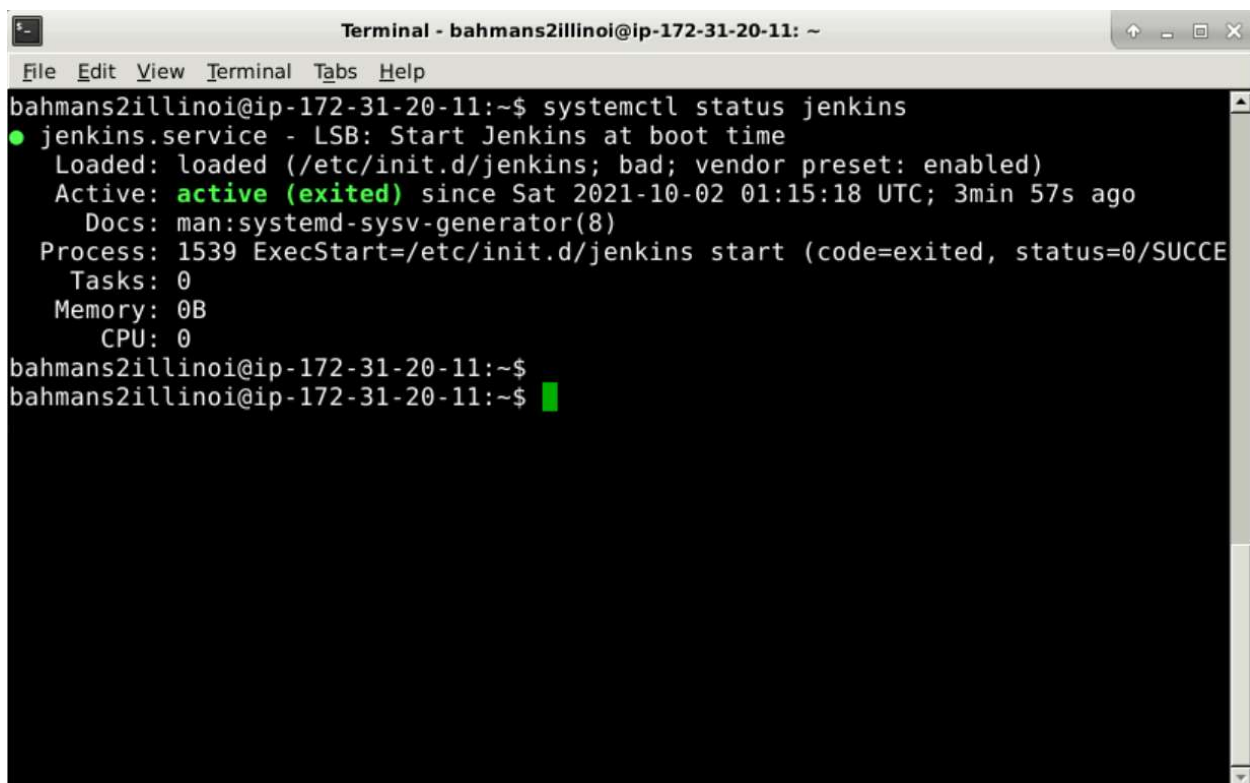


Building a Maven Project with Jenkins

Description: You are a DevOps engineer, and you are asked to create a sample maven project, add a sample java code in it, and deploy the same on Jenkins.

Solution:

1. Checking if Jenkins is available, up and running:

A terminal window titled "Terminal - bahmans2illinoi@ip-172-31-20-11: ~" with a menu bar (File, Edit, View, Terminal, Tabs, Help). The terminal shows the command `systemctl status jenkins` and its output. The output indicates that the `jenkins.service` is loaded and active (exited) since Saturday, 2021-10-02 at 01:15:18 UTC, 3 minutes and 57 seconds ago. The process ID is 1539, and the status is 0/SUCCESS. The terminal also shows the user's prompt and a cursor.

```

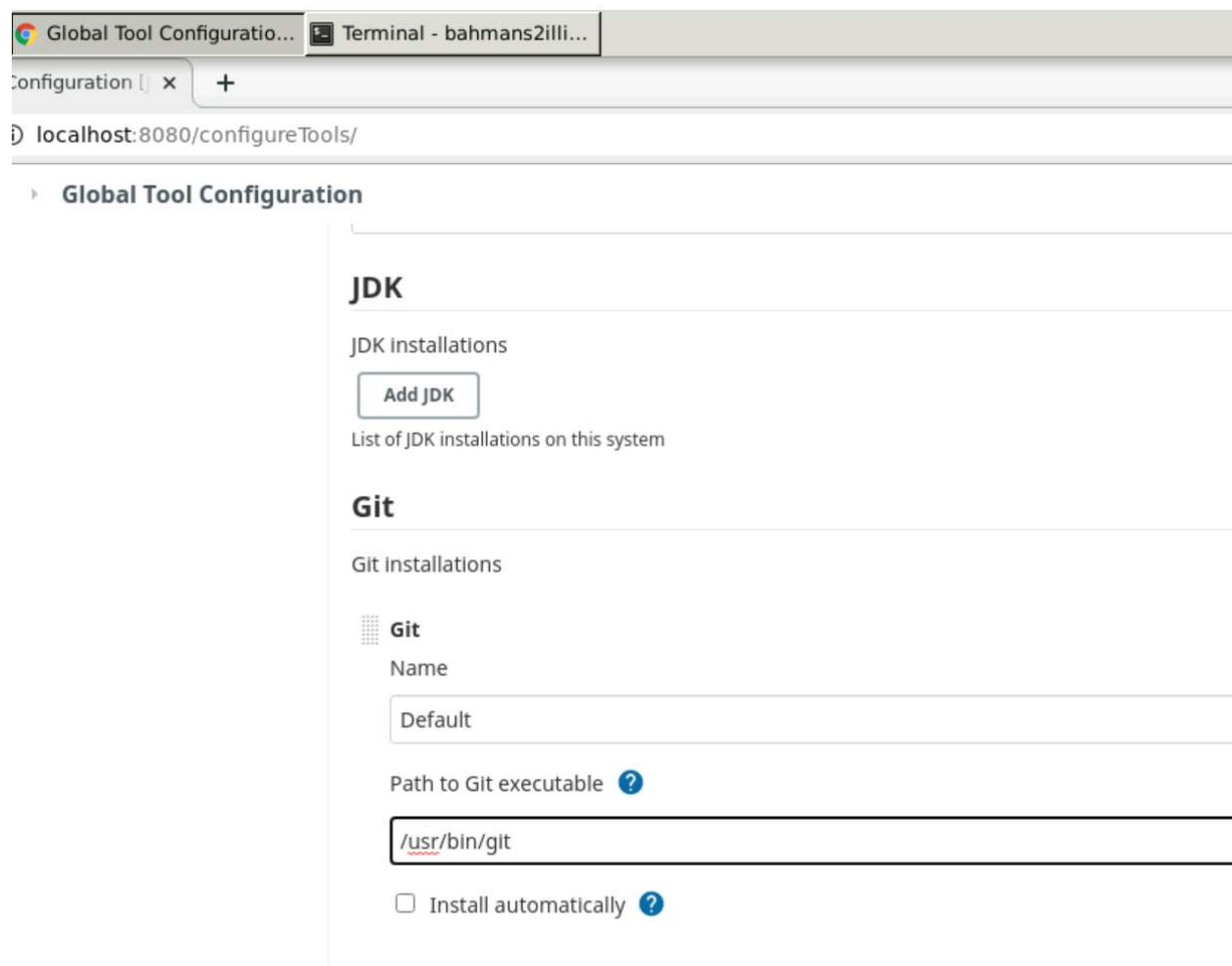
bahmans2illinoi@ip-172-31-20-11:~$ systemctl status jenkins
● jenkins.service - LSB: Start Jenkins at boot time
   Loaded: loaded (/etc/init.d/jenkins; bad; vendor preset: enabled)
   Active: active (exited) since Sat 2021-10-02 01:15:18 UTC; 3min 57s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 1539 ExecStart=/etc/init.d/jenkins start (code=exited, status=0/SUCCESS)
    Tasks: 0
   Memory: 0B
      CPU: 0
bahmans2illinoi@ip-172-31-20-11:~$
bahmans2illinoi@ip-172-31-20-11:~$
```

2. Configure the Jenkins: Global tool configuration:

- Git



```
Terminal - bahmans2illinoi@ip-172-31-20-11: ~  
File Edit View Terminal Tabs Help  
bahmans2illinoi@ip-172-31-20-11:~$ whereis git  
git: /usr/bin/git /usr/share/man/man1/git.1.gz  
bahmans2illinoi@ip-172-31-20-11:~$
```



Global Tool Configuration

configuration [x] +

localhost:8080/configureTools/

Global Tool Configuration

JDK


JDK Installations

[Add JDK](#)

List of JDK installations on this system


Git

Git Installations


 **Git**

Name

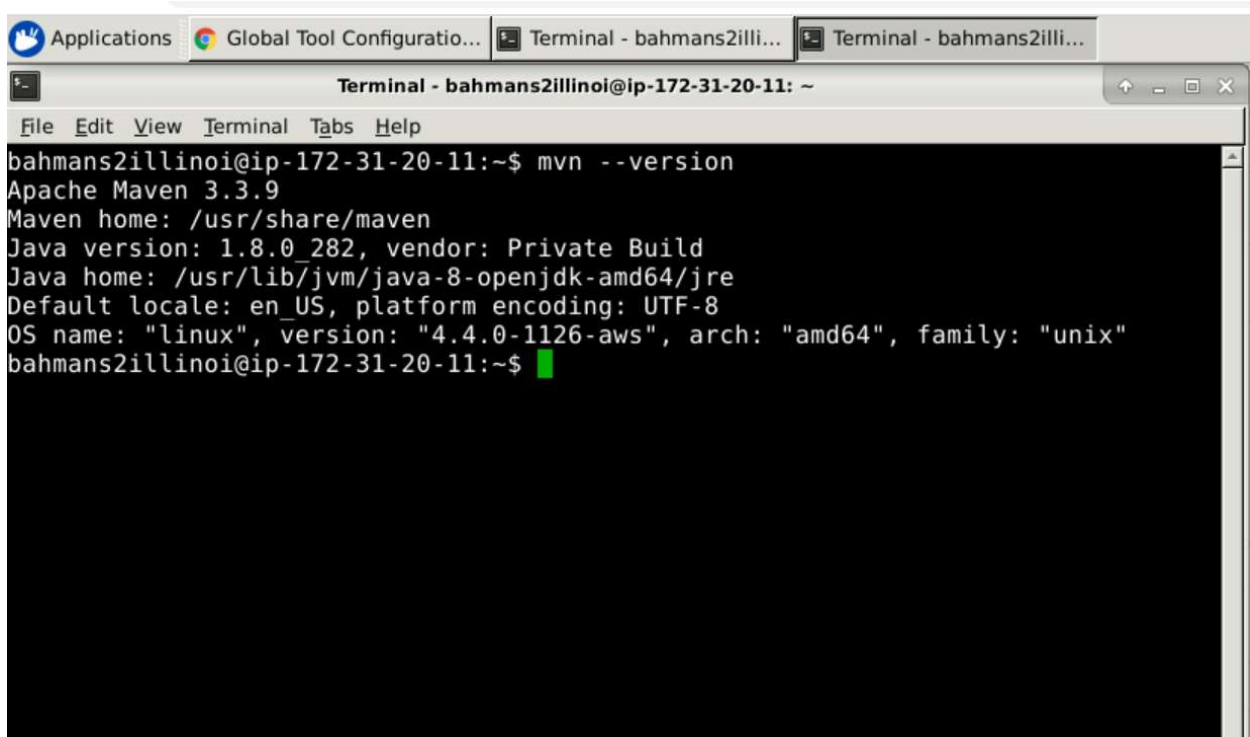
Default

Path to Git executable 

/usr/bin/git

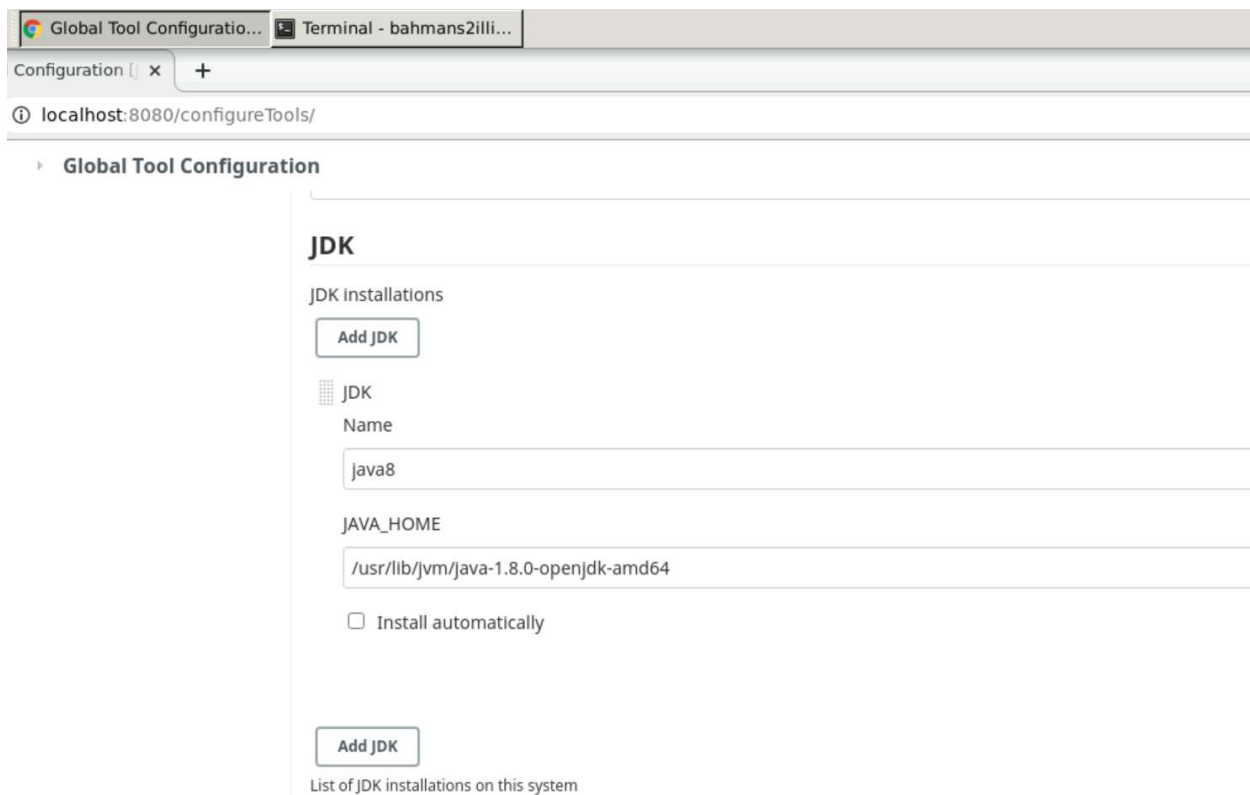
☐ Install automatically 

- Java SDK



A terminal window titled "Terminal - bahmans2illinoi@ip-172-31-20-11: ~". The window contains the following text:

```
bahmans2illinoi@ip-172-31-20-11:~$ mvn --version
Apache Maven 3.3.9
Maven home: /usr/share/maven
Java version: 1.8.0_282, vendor: Private Build
Java home: /usr/lib/jvm/java-8-openjdk-amd64/jre
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "4.4.0-1126-aws", arch: "amd64", family: "unix"
bahmans2illinoi@ip-172-31-20-11:~$
```



A web browser window showing the "Global Tool Configuration" page. The address bar displays "localhost:8080/configureTools/". The page has a sidebar with "Global Tool Configuration" and a main content area titled "JDK".

JDK

JDK Installations

[Add JDK](#)

JDK
Name
java8

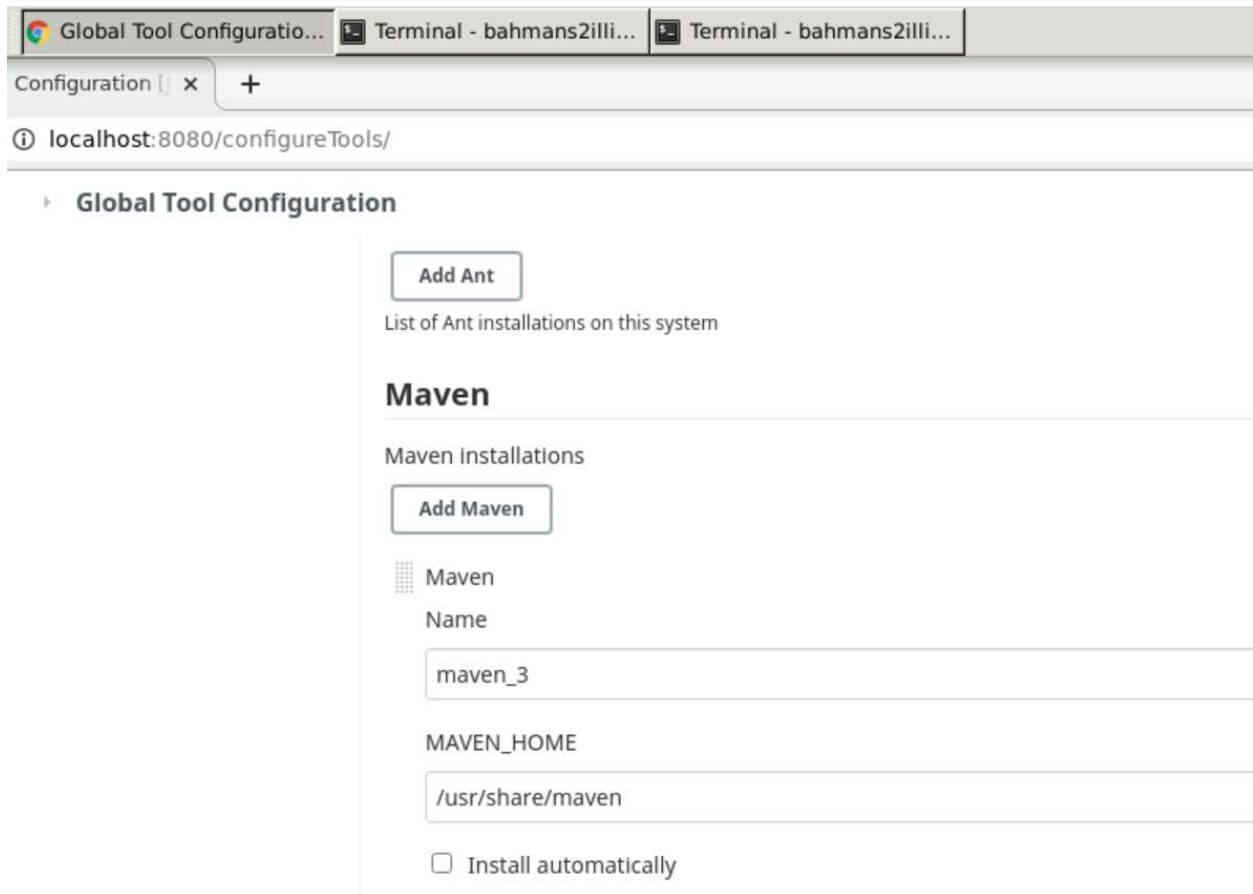
JAVA_HOME

☐ Install automatically

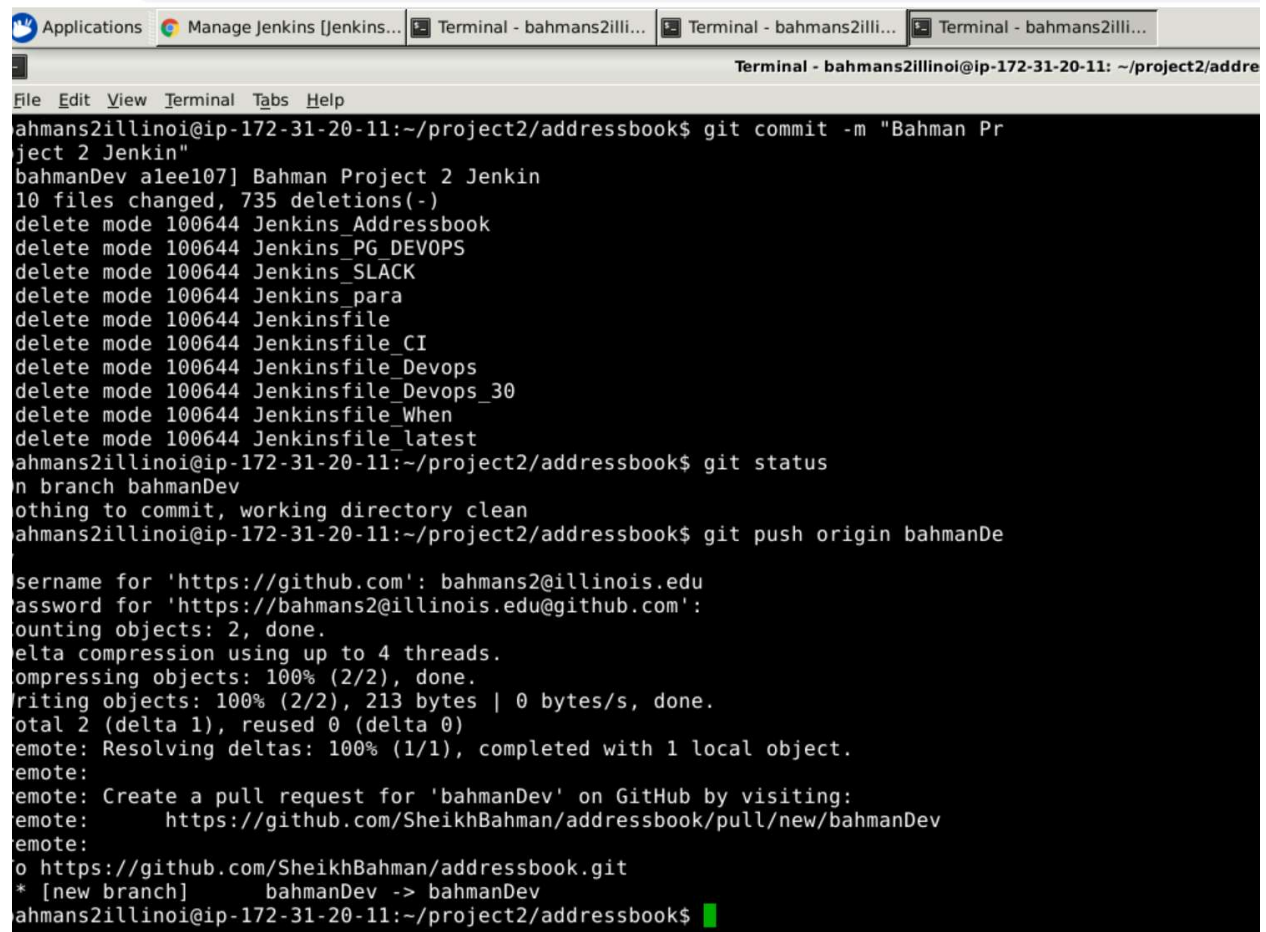
[Add JDK](#)

List of JDK installations on this system

- Maven



3. Create bahmanDev branch on git forked (to have a Java project)



The screenshot shows a terminal window with the title bar "Terminal - bahmans2illinoi@ip-172-31-20-11: ~/project2/addressbook". The terminal content shows the following sequence of commands and output:

```
ahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git commit -m "Bahman Project 2 Jenkin"
[master 100644] Bahman Project 2 Jenkin
10 files changed, 735 deletions(-)
delete mode 100644 Jenkins_Addressbook
delete mode 100644 Jenkins_PG_DEVOPS
delete mode 100644 Jenkins_SLACK
delete mode 100644 Jenkins_para
delete mode 100644 Jenkinsfile
delete mode 100644 Jenkinsfile_CI
delete mode 100644 Jenkinsfile_Devops
delete mode 100644 Jenkinsfile_Devops_30
delete mode 100644 Jenkinsfile_When
delete mode 100644 Jenkinsfile_latest
ahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git status
On branch bahmanDev
nothing to commit, working directory clean
ahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git push origin bahmanDev
Counting objects: 2, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (2/2), 213 bytes | 0 bytes/s, done.
Total 2 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'bahmanDev' on GitHub by visiting:
remote:   https://github.com/SheikhBahman/addressbook/pull/new/bahmanDev
remote:
To https://github.com/SheikhBahman/addressbook.git
 * [new branch]      bahmanDev -> bahmanDev
ahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$
```

SheikhBahman / addressbook Public

forked from devopstrainers1/addressbook

<> Code Pull requests Actions Projects Wiki Security Insights Settings

bahmanDev had recent pushes less than a minute ago Compare & pull request

bahmanDev 5 branches 0 tags Go to file Add file Code

This branch is 1 commit ahead of devopstrainers1:master. Contribute Fetch upstream

Bahman Project 2 Jenkin		a1ee107 1 hour ago 201 commits
src/main/java/com/vaadin/tutorial/ad...	Update AddressbookUI.java	3 months ago
.gitignore	Ignore target directory generated by Maven	6 years ago
README.md	converted some URLs to links; added screenshot	6 years ago
addressbook_screenshot.png	converted some URLs to links; added screenshot	6 years ago
pom.xml	Use https for Maven repositories (vaadin#38)	2 years ago

README.md

Addressbook Tutorial

4. Write a Jenkins pipeline

```

1 pipeline {
2   agent any
3   tools {
4     maven 'maven_3'
5     jdk 'java_8'
6   }
7   stages {
8     stage('Checkout the code') {
9       steps {
10        git branch: 'bahmanDev', credentialsId: 'e0261c3c-9976-4308-9a32-c800f97a65d3', url: 'https://github.com/SheikhBahman/addressbook.g
11      }
12    }
13    stage('Code Compile') {
14      steps {
15        sh 'mvn compile'
16      }
17    }
18    stage('Run Unit test') {
19      steps {
20        sh 'mvn test'
21      }
22    }
23    stage('Create Package') {
24      steps {
25        sh 'mvn package'
26      }
27    }
28  }
29 }

```

5. Create the Jenkins file: checkout the java files, compile, run test, create package

```

Terminal - bahmans2illinoi@ip-172-31-20-11: ~/CaltechDevOps/jenkins
File Edit View Terminal Tabs Help
pipeline {
    agent any
    tools {
        maven 'maven_3'
        jdk 'java_8'
    }
    stages {
        stage('Checkout the code') {
            steps {
                git branch: 'bahmanDev', credentialsId: 'e0261c3c-9976-4308-9a32-c800f97a65d3', url: 'https://github.com/SheikhBahman/addressbook.git'
            }
        }
        stage('Code Compile') {
            steps {
                sh 'mvn compile'
            }
        }
        stage('Run Unit test') {
            steps {
                sh 'mvn test'
            }
        }
        stage('Create Package') {
            steps {
                sh 'mvn package'
            }
        }
    }
}
-- INSERT --
29,2

```

6. Push to JenkinsFile to the git repository:

```

Terminal - bahmans2illinoi@ip-172-31-20-11: ~/project2/addressbook
File Edit View Terminal Tabs Help
bahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git status
On branch bahmanDev
Untracked files:
  (use "git add <file>..." to include in what will be committed)

    JenkinsFile

nothing added to commit but untracked files present (use "git add" to track)
bahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git add .
bahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git commit -m "add Jenkins file"
[bahmanDev 6f138b1] add Jenkins file
1 file changed, 29 insertions(+)
create mode 100644 JenkinsFile
bahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$ git push origin bahmanDev
Username for 'https://github.com': bahmans2@illinois.edu
Password for 'https://bahmans2@illinois.edu@github.com':
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 524 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/SheikhBahman/addressbook.git
   a1ee107..6f138b1 bahmanDev -> bahmanDev
bahmans2illinoi@ip-172-31-20-11:~/project2/addressbook$

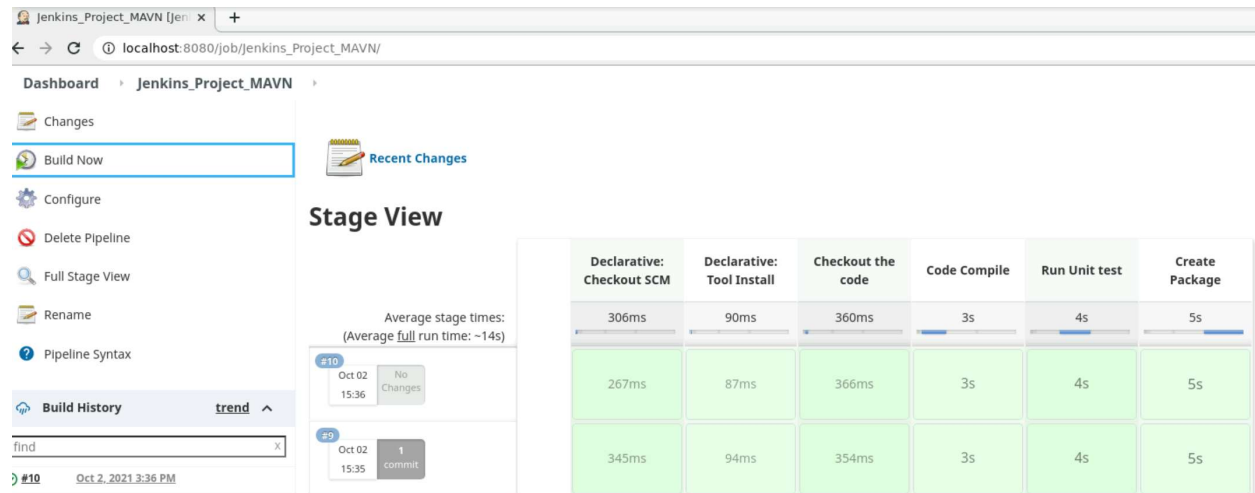
```

7. Create a Jenkins pipeline script from SCM:

The screenshot shows the Jenkins Pipeline configuration page for a job named 'Jenkins_Project_MAVN'. The 'Pipeline' tab is selected. The 'Repositories' section contains a 'Repository URL' field with the value 'https://github.com/SheikhBahman/addressbook.git' and a 'Credentials' dropdown menu with 'bahmans2@illinois.edu/******' selected. There are 'Advanced...' and 'Add Repository' buttons. The 'Branches to build' section has a 'Branch Specifier (blank for 'any')' field with the value '*/bahmanDev' and an 'Add Branch' button. At the bottom, there are 'Save' and 'Apply' buttons.


The screenshot shows the Jenkins Pipeline configuration page for the same job. The 'Pipeline' tab is selected. The 'Branch Specifier (blank for 'any')' field has the value '*/bahmanDev'. The 'Repository browser' dropdown menu is set to '(Auto)'. The 'Additional Behaviours' section has an 'Add' button. The 'Script Path' field has the value 'JenkinsFile'. The 'Lightweight checkout' checkbox is checked. At the bottom, there are 'Save' and 'Apply' buttons.

8. Build the Jenkins pipeline:





9. Console output:


10/2/2021 Jenkins_Project_MAVN #10 Console [Jenkins]


11


Dashboard > Jenkins_Project_MAVN > #10


 Back to Project


 Status


 Changes


 Console Output


 View as plain text


 Edit Build Information


 Delete build '#10'


 Git Build Data


 Restart from Stage

 Replay

 Pipeline Steps

 Workspaces

 Previous Build

 **Console Output**

Started by user [bahman](#)
Obtained JenkinsFile from git <https://github.com/SheikhBahman/addressbook.git>
Running in Durability level: MAX_SURVIVABILITY
[Pipeline] Start of Pipeline
[Pipeline] node
Running on [Jenkins](#) in /var/lib/jenkins/workspace/Jenkins_Project_MAVN
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
localhost:8080/job/Jenkins_Project_MAVN/10/console

1/6

```

10/2/2021 Jenkins_Project_MAVN #10 Console [jenkins]
[Pipeline] checkout
The recommended git tool is: /usr/bin/git
using credential e0261c3c-9976-4308-9a32-c800f97a65d3

Dashboard Jenkins_Project_MAVN #10

/var/lib/jenkins/workspace/Jenkins_Project_MAVN/.git # timeout=10
Fetching changes from the remote Git repository
> /usr/bin/git config remote.origin.url https://github.com/SheikhBahman/addressbook.git
# timeout=10
Fetching upstream changes from https://github.com/SheikhBahman/addressbook.git
> /usr/bin/git --version # timeout=10
> git --version # 'git version 2.7.4'
using GIT_ASKPASS to set credentials
> /usr/bin/git fetch --tags --progress https://github.com/SheikhBahman/addressbook.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
> /usr/bin/git rev-parse refs/remotes/origin/bahmanDev^{commit} # timeout=10
Checking out Revision 5e60c08efacd73da4455055b20ea943537548c7e
(refs/remotes/origin/bahmanDev)
> /usr/bin/git config core.sparsecheckout # timeout=10
> /usr/bin/git checkout -f 5e60c08efacd73da4455055b20ea943537548c7e # timeout=10
Commit message: "Modify JenkinsFile"
> /usr/bin/git rev-list --no-walk 5e60c08efacd73da4455055b20ea943537548c7e # timeout=10
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Tool Install)
[Pipeline] tool
[Pipeline] envVarsForTool
[Pipeline] tool
[Pipeline] envVarsForTool
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Checkout the code)
[Pipeline] tool
[Pipeline] envVarsForTool
[Pipeline] tool
[Pipeline] envVarsForTool
[Pipeline] withEnv
[Pipeline] {
[Pipeline] git
The recommended git tool is: /usr/bin/git
using credential e0261c3c-9976-4308-9a32-c800f97a65d3
> /usr/bin/git rev-parse --resolve-git-dir
/var/lib/jenkins/workspace/Jenkins_Project_MAVN/.git # timeout=10
Fetching changes from the remote Git repository
> /usr/bin/git config remote.origin.url https://github.com/SheikhBahman/addressbook.git
# timeout=10

```

```

localhost:8080/job/Jenkins_Project_MAVN/10/console

```

```

2/6

```

```
localhost:8080/job/jenkins-Project_MAVN/10/console
```



```

10/2/2021 Jenkins_Project_MAVN #10 Console [jenkins]
[Pipeline] { (Pipeline) }
[Pipeline] tool
[Pipeline] envVarsForTool
[Pipeline] sh
+ mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] -----
[INFO] Building Vaadin Addressbook example 2.0
[INFO] -----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ addressbook ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory
/var/lib/jenkins/workspace/Jenkins_Project_MAVN/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.2:compile (default-compile) @ addressbook ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @
addressbook ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory
/var/lib/jenkins/workspace/Jenkins_Project_MAVN/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.2:testCompile (default-testCompile) @ addressbook ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.17:test (default-test) @ addressbook ---
[INFO] No tests to run.
[INFO]
[INFO] --- maven-war-plugin:2.2:war (default-war) @ addressbook ---
[INFO] Packaging webapp
[INFO] Assembling webapp [addressbook] in
[/var/lib/jenkins/workspace/Jenkins_Project_MAVN/target/addressbook-2.0]
[INFO] Processing war project
[INFO] Webapp assembled in [128 msecs]
[INFO] Building war: /var/lib/jenkins/workspace/Jenkins_Project_MAVN/target/addressbook-
2.0.war
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 3.120 s
[INFO] Finished at: 2021-10-02T15:36:24+00:00
[INFO] Final Memory: 12M/285M
[INFO] -----
[Pipeline] }
[Pipeline] // withEnv
localhost:8080/job/Jenkins_Project_MAVN/10/console

```

5/6

```
10/2/2021 Jenkins_Project_MAVN #10 Console [jenkins]
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // stage
[Pipeline] End of Pipeline
Finished: SUCCESS

Dashboard » Jenkins_Project_MAVN » #10

[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

Jenkins 2.303.1