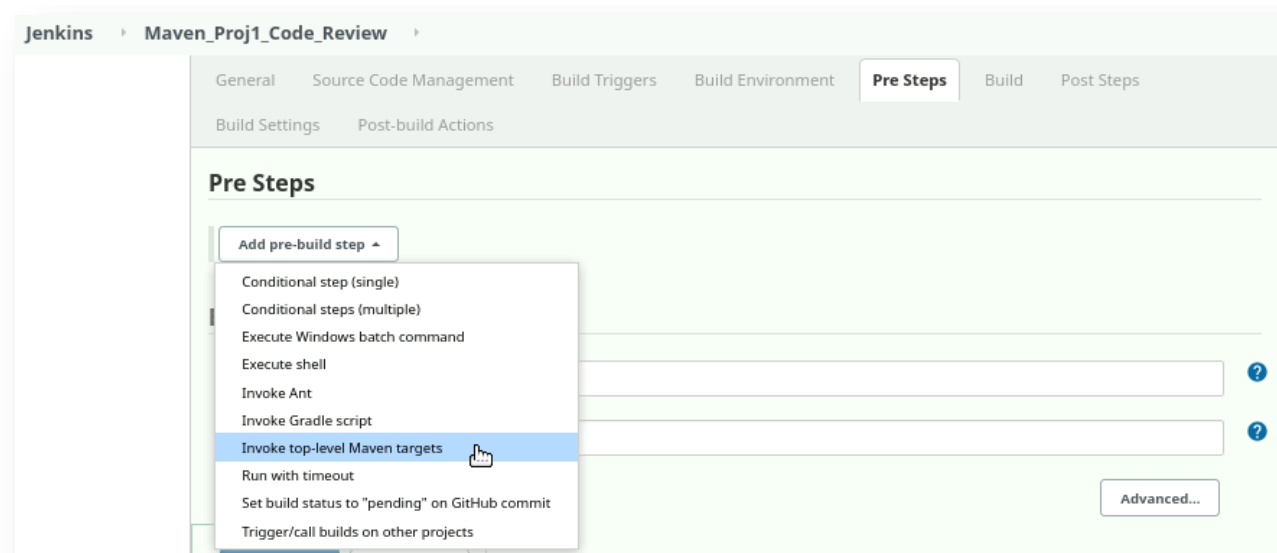
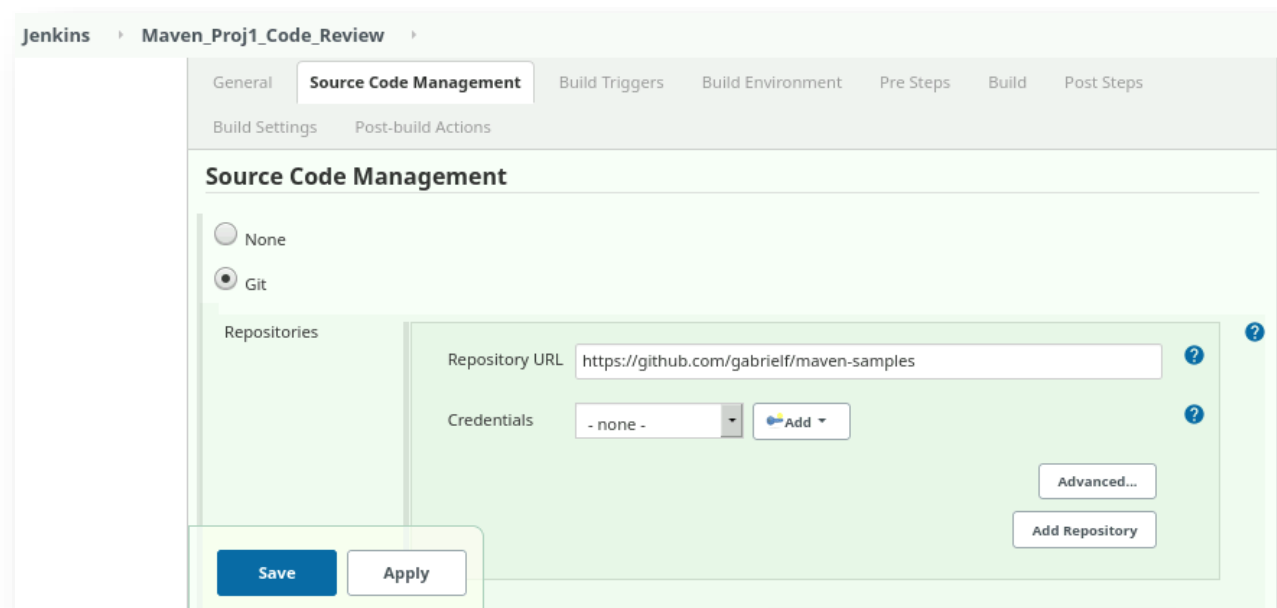
Step 8: Configure the job by providing the git path and defining the job goals.

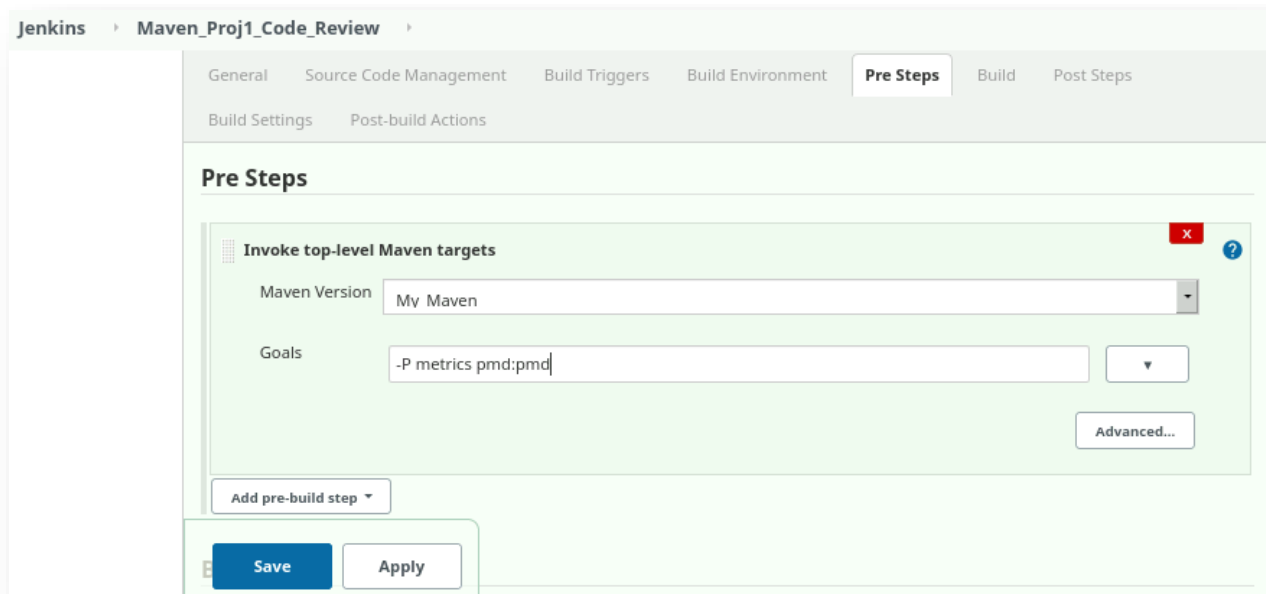
Below is the link to the Github repository path.

<https://github.com/gabrielf/maven-samples>



The image shows the Jenkins configuration page for the job 'Maven_Proj1_Code_Review'. The 'General' tab is selected. It has a 'Description' text area which is empty. Below it, there's a '[Plain text] Preview' link. At the bottom, there's a 'Discard old builds' checkbox and 'Save' and 'Apply' buttons.





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Step 9: Click on build now and check the console output.

Jenkins

Maven_Proj1_Code_Review

Back to Dashboard

Status

Changes

Workspace

Build Now

Configure

Delete Maven project

Modules

Rename

Maven project Maven_Proj1_Code_Review

Workspace

Recent Changes

Permalinks

Jenkins

Maven_Proj1_Code_Review

#1

Back to Project

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build '#1'

Git Build Data

Redeploy Artifacts

Test Result

See Fingerprints

Console Output

Skipping 239 KB.. [Full Log](#)

s (3): 202 kB | 406/472 kB | 153 kB

Progress (3): 202 kB | 410/472 kB | 153 kB

Progress (3): 202 kB | 414/472 kB | 153 kB

Progress (3): 202 kB | 418/472 kB | 153 kB

Progress (3): 202 kB | 422/472 kB | 153 kB

Progress (3): 202 kB | 426/472 kB | 153 kB

Progress (3): 202 kB | 430/472 kB | 153 kB

Progress (3): 202 kB | 434/472 kB | 153 kB

Progress (3): 202 kB | 438/472 kB | 153 kB

Progress (3): 202 kB | 442/472 kB | 153 kB

Progress (3): 202 kB | 446/472 kB | 153 kB

Progress (3): 202 kB | 451/472 kB | 153 kB

Progress (3): 202 kB | 455/472 kB | 153 kB

Progress (3): 202 kB | 459/472 kB | 153 kB

Progress (3): 202 kB | 463/472 kB | 153 kB

Progress (3): 202 kB | 467/472 kB | 153 kB

Progress (3): 202 kB | 471/472 kB | 153 kB

Progress (3): 202 kB | 472 kB | 153 kB

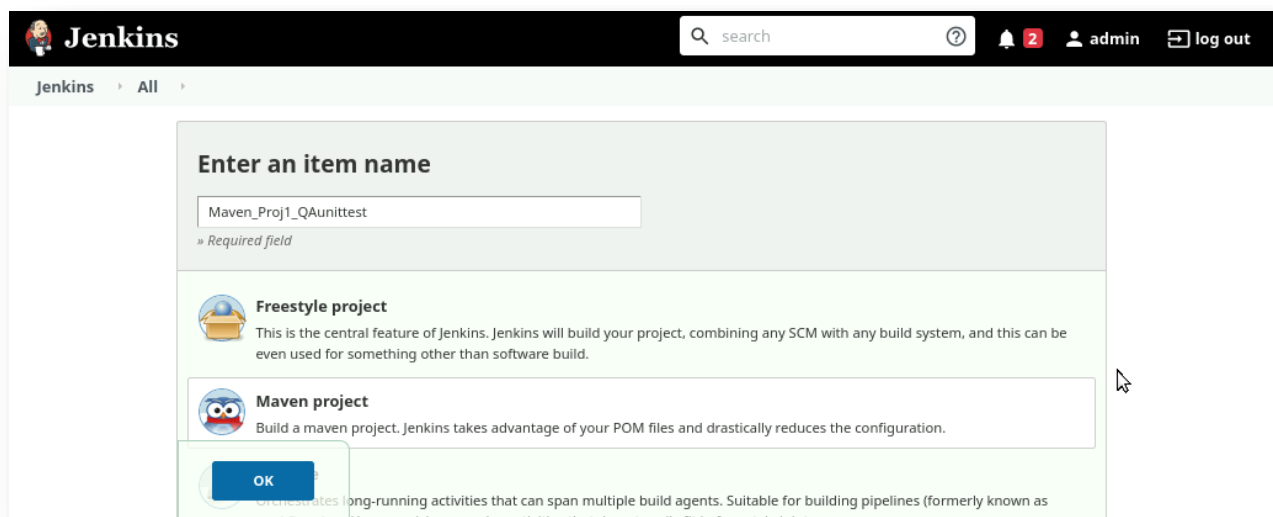
Progress (4): 202 kB | 472 kB | 153 kB | 4.1/61 kB

Page 10

```
Jenkins > Maven_Proj1_Code_Review > #1

Waiting for Jenkins to finish collecting data
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/single-module/pom.xml to com.example.maven-samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/single-module/target/single-module-project.jar to com.example.maven-samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.jar
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/multi-module/pom.xml to com.example.maven-samples/multi-module-parent/1.0-SNAPSHOT/multi-module-parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/pom.xml to com.example.maven-samples/parent/1.0-SNAPSHOT/parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/multi-module/webapp/pom.xml to com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/multi-module/webapp/target/webapp.war to com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.war
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/multi-module/server/pom.xml to com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_Code_Review/multi-module/server/target/server.jar to com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.jar
channel stopped
Finished: SUCCESS
```

Step 10: Now, create a new job which will also be a Maven project.



Step 11: Configure the job by providing the git path and defining the job goals.

Jenkins ▸ Maven_Proj1_QAunittest ▸

General

Source Code Management

Build Triggers

Build Environment

Pre Steps

Build

Post Steps

Build Settings

Post-build Actions

Description

[Plain text] Preview

Discard old builds

Save

Apply

Jenkins ▸ Maven_Proj1_QAunittest ▸

General

Source Code Management

Build Triggers

Build Environment

Pre Steps

Build

Post Steps

Build Settings

Post-build Actions

Source Code Management

☐ None

☒ Git

Repositories

Repository URL

https://github.com/gabrielf/maven-samples

Credentials

- none -

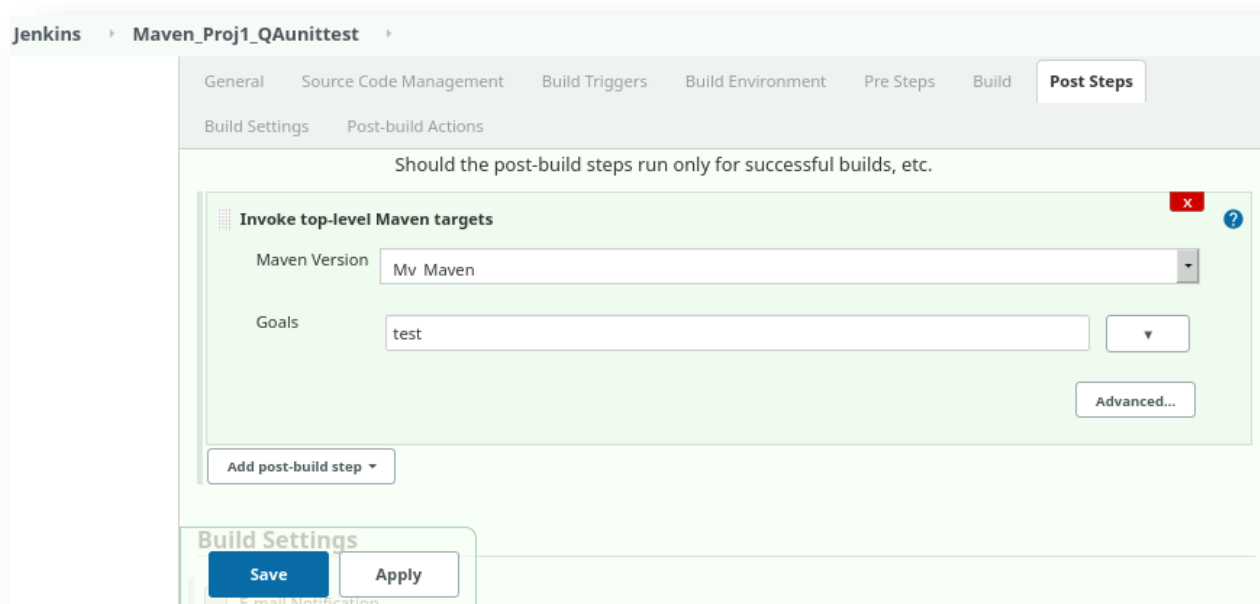
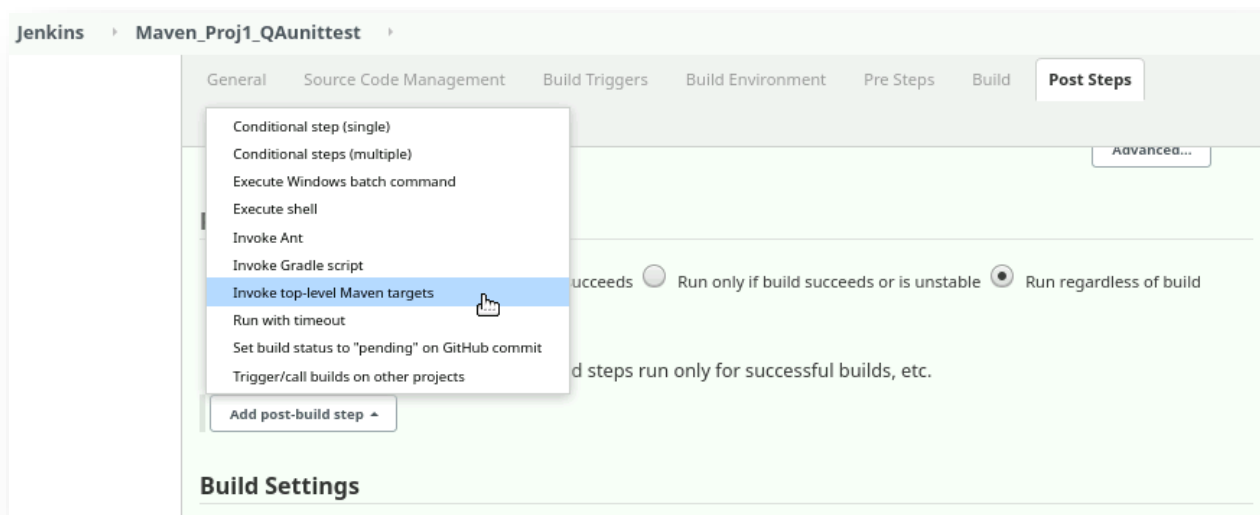
Add

Advanced...

Add Repository

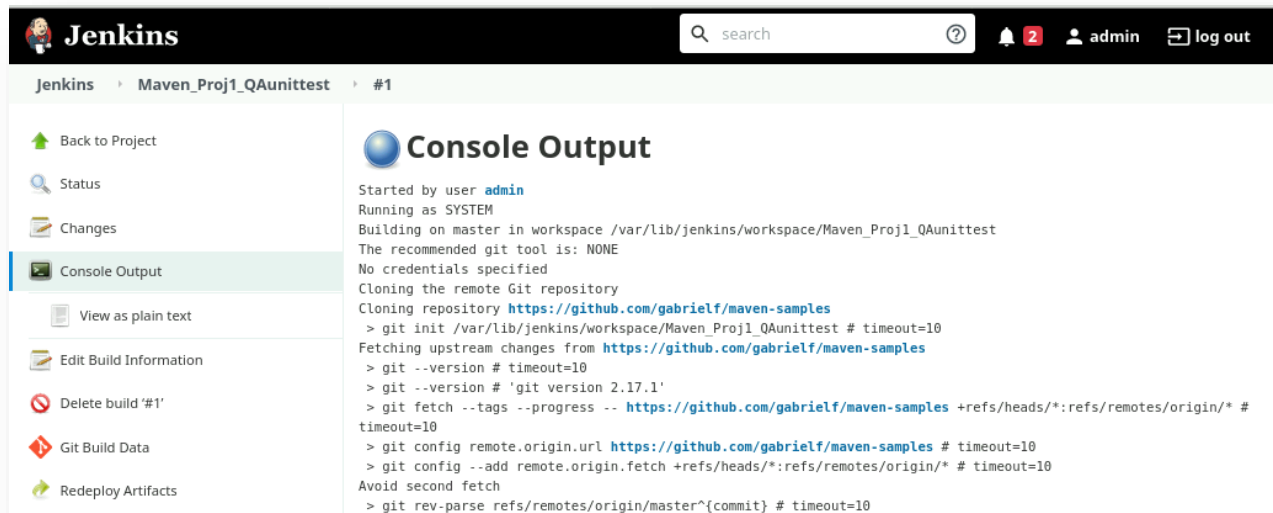
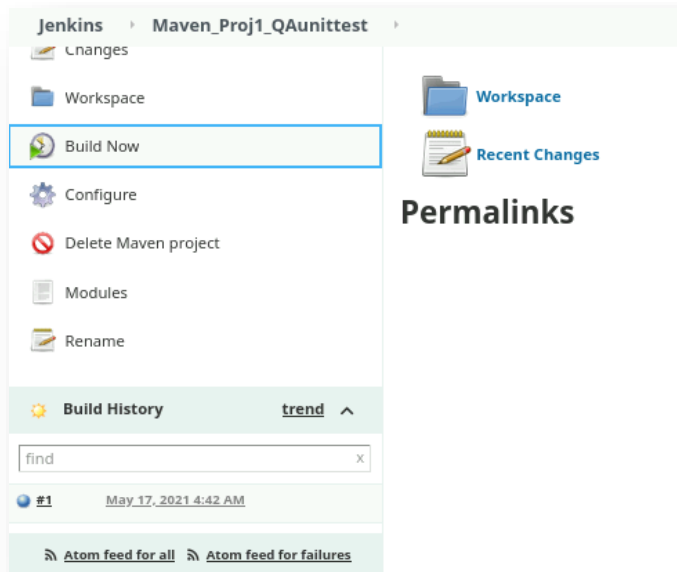
Save

Apply



Step 12: Click on build now and go on console output after the job is built.





```
Jenkins  ▸ Maven_Proj1_QAunittest  ▸ #1

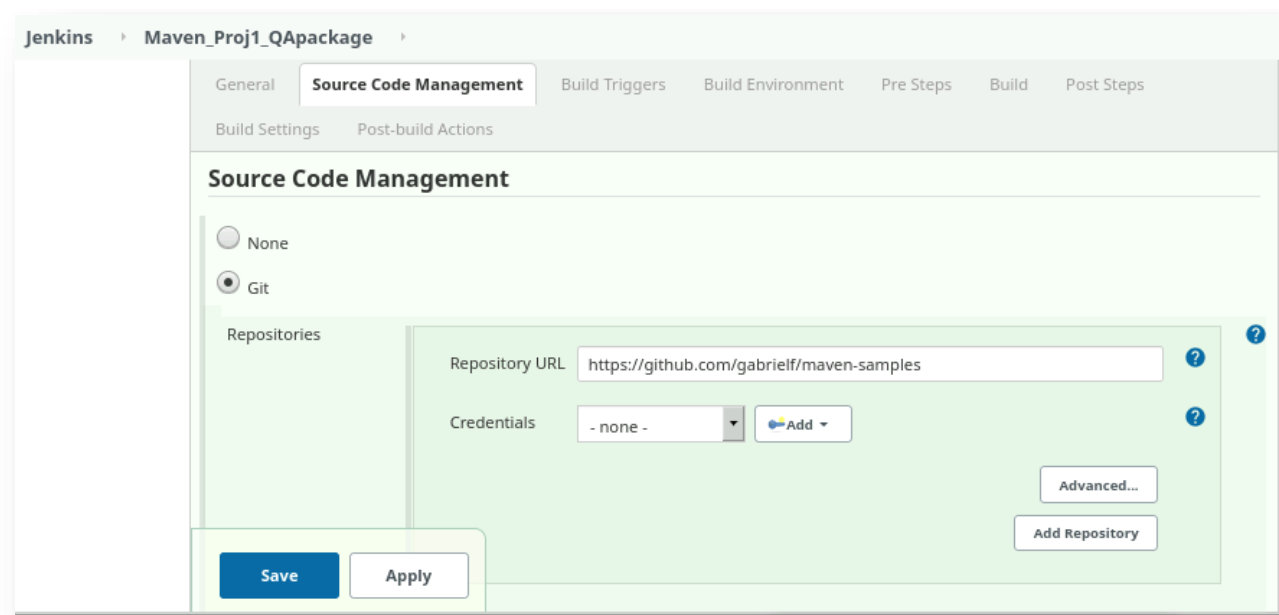
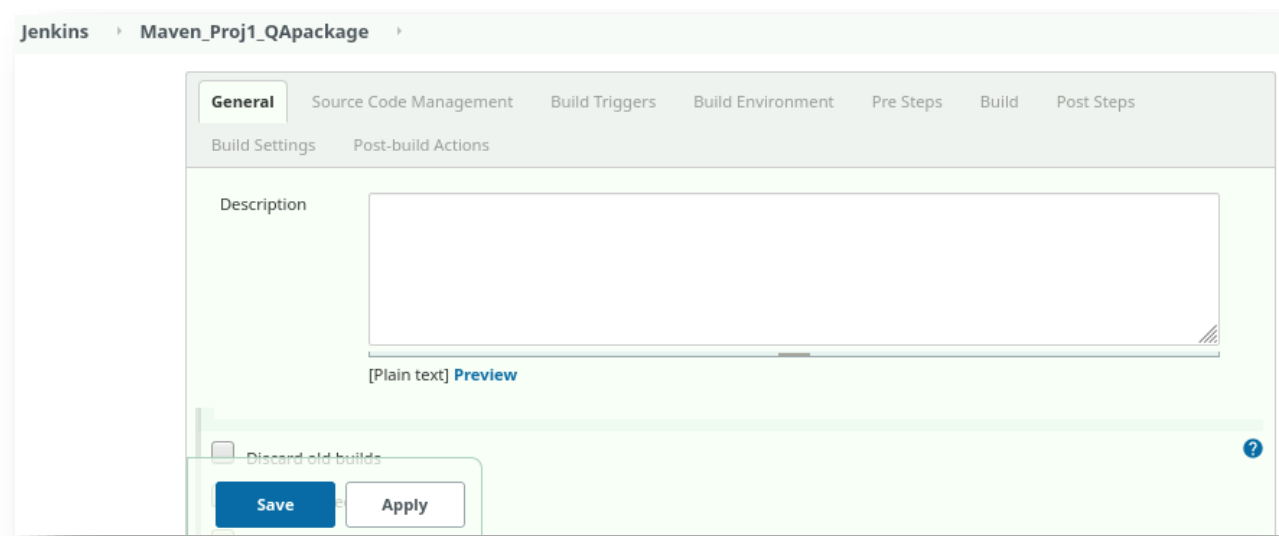
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0

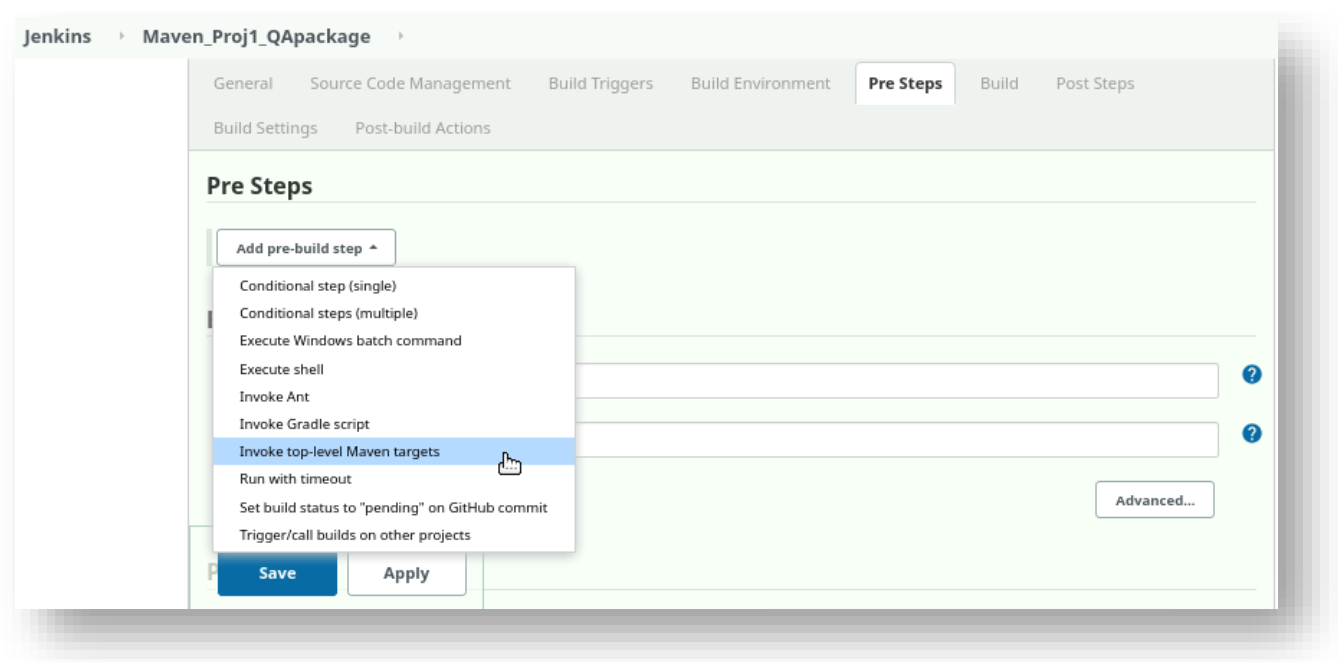
[INFO]
[INFO] -----< com.example.maven-samples:parent >-----
[INFO] Building Parent 1.0-SNAPSHOT [5/5]
[INFO] -----[ pom ]-----
[INFO] -----
[INFO] Reactor Summary for Parent 1.0-SNAPSHOT:
[INFO]
[INFO] Multi Module Project Parent ..... SUCCESS [ 0.004 s]
[INFO] Server ..... SUCCESS [ 1.575 s]
[INFO] Webapp ..... SUCCESS [ 0.294 s]
[INFO] A Single Maven Module ..... SUCCESS [ 0.372 s]
[INFO] Parent ..... SUCCESS [ 0.001 s]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 2.461 s
[INFO] Finished at: 2021-05-17T04:43:19Z
[INFO] -----
Finished: SUCCESS
```

Step 13: Now, create a new job, and it will also be a Maven project.

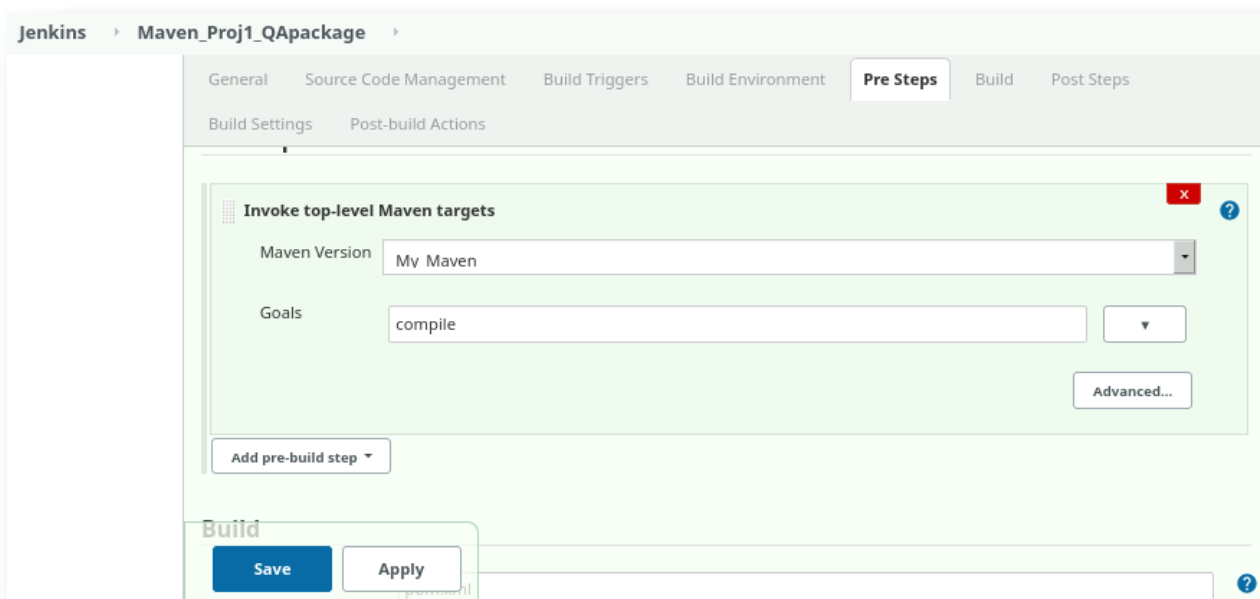
The image shows the Jenkins 'Enter an item name' dialog box. At the top, there's a search bar and a user profile 'admin' with a 'log out' button. Below the dialog title, the text 'Maven_Proj1_QApackage' is entered in the 'Enter an item name' field, with a note '» Required field'. Two options are listed: 'Freestyle project' (with a folder icon) and 'Maven project' (with a robot icon). The 'Maven project' option is highlighted, and its description reads: 'Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.' At the bottom, there is an 'OK' button.

Step 14: Click on configure and configure your project.

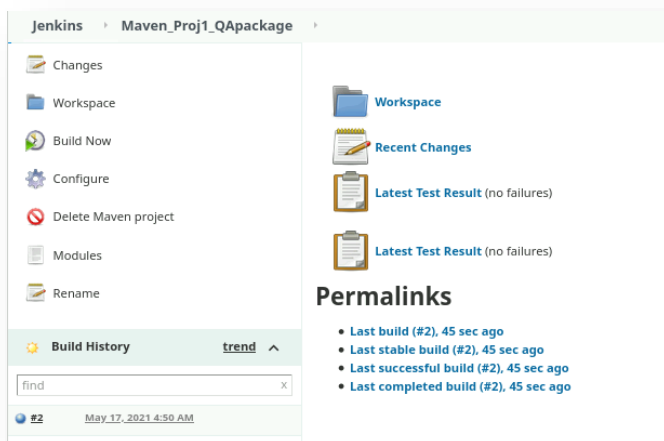
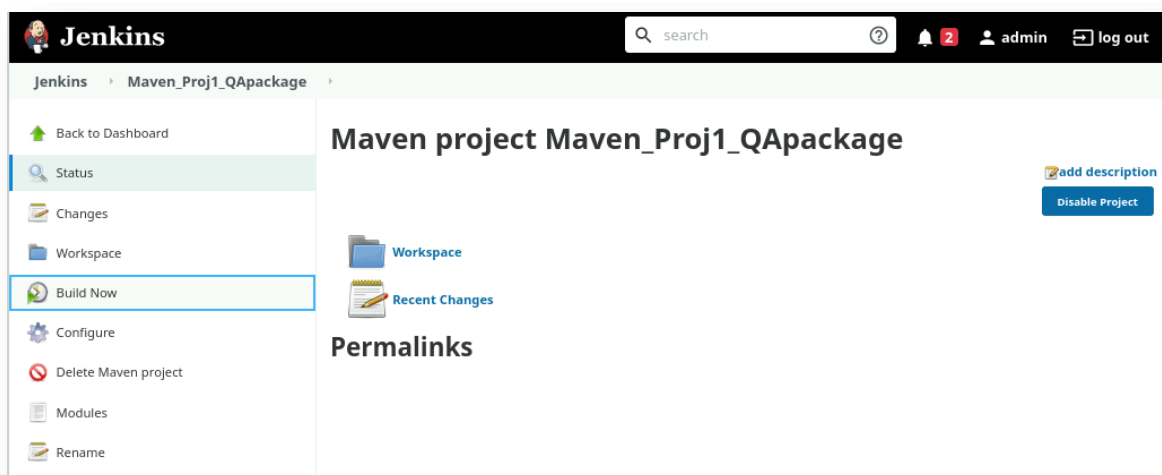




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Step 15: After configuring your job, click on build now and then check the console output.



```

Jenkins  ▸ Maven_Proj1_QApackage  ▸ #2
Changes
Console Output
View as plain text
Edit Build Information
Delete build '#2'
Git Build Data
Redeploy Artifacts
Test Result
See Fingerprints

Building on master in workspace /var/lib/jenkins/workspace/Maven_Proj1_QApackage
The recommended git tool is: NONE
No credentials specified
> git rev-parse --is-inside-work-tree # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/gabrielf/maven-samples # timeout=10
Fetching upstream changes from https://github.com/gabrielf/maven-samples
> git --version # timeout=10
> git --version # 'git version 2.17.1'
> git fetch --tags --progress -- https://github.com/gabrielf/maven-samples +refs/heads/*:refs/remotes/origin/* #
timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision 4d47c7d9bd4ca5ea765d78c76020dd71cf133e8b (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f 4d47c7d9bd4ca5ea765d78c76020dd71cf133e8b # timeout=10
Commit message: "Merge pull request #1 from narendra2244/patch-1"
> git rev-list --no-walk 4d47c7d9bd4ca5ea765d78c76020dd71cf133e8b # timeout=10
[Maven_Proj1_QApackage] $ /var/lib/jenkins/tools/hudson.tasks.Maven_MavenInstallation/My_Maven/bin/mvn compile
[INFO] Scanning for projects...
[WARNING]
[WARNING] Some problems were encountered while building the effective model for com.example.maven-
samples:server:jar:1.0-SNAPSHOT
[WARNING] Reporting configuration should be done in <reporting> section, not in maven-site-plugin <configuration>
as reportPlugins parameter.

```

```

Jenkins  ▸ Maven_Proj1_QApackage  ▸ #2

[INFO] Total time: 9.865 s
[INFO] Finished at: 2021-05-17T04:50:41Z
[INFO] -----
Waiting for Jenkins to finish collecting data
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/single-module/pom.xml to com.example.maven-
samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/single-module/target/single-module-
project.jar to com.example.maven-samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.jar
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/pom.xml to com.example.maven-
samples/multi-module-parent/1.0-SNAPSHOT/multi-module-parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/pom.xml to com.example.maven-samples/parent
/1.0-SNAPSHOT/parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/pom.xml to
com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/target/webapp.war to
com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.war
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/server/pom.xml to
com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/server/target/server.jar to
com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.jar
channel stopped
Finished: SUCCESS

```

Step 16: If the job is successfully built, go to the below path and find your webapp.war file.

```
$ cd /var/lib/Jenkins/workspace/Maven_proj1_QApackage/multi-module/webapp/target
```

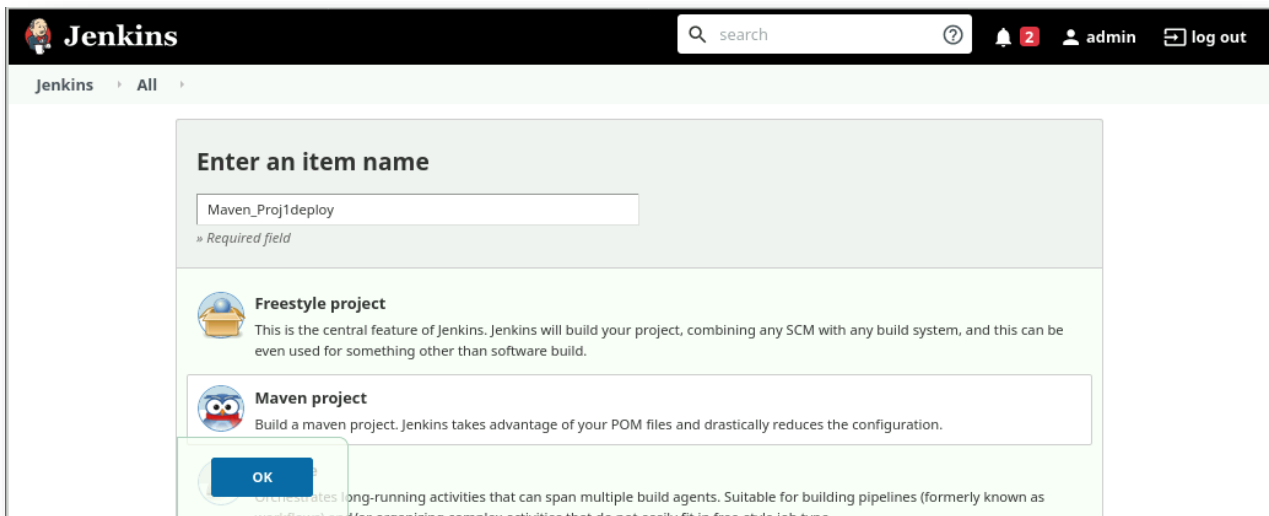
```
$ ls
```

```

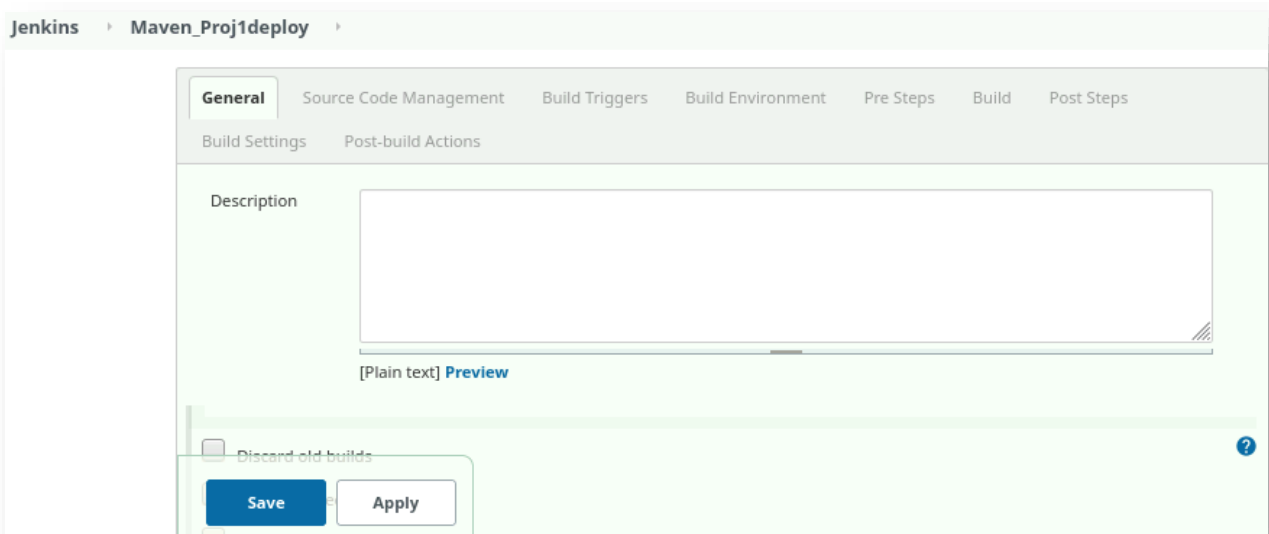
edureka@kmaster:~$ cd /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/target/
edureka@kmaster:/var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/target$ ls
edureka@kmaster:/var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/target$

```

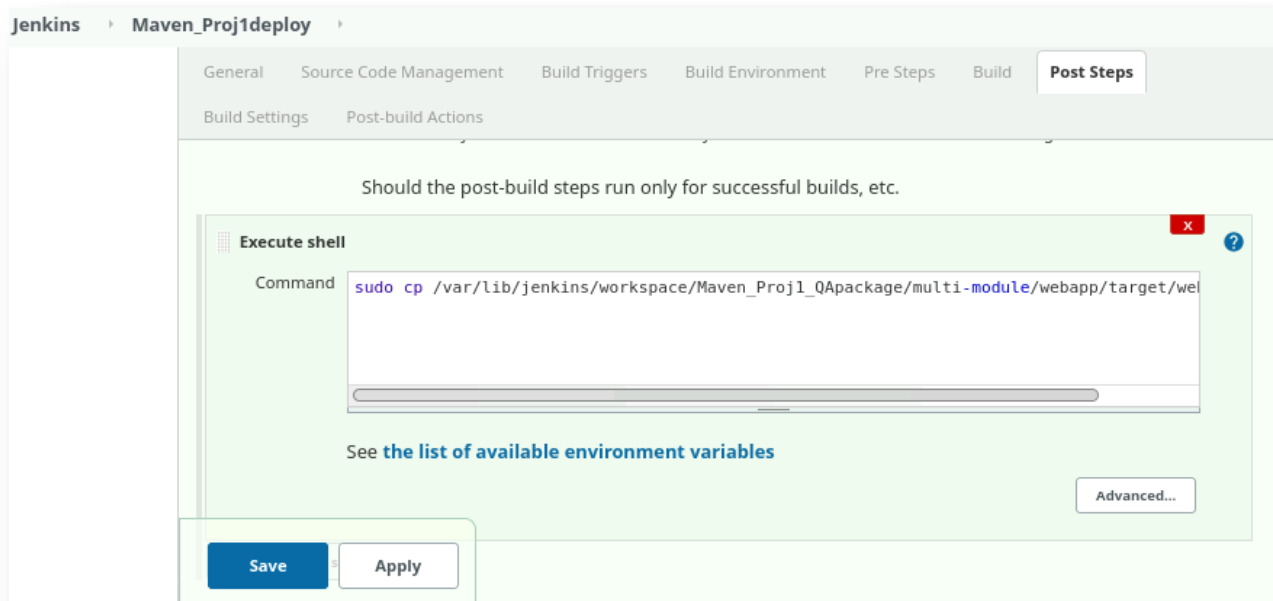
Step 17: After building the war file, create another job to deploy the war file over the tomcat server.



The image shows the Jenkins 'Enter an item name' dialog box. At the top, there's a search bar and user information (admin, log out). Below the title 'Enter an item name', there's a text input field containing 'Maven_Proj1deploy'. A small message below the field says '» Required field'. Underneath, there are two project type options: 'Freestyle project' with a description '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.' and 'Maven project' with a description 'Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.' At the bottom, there's an 'OK' button.



The image shows the Jenkins configuration page for a job named 'Maven_Proj1deploy'. The page has a breadcrumb 'Jenkins > Maven_Proj1deploy'. Below the breadcrumb, there's a tabbed interface with tabs for 'General', 'Source Code Management', 'Build Triggers', 'Build Environment', 'Pre Steps', 'Build', and 'Post Steps'. The 'General' tab is selected. Under the 'General' tab, there's a 'Description' section with a large text area and a '[Plain text] Preview' link. At the bottom, there's a 'Discard old builds' section with a 'Save' button and an 'Apply' button.



Copy the given code and paste it in the Execute shell command:

`/var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/target/webapp.war /opt/tomcat/webapps/`



```
Jenkins  ▸ Maven_Proj1deploy  ▸ #3

Waiting for Jenkins to finish collecting data
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/single-module/pom.xml to com.example.maven-
samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/single-module/target/single-module-project.jar to
com.example.maven-samples/single-module-project/1.0-SNAPSHOT/single-module-project-1.0-SNAPSHOT.jar
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/multi-module/pom.xml to com.example.maven-
samples/multi-module-parent/1.0-SNAPSHOT/multi-module-parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/pom.xml to com.example.maven-samples/parent/1.0-
SNAPSHOT/parent-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/multi-module/webapp/pom.xml to com.example.maven-
samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/multi-module/webapp/target/webapp.war to
com.example.maven-samples/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.war
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/multi-module/server/pom.xml to com.example.maven-
samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Maven_Proj1deploy/multi-module/server/target/server.jar to
com.example.maven-samples/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.jar
channel stopped
[Maven_Proj1deploy] $ /bin/sh -xe /tmp/jenkins3314760899362451375.sh
+ sudo cp /var/lib/jenkins/workspace/Maven_Proj1_QApackage/multi-module/webapp/target/webapp.war /opt/tomcat
/webapps/
Finished: SUCCESS
```

Step 18: After building the job, go to the address <http://localhost:8090/webapp> and you can see the below output.

