DevOps Lab

Assignment 6:

Aim: To understand the usage of Maven and Jenkins and Selenium to build a simple automation project using Maven and Jenkins.

Theory & Execution:

Maven is a build automation tool used primarily for Java projects. Maven can also be used to build and manage projects written in C#, Ruby, Scala, and other languages. The Maven project is hosted by the Apache Software Foundation, where it was formerly part of the Jakarta Project.

Maven addresses two aspects of building software: how software is built, and its dependencies.

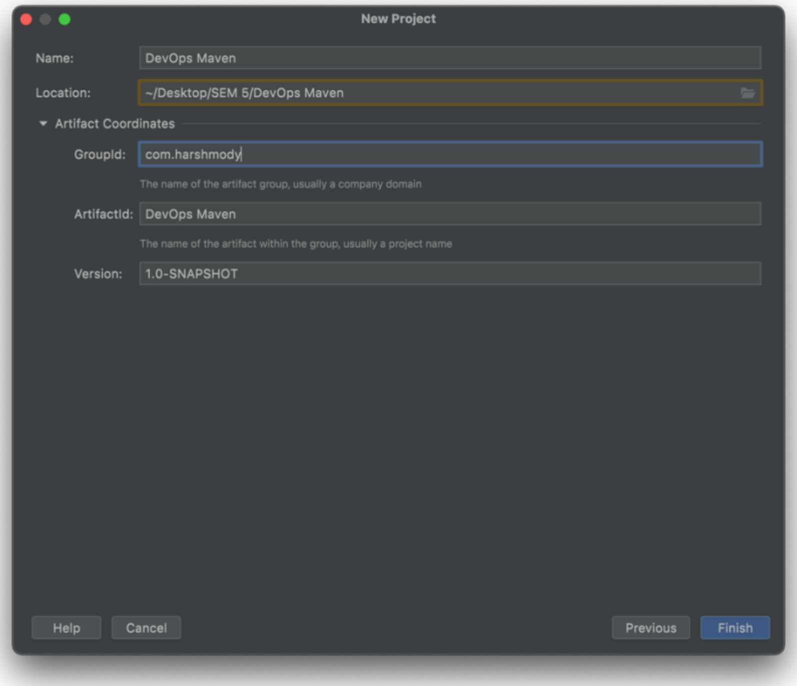
Maven is built using a plugin-based architecture that allows it to make use of any application controllable through standard input. A C/C++ native plugin is maintained for Maven 2.

Maven projects are configured using a Project Object Model (POM), which is stored in a pom.xml-file.

This POM only defines a unique identifier for the project (coordinates) and its dependency on the JUnit framework. However, that is already enough for building the project and running the unit tests associated with the project. Maven accomplishes this by embracing the idea of Convention over Configuration, that is, Maven provides default values for the project's configuration.

Selenium is an open-source automated testing framework for web applications. Selenium provides a playback tool for authoring functional tests without the need to learn a test scripting language (Selenium IDE). It also provides a test domain-specific language to write tests in a number of popular programming languages, including C#, Groovy, Java, Perl, PHP, Python, Ruby and Scala. The tests can then run against most modern web browsers. Selenium runs on Windows, Linux, and macOS.

Create a new maven project using IntelliJ IDEA.



New Project

Name: DevOps Maven

Location: ~/Desktop/SEM 5/DevOps Maven

Artifact Coordinates

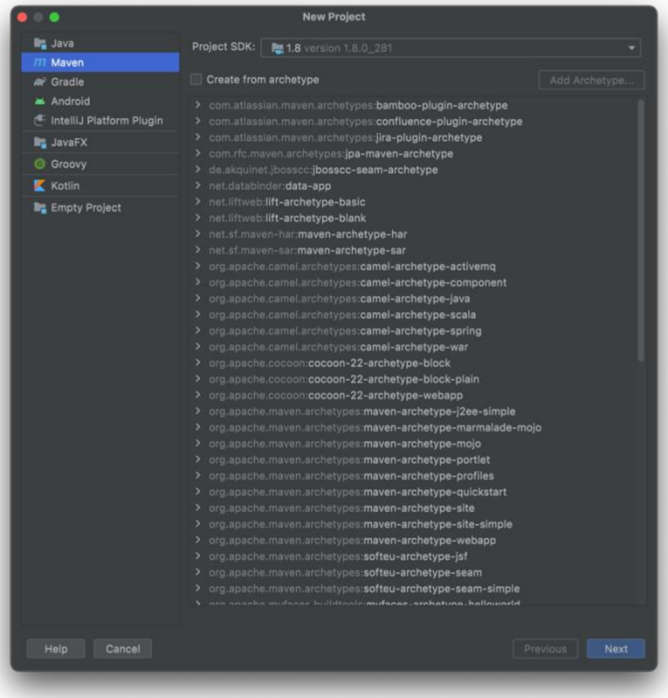
GroupId: com.harshmody

The name of the artifact group, usually a company domain

ArtifactId: DevOps Maven

The name of the artifact within the group, usually a project name

Version: 1.0-SNAPSHOT



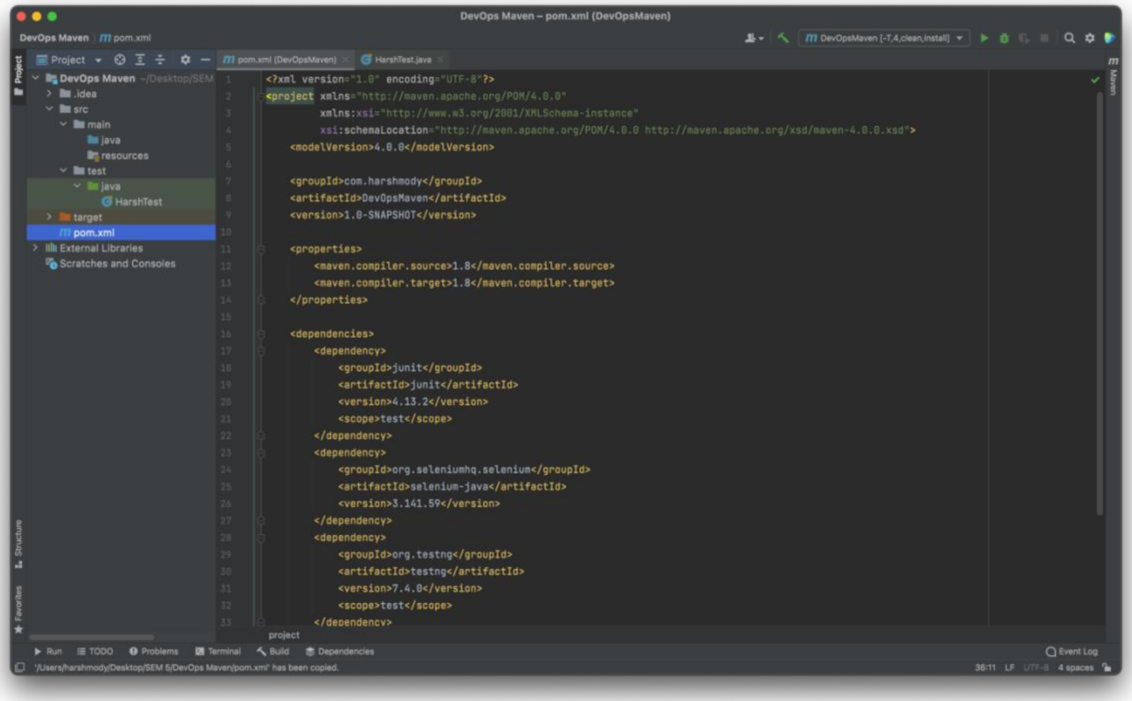
New Project

Project SDK: 1.8 version 1.8.0_281

☐ Create from archetype

```
com.atlassian.maven.archetypes:bamboo-plugin-archetype
com.atlassian.maven.archetypes:confluence-plugin-archetype
com.atlassian.maven.archetypes:jira-plugin-archetype
com.rfc.maven.archetypes:jpa-maven-archetype
de.akquinet.jbosscc:jbosscc-seam-archetype
net.databinder:data-app
net.liftweb:lift-archetype-basic
net.liftweb:lift-archetype-blank
net.sf.maven-har:maven-archetype-har
net.sf.maven-sar:maven-archetype-sar
org.apache.camel.archetypes:camel-archetype-activemq
org.apache.camel.archetypes:camel-archetype-component
org.apache.camel.archetypes:camel-archetype-java
org.apache.camel.archetypes:camel-archetype-scala
org.apache.camel.archetypes:camel-archetype-spring
org.apache.camel.archetypes:camel-archetype-war
org.apache.cocoon:cocoon-22-archetype-block
org.apache.cocoon:cocoon-22-archetype-block-plain
org.apache.cocoon:cocoon-22-archetype-webapp
org.apache.maven.archetypes:maven-archetype-j2ee-simple
org.apache.maven.archetypes:maven-archetype-marmalade-mojo
org.apache.maven.archetypes:maven-archetype-mojo
org.apache.maven.archetypes:maven-archetype-portlet
org.apache.maven.archetypes:maven-archetype-profiles
org.apache.maven.archetypes:maven-archetype-quickstart
org.apache.maven.archetypes:maven-archetype-site
org.apache.maven.archetypes:maven-archetype-site-simple
org.apache.maven.archetypes:maven-archetype-webapp
org.apache.maven.archetypes:softeu-archetype-jsf
org.apache.maven.archetypes:softeu-archetype-seam
org.apache.maven.archetypes:softeu-archetype-seam-simple
org.apache.myfaces.buildtools:myfaces-archetype-helloworld
```

Configure projects pom.xml file with Project Dependencies, etc.

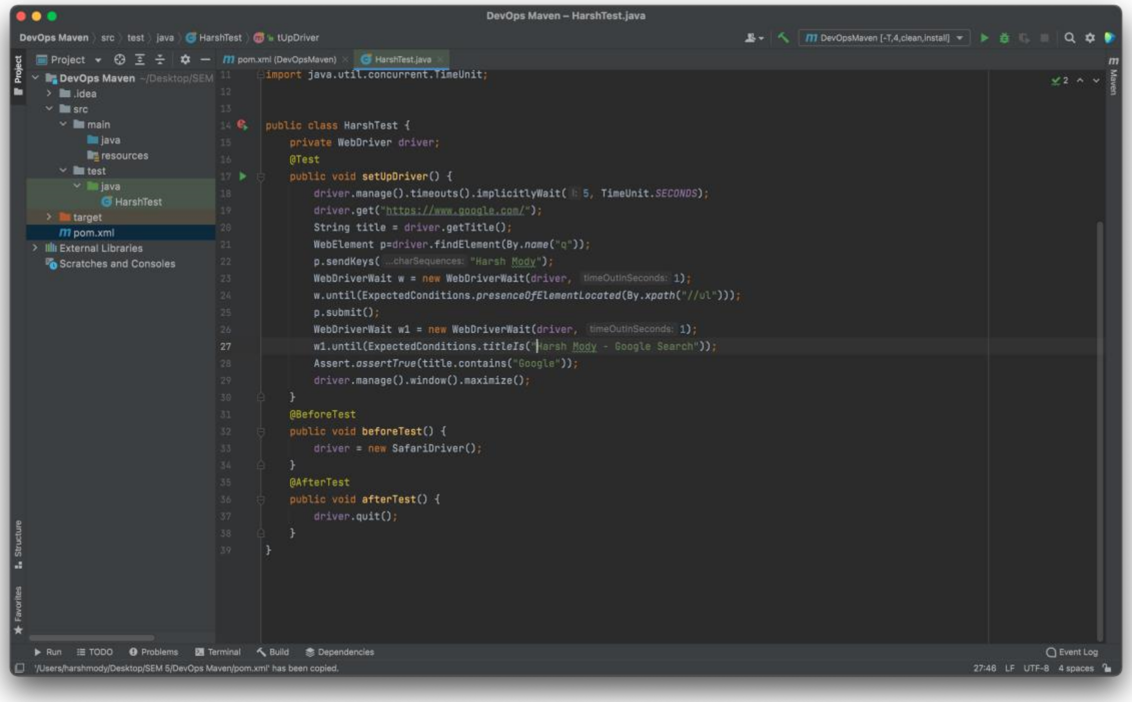


DevOps Maven – pom.xml (DevOpsMaven)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>

    <groupId>com.harshmody</groupId>
    <artifactId>DevOpsMaven</artifactId>
    <version>1.0-SNAPSHOT</version>

    <properties>
        <maven.compiler.source>1.8</maven.compiler.source>
        <maven.compiler.target>1.8</maven.compiler.target>
    </properties>

    <dependencies>
        <dependency>
            <groupId>junit</groupId>
            <artifactId>junit</artifactId>
            <version>4.13.2</version>
            <scope>test</scope>
        </dependency>
        <dependency>
            <groupId>org.seleniumhq.selenium</groupId>
            <artifactId>selenium-java</artifactId>
            <version>3.141.59</version>
        </dependency>
        <dependency>
            <groupId>org.testng</groupId>
            <artifactId>testng</artifactId>
            <version>7.4.0</version>
            <scope>test</scope>
        </dependency>
```

'/Users/harshmody/Desktop/SEM 5/DevOps Maven/pom.xml' has been copied.

Write test driven code to automate web browsing using Selenium.

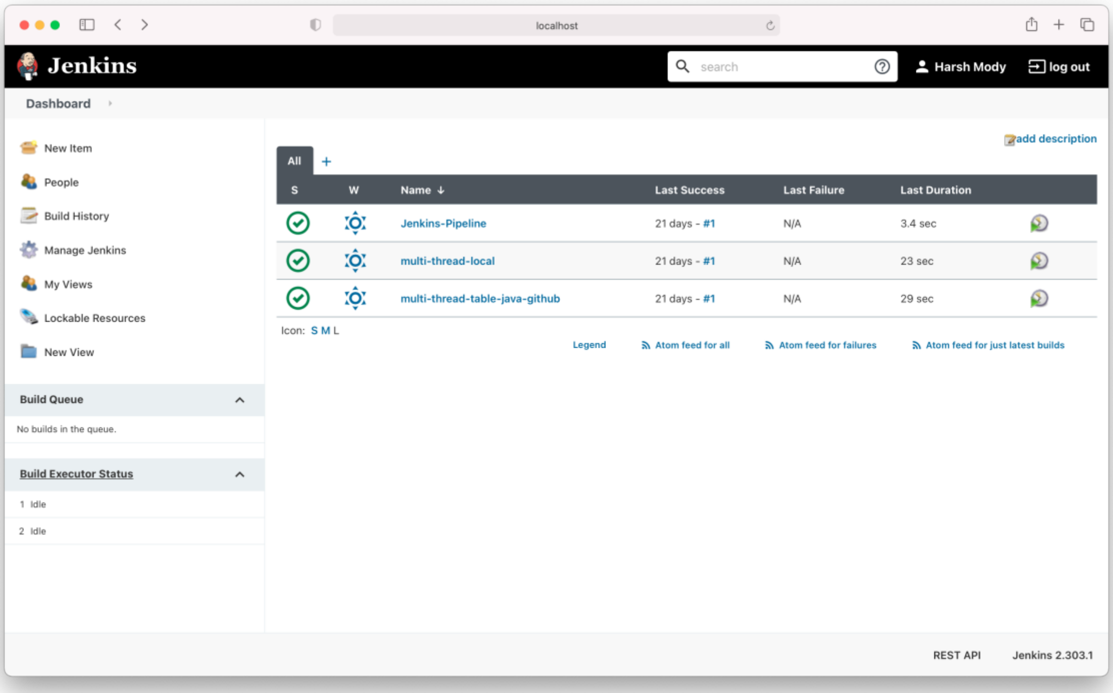


DevOps Maven – HarshTest.java

```java
import java.util.concurrent.TimeUnit;


public class HarshTest {
    private WebDriver driver;
    @Test
    public void setUpDriver() {
        driver.manage().timeouts().implicitlyWait( 5, TimeUnit.SECONDS);
        driver.get("https://www.google.com/");
        String title = driver.getTitle();
        WebElement p=driver.findElement(By.name("q"));
        p.sendKeys( "Harsh Mody");
        WebDriverWait w = new WebDriverWait(driver,  1);
        w.until(ExpectedConditions.presenceOfElementLocated(By.xpath("//ul")));
        p.submit();
        WebDriverWait w1 = new WebDriverWait(driver,  1);
        w1.until(ExpectedConditions.titleIs("Harsh Mody - Google Search"));
        Assert.assertTrue(title.contains("Google"));
        driver.manage().window().maximize();
    }
    @BeforeTest
    public void beforeTest() {
        driver = new SafariDriver();
    }
    @AfterTest
    public void afterTest() {
        driver.quit();
    }
}
```

'/Users/harshmody/Desktop/SEM 5/DevOps Maven/pom.xml' has been copied.

Go to Jenkins Dashboard and Manage Jenkins to configure Jenkins to work with Maven.

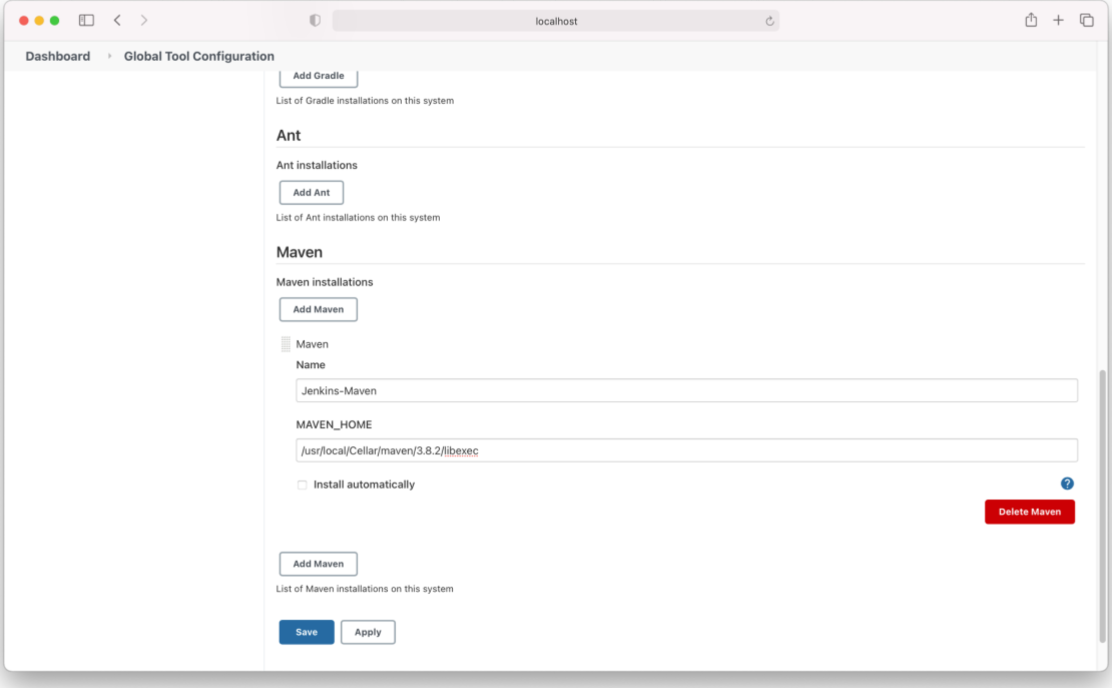


No builds in the queue.

1 Idle

2 Idle

S	W	Name ↓	Last Success	Last Failure	Last Duration
✓	☼	Jenkins-Pipeline	21 days - #1	N/A	3.4 sec
✓	☼	multi-thread-local	21 days - #1	N/A	23 sec
✓	☼	multi-thread-table-java-github	21 days - #1	N/A	29 sec



List of Gradle installations on this system

Ant

Ant installations

List of Ant installations on this system

Maven

Maven installations

Maven

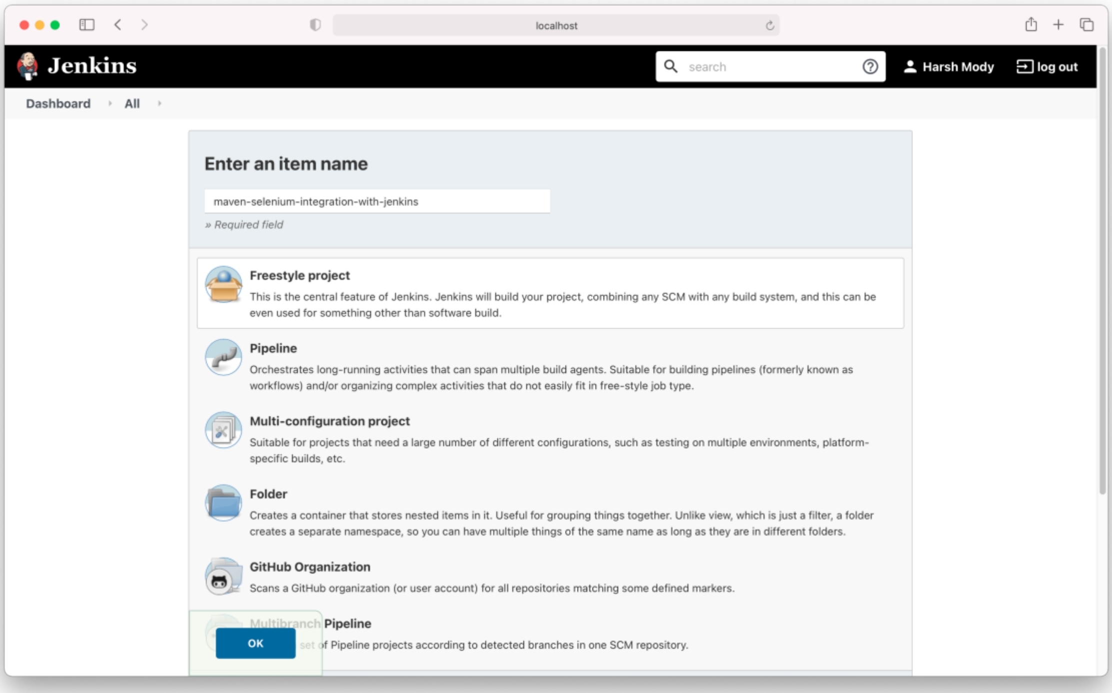
Name: Jenkins-Maven

MAVEN_HOME: /usr/local/Cellar/maven/3.8.2/libexec

□ Install automatically

List of Maven installations on this system

Create a Jenkins Project with appropriate settings.



Enter an item name

maven-selenium-integration-with-jenkins

» 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.

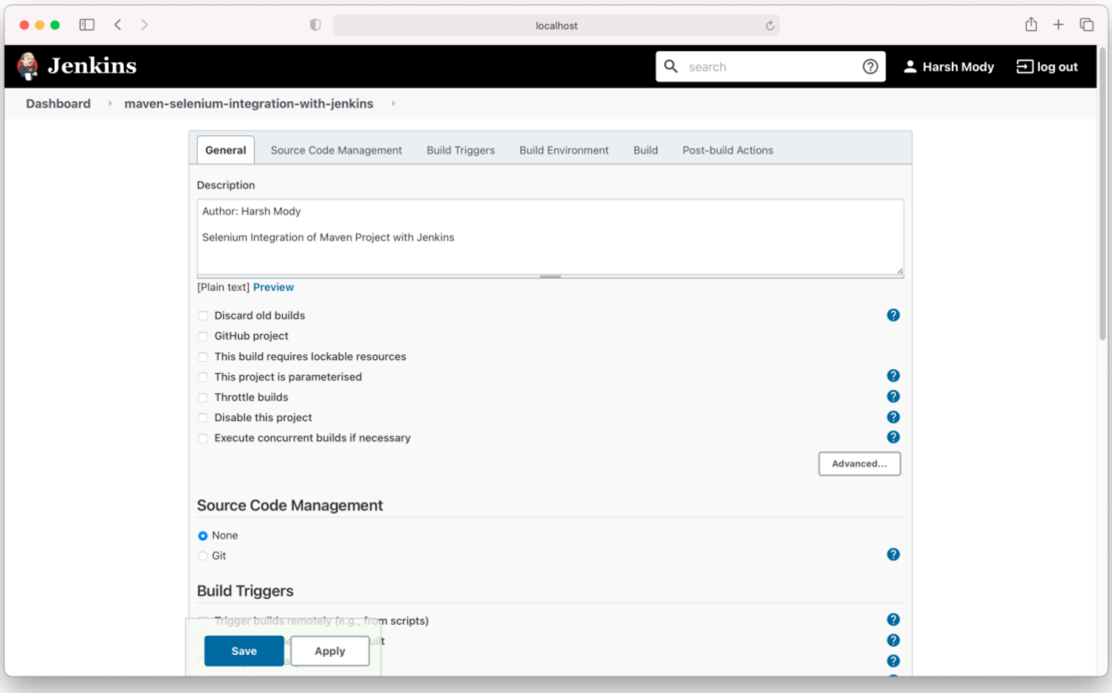
Pipeline
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

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

Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

GitHub Organization
Scans a GitHub organization (or user account) for all repositories matching some defined markers.

Multibranch Pipeline
set of Pipeline projects according to detected branches in one SCM repository.



Description

Author: Harsh Mody

Selenium Integration of Maven Project with Jenkins

[Plain text] Preview

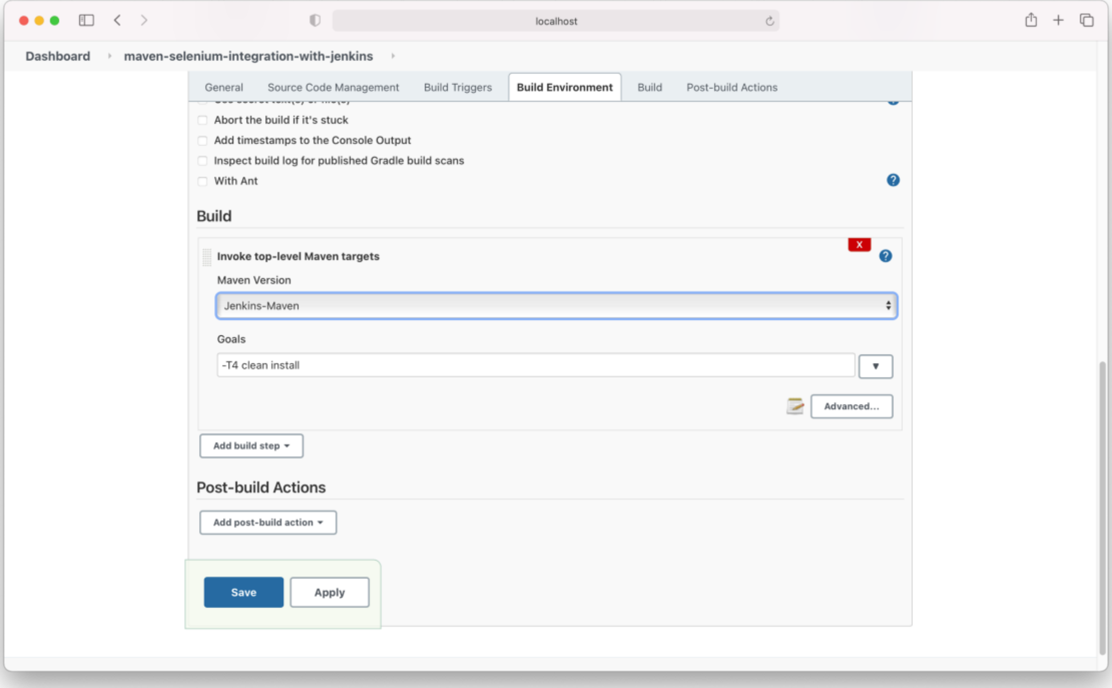
- □ Discard old builds
- □ GitHub project
- □ This build requires lockable resources
- □ This project is parameterised
- □ Throttle builds
- □ Disable this project
- □ Execute concurrent builds if necessary

Source Code Management

- ● None
- ○ Git

Build Triggers

- □ Trigger builds remotely (e.g., from scripts)



□ Abort the build if it's stuck

□ Add timestamps to the Console Output

□ Inspect build log for published Gradle build scans

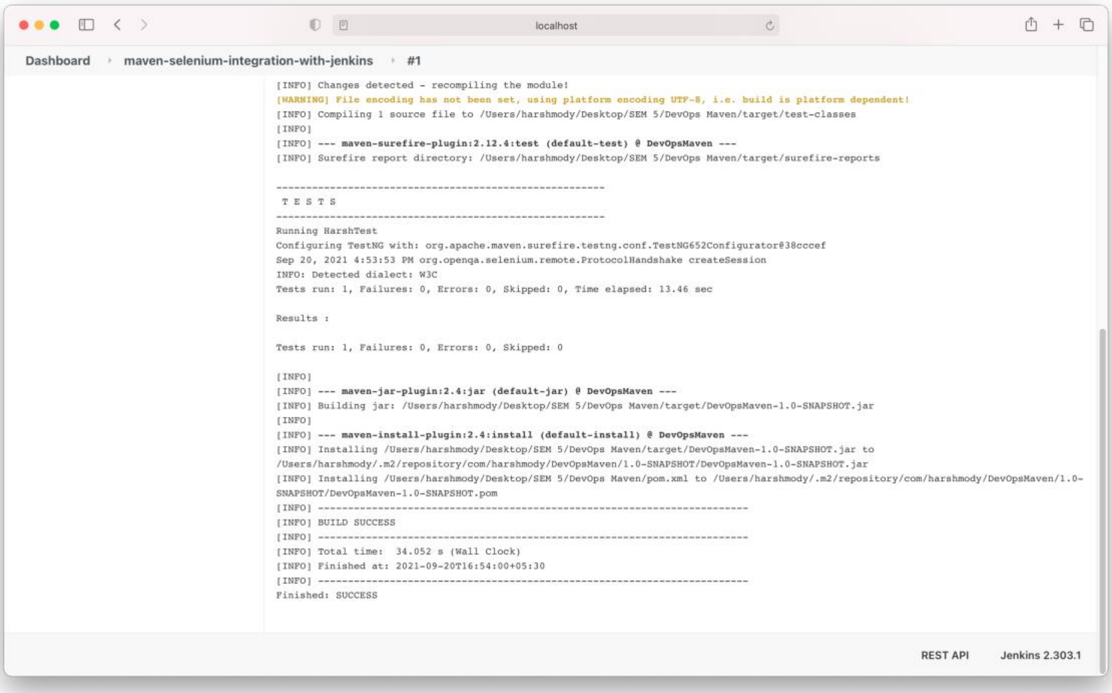
□ With Ant

Build

Invoke top-level Maven targets

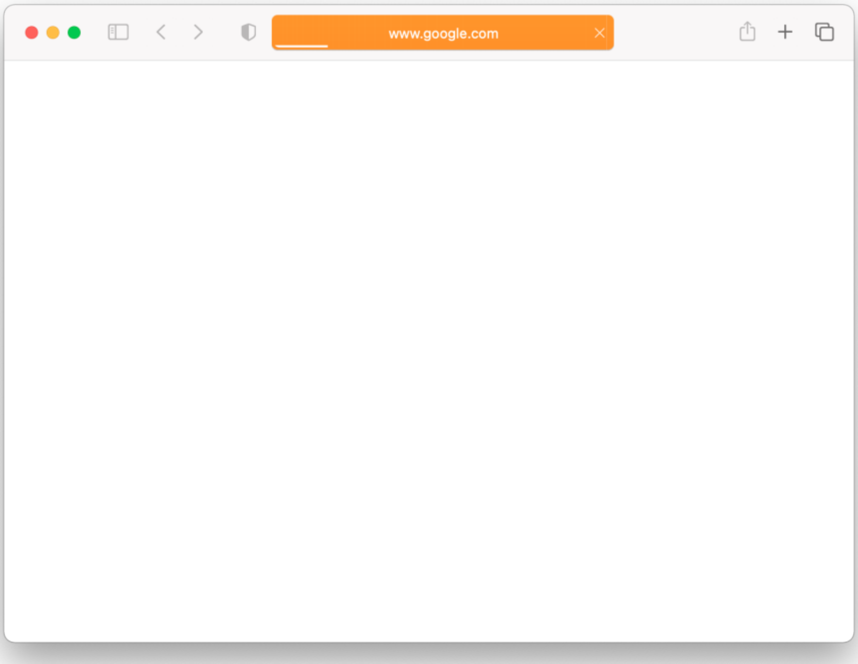
Maven Version: Jenkins-Maven

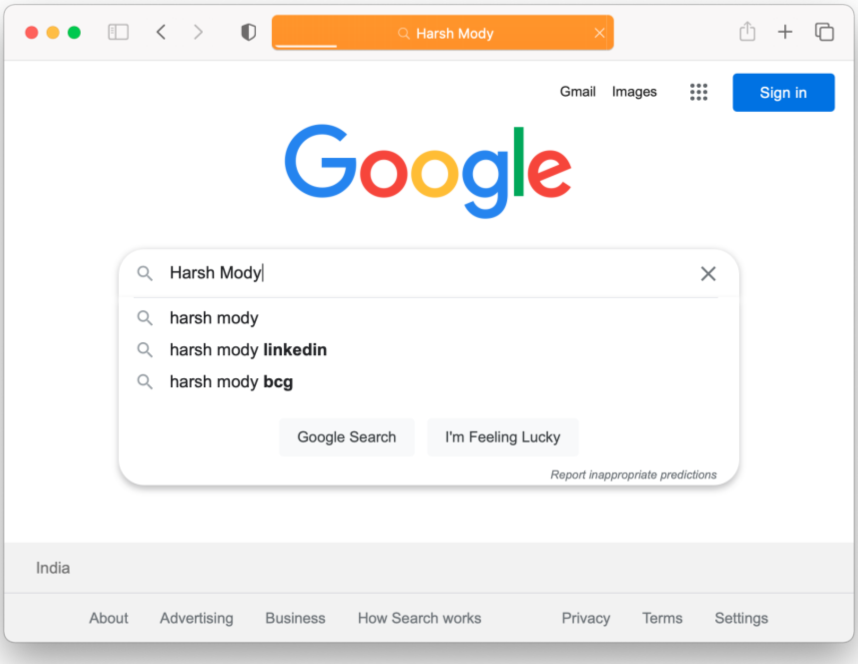
Goals: -T4 clean install



```
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /Users/harshmody/Desktop/SEM 5/DevOps Maven/target/test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ DevOpsMaven ---
[INFO] Surefire report directory: /Users/harshmody/Desktop/SEM 5/DevOps Maven/target/surefire-reports

-------------------------------------------------------
 T E S T S
-------------------------------------------------------
Running HarshTest
Configuring TestNG with: org.apache.maven.surefire.testng.conf.TestNG652Configurator@38cccef
Sep 20, 2021 4:53:53 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 13.46 sec

Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ DevOpsMaven ---
[INFO] Building jar: /Users/harshmody/Desktop/SEM 5/DevOps Maven/target/DevOpsMaven-1.0-SNAPSHOT.jar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ DevOpsMaven ---
[INFO] Installing /Users/harshmody/Desktop/SEM 5/DevOps Maven/target/DevOpsMaven-1.0-SNAPSHOT.jar to
/Users/harshmody/.m2/repository/com/harshmody/DevOpsMaven/1.0-SNAPSHOT/DevOpsMaven-1.0-SNAPSHOT.jar
[INFO] Installing /Users/harshmody/Desktop/SEM 5/DevOps Maven/pom.xml to /Users/harshmody/.m2/repository/com/harshmody/DevOpsMaven/1.0-
SNAPSHOT/DevOpsMaven-1.0-SNAPSHOT.pom
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  34.052 s (Wall Clock)
[INFO] Finished at: 2021-09-20T16:54:00+05:30
[INFO] ------------------------------------------------------------------------
Finished: SUCCESS
```

On successful compilation, as we see a automated browser window opens automatically denoted by yellow address bar in Safari. A new browser is opened and my name is searched on Google after which the window maximizes and then browser window is terminated.



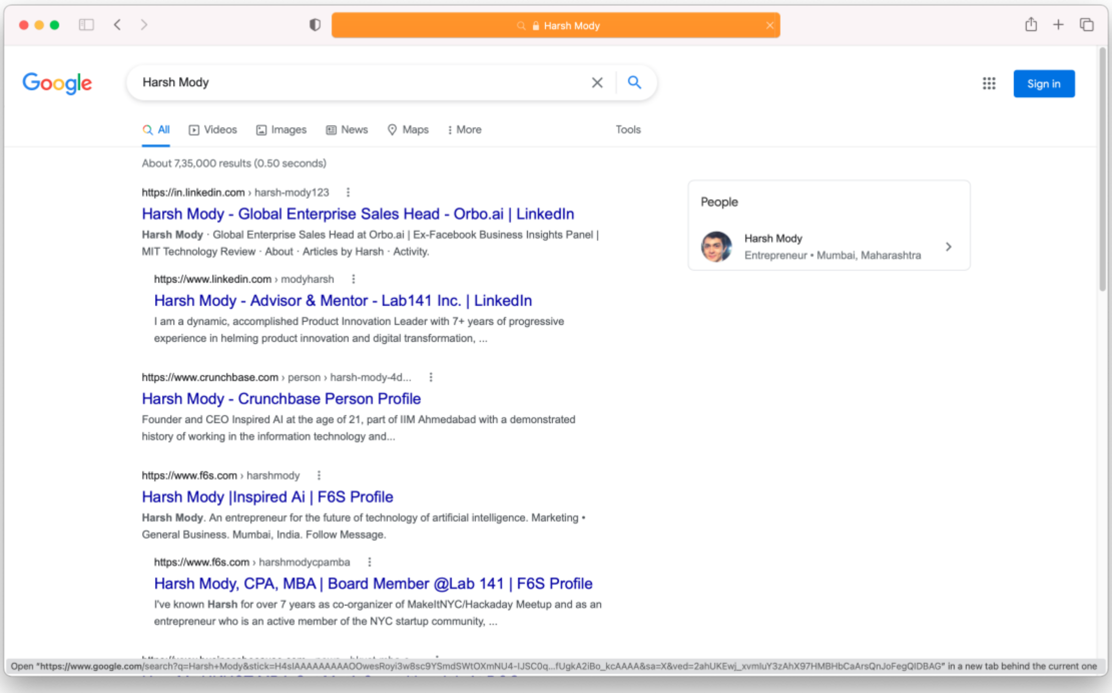


Harsh Mody

harsh mody

harsh mody **linkedin**

harsh mody **bcg**



About 7,35,000 results (0.50 seconds)

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Harsh Mody - Global Enterprise Sales Head - Orbo.ai | LinkedIn

Harsh Mody · Global Enterprise Sales Head at Orbo.ai | Ex-Facebook Business Insights Panel | MIT Technology Review · About · Articles by Harsh · Activity.

https://www.linkedin.com › modyharsh

Harsh Mody - Advisor & Mentor - Lab141 Inc. | LinkedIn

I am a dynamic, accomplished Product Innovation Leader with 7+ years of progressive experience in helming product innovation and digital transformation, ...

https://www.crunchbase.com › person › harsh-mody-4d...

Harsh Mody - Crunchbase Person Profile

Founder and CEO Inspired AI at the age of 21, part of IIM Ahmedabad with a demonstrated history of working in the information technology and...

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Harsh Mody. An entrepreneur for the future of technology of artificial intelligence. Marketing • General Business. Mumbai, India. Follow Message.

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Harsh Mody, CPA, MBA | Board Member @Lab 141 | F6S Profile

I've known **Harsh** for over 7 years as co-organizer of MakeItNYC/Hackaday Meetup and as an entrepreneur who is an active member of the NYC startup community, ...

People

Harsh Mody
Entrepreneur • Mumbai, Maharashtra

Open "https://www.google.com/search?q=Harsh+Mody&stick=H4sIAAAAAAAAAOOwesRoyi3w8sc9YSmdSWtOXmNU4-IJSC0q...fUgkA2iBo_kcAAAA&sa=X&ved=2ahUKEwj_xvmluY3zAhX97HMBHbCaArsQnJoFegQIDBAG" in a new tab behind the current one

Conclusion: Thus, successfully understood the importance of DevOps tools such as Maven to handle project dependencies like Selenium and also its Integration with CI/CD tools like Jenkins for faster and reliable code delivery.