Plural Sight - Jenkins 2

https://jenkins.io/download/
(jenkins.war)

Java
Java (java.tar.gz)
Location: /home/vagrant/Documents

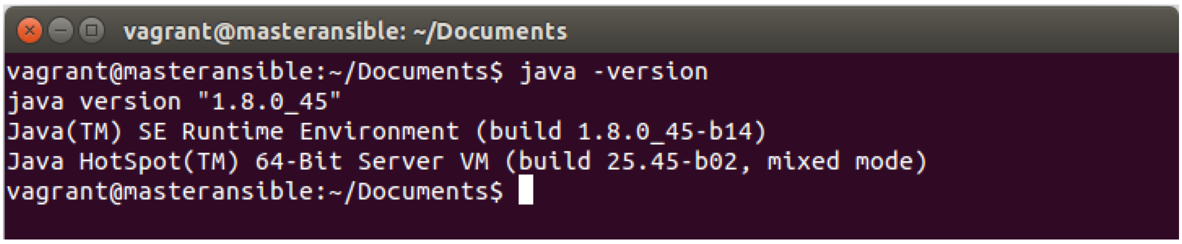
Commands Used:

sudo apt-get update

sudo tar zxvf java.tar.gz

sudo update-alternatives --install /usr/bin/javac javac /home/vagrant/Documents/jdk1.8.0_45/bin/java 100

update-alternatives --install /usr/bin/javac javac /home/vagrant/Documents/jdk1.8.0_45/bin/java 100



vagrant@masteransible: ~/Documents

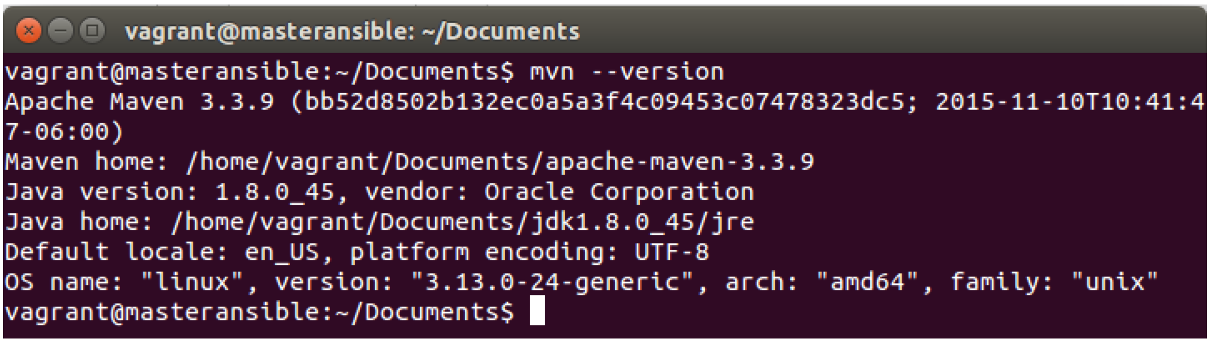
```
vagrant@masteransible:~/Documents$ java -version
java version "1.8.0_45"
Java(TM) SE Runtime Environment (build 1.8.0_45-b14)
Java HotSpot(TM) 64-Bit Server VM (build 25.45-b02, mixed mode)
vagrant@masteransible:~/Documents$
```

Maven
Maven (maven.tar.gz)
Location: /home/vagrant/Documents

Commands Used:

sudo tar zxvf maven.tar.gz

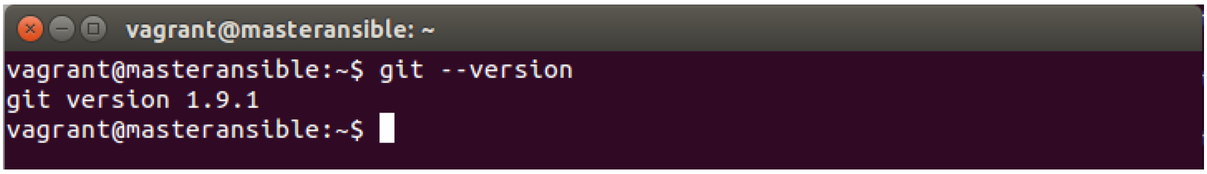
update-alternatives --install /usr/bin/mvn mvn /home/vagrant/Documents/apache-maven-3.3.9/bin/mvn 100



vagrant@masteransible: ~/Documents

```
vagrant@masteransible:~/Documents$ mvn --version
Apache Maven 3.3.9 (bb52d8502b132ec0a5a3f4c09453c07478323dc5; 2015-11-10T10:41:4
7-06:00)
Maven home: /home/vagrant/Documents/apache-maven-3.3.9
Java version: 1.8.0_45, vendor: Oracle Corporation
Java home: /home/vagrant/Documents/jdk1.8.0_45/jre
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "3.13.0-24-generic", arch: "amd64", family: "unix"
vagrant@masteransible:~/Documents$
```

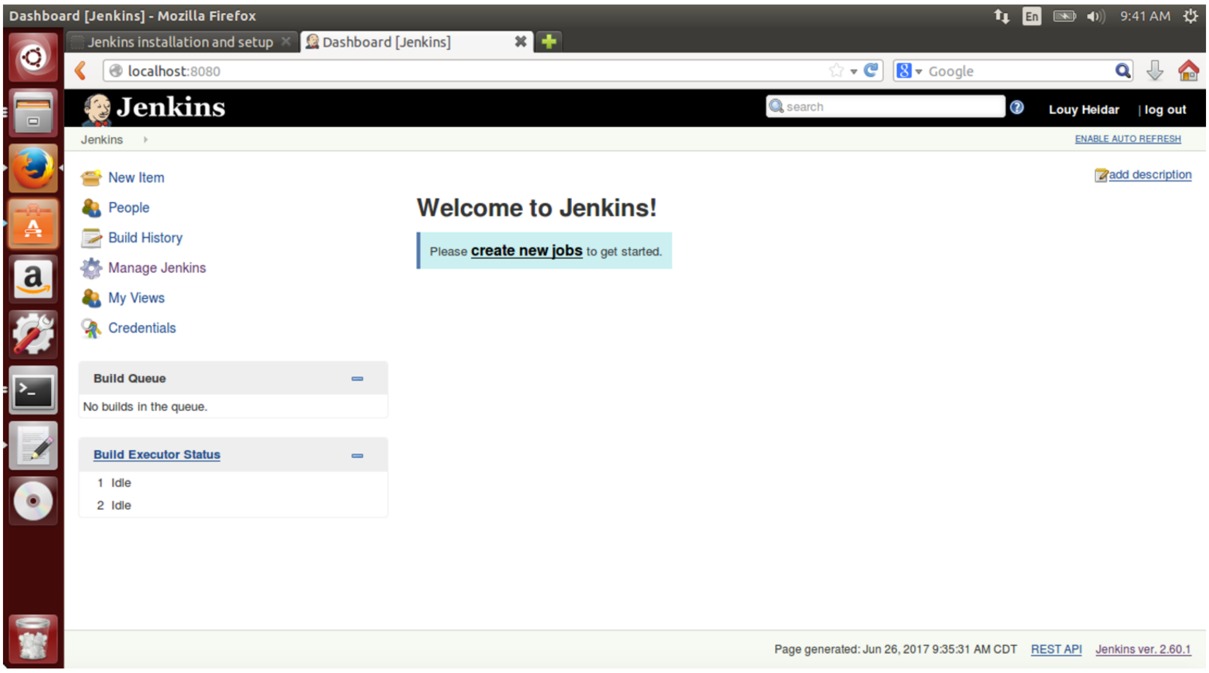
Git
sudo apt-get install -y git



```
vagrant@masteransible: ~
vagrant@masteransible:~$ git --version
git version 1.9.1
vagrant@masteransible:~$
```

Jenkins (Version 2.60.1)
localhost:8080

Start Jenkins
java -jar jenkins.war



Welcome to Jenkins!

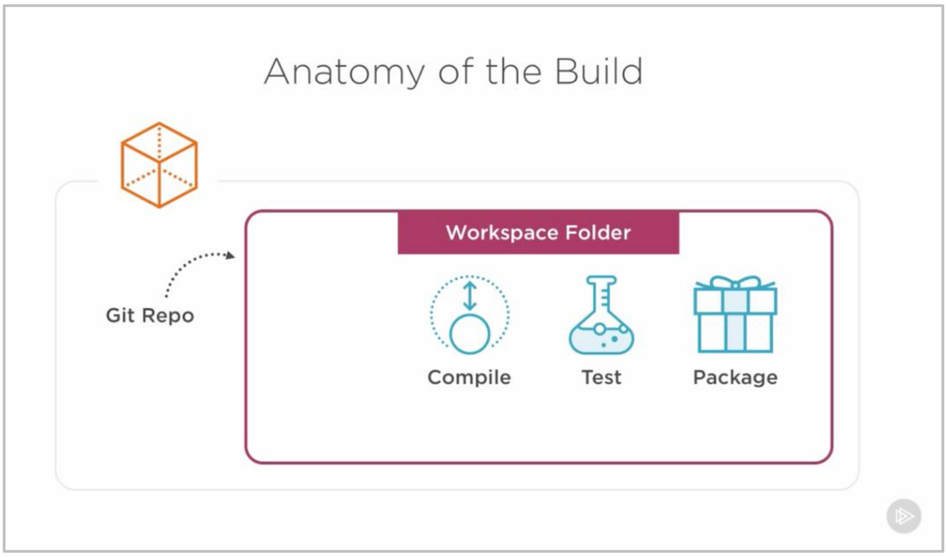
Please **create new jobs** to get started.

No builds in the queue.

1 Idle
2 Idle

Page generated: Jun 26, 2017 9:35:31 AM CDT

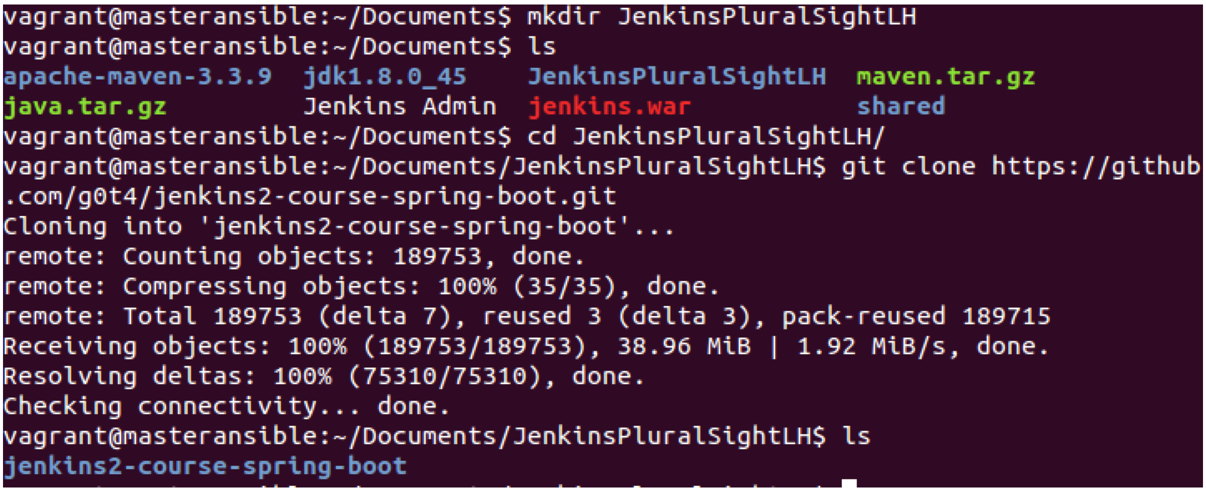
Creating Application Builds



Cloning Sample Project

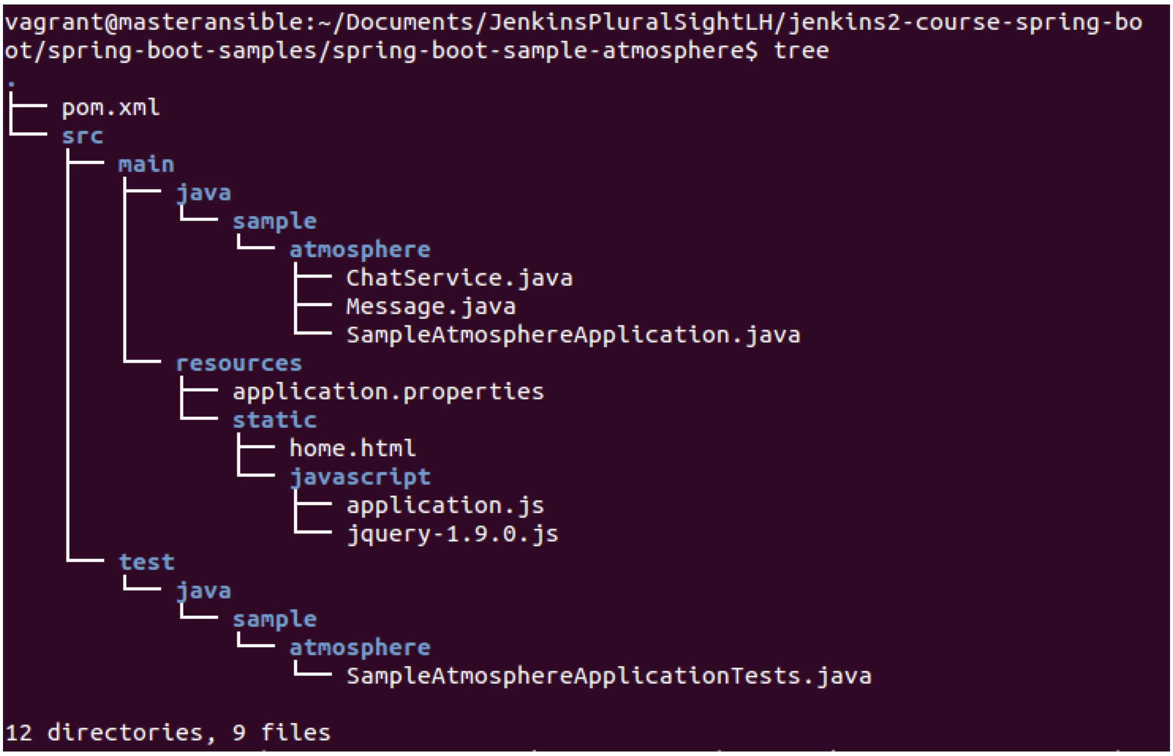
https://github.com/g0t4/jenkins2-course-spring-boot.git

1) Create new directory
2) Clone repository to Local Directory
3) Check project file are present in local directory



```
vagrant@masteransible:~/Documents$ mkdir JenkinsPluralSightLH
vagrant@masteransible:~/Documents$ ls
apache-maven-3.3.9  jdk1.8.0_45    JenkinsPluralSightLH  maven.tar.gz
java.tar.gz         Jenkins Admin  jenkins.war           shared
vagrant@masteransible:~/Documents$ cd JenkinsPluralSightLH/
vagrant@masteransible:~/Documents/JenkinsPluralSightLH$ git clone https://github
.com/g0t4/jenkins2-course-spring-boot.git
Cloning into 'jenkins2-course-spring-boot'...
remote: Counting objects: 189753, done.
remote: Compressing objects: 100% (35/35), done.
remote: Total 189753 (delta 7), reused 3 (delta 3), pack-reused 189715
Receiving objects: 100% (189753/189753), 38.96 MiB | 1.92 MiB/s, done.
Resolving deltas: 100% (75310/75310), done.
Checking connectivity... done.
vagrant@masteransible:~/Documents/JenkinsPluralSightLH$ ls
jenkins2-course-spring-boot
```

Displaying the tree of sample-atmosphere tree project structure



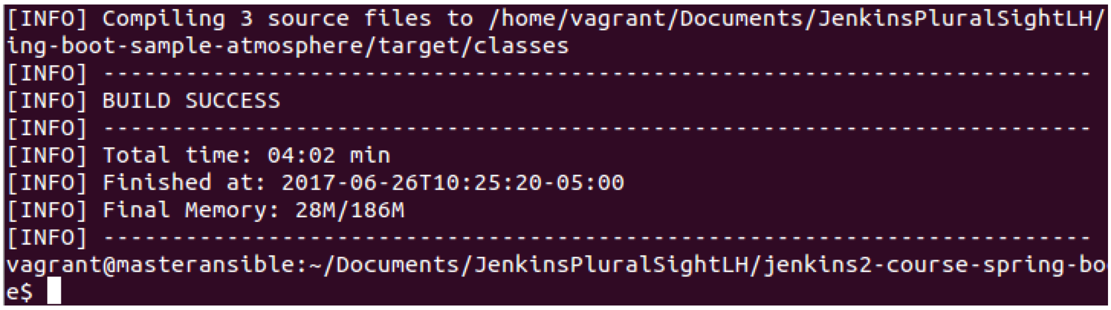
```
vagrant@masteransible:~/Documents/JenkinsPluralSightLH/jenkins2-course-spring-bo
ot/spring-boot-samples/spring-boot-sample-atmosphere$ tree
.
├── pom.xml
└── src
    ├── main
    │   ├── java
    │   │   └── sample
    │   │       └── atmosphere
    │   │           ├── ChatService.java
    │   │           ├── Message.java
    │   │           └── SampleAtmosphereApplication.java
    │   └── resources
    │       ├── application.properties
    │       └── static
    │           ├── home.html
    │           └── javascript
    │               ├── application.js
    │               └── jquery-1.9.0.js
    └── test
        └── java
            └── sample
                └── atmosphere
                    └── SampleAtmosphereApplicationTests.java

12 directories, 9 files
```

Manual Compilation with Maven

1) Compiling Java source code in class files

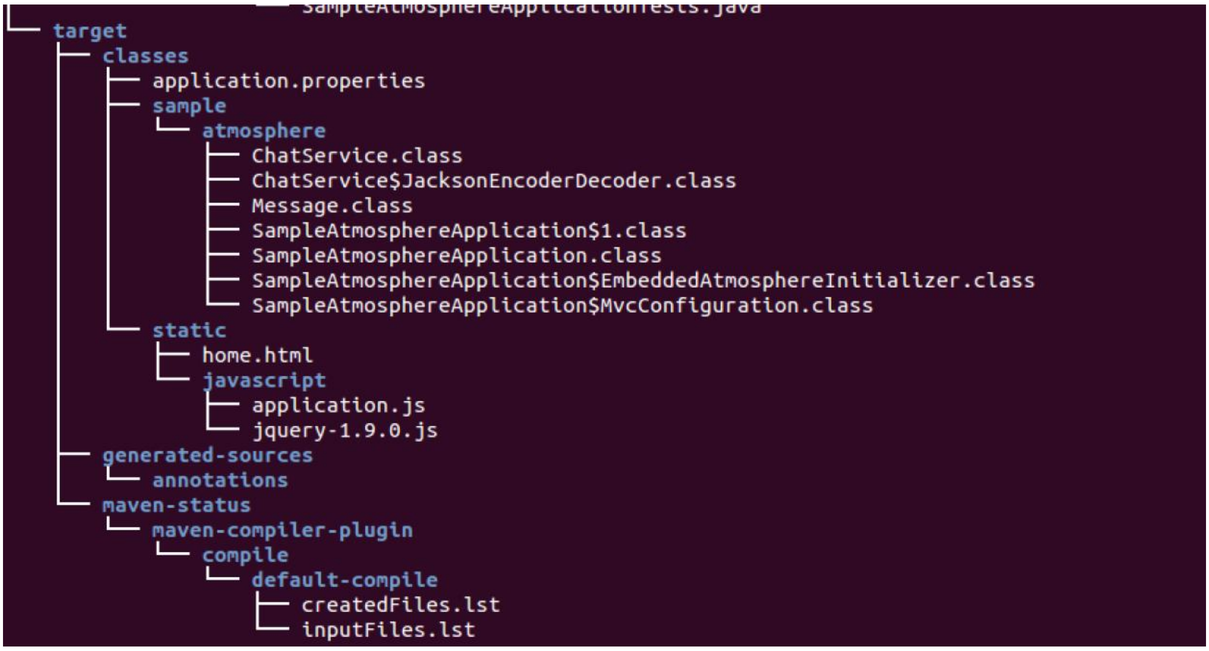
Maven compile command once in project directory (spring-boot-same-atmosphere):
$ mvn compile

Project successfully compiled using Maven



```
[INFO] Compiling 3 source files to /home/vagrant/Documents/JenkinsPluralSightLH/
ing-boot-sample-atmosphere/target/classes
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 04:02 min
[INFO] Finished at: 2017-06-26T10:25:20-05:00
[INFO] Final Memory: 28M/186M
[INFO] ------------------------------------------------------------------------
vagrant@masteransible:~/Documents/JenkinsPluralSightLH/jenkins2-course-spring-bo
e$
```

Class files for compile applications (.class extensions)



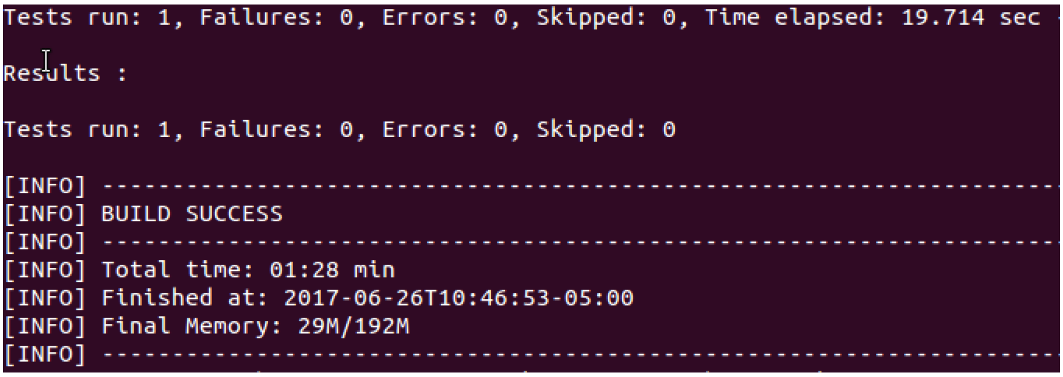
```
│                   └── SampleAtmosphereApplicationTests.java
└── target
    ├── classes
    │   ├── application.properties
    │   ├── sample
    │   │   └── atmosphere
    │   │       ├── ChatService.class
    │   │       ├── ChatService$JacksonEncoderDecoder.class
    │   │       ├── Message.class
    │   │       ├── SampleAtmosphereApplication$1.class
    │   │       ├── SampleAtmosphereApplication.class
    │   │       ├── SampleAtmosphereApplication$EmbeddedAtmosphereInitializer.class
    │   │       └── SampleAtmosphereApplication$MvcConfiguration.class
    │   └── static
    │       ├── home.html
    │       └── javascript
    │           ├── application.js
    │           └── jquery-1.9.0.js
    ├── generated-sources
    │   └── annotations
    └── maven-status
        └── maven-compiler-plugin
            └── compile
                └── default-compile
                    ├── createdFiles.lst
                    └── inputFiles.lst
```

Manual Testing

Executing tests that are associated with project

$ mvn test

Results display build status & number of tests with no errors (1 test, 0 Errors)



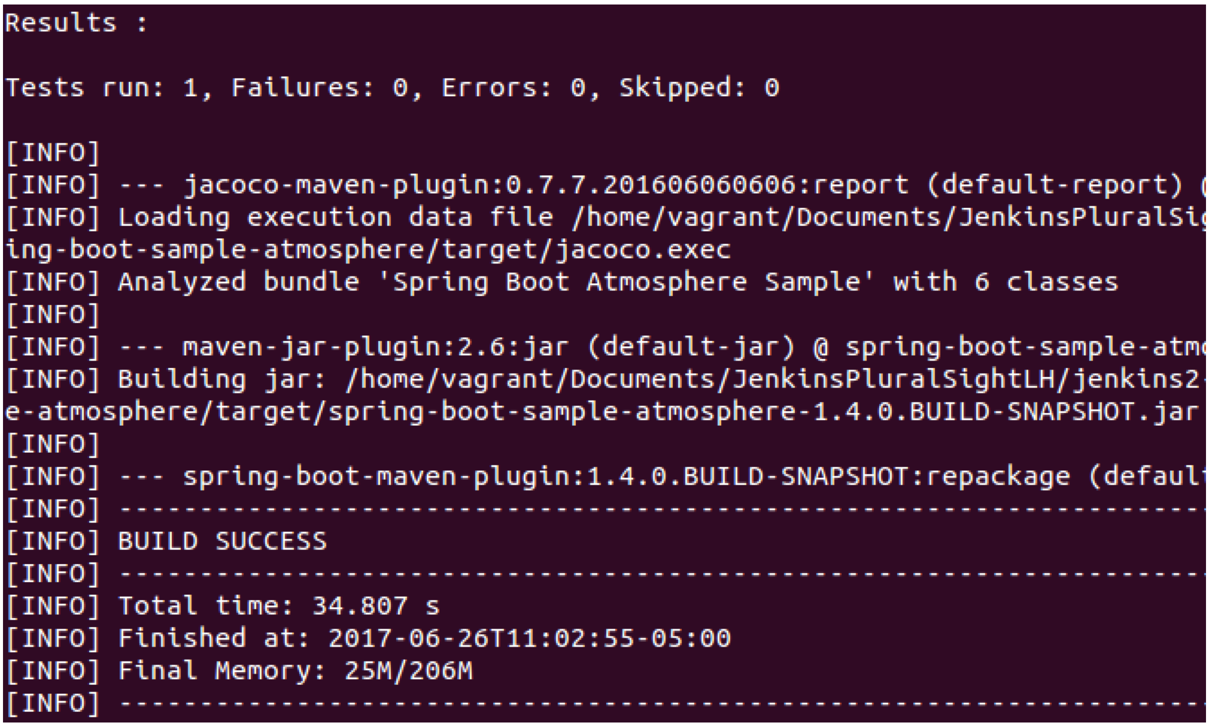
```
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 19.714 sec

Results :

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

[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 01:28 min
[INFO] Finished at: 2017-06-26T10:46:53-05:00
[INFO] Final Memory: 29M/192M
[INFO] ------------------------------------------------------------------------
```

Packaging

Packaging phase applied to packaging results into a .jar file

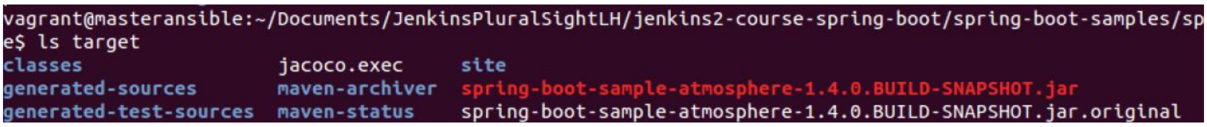
Test are run automatically again as part packaging phase

Output shows that jar file has been built successfully i.e. a package like a zip file which contains application content with all dependencies and resources need to run.



```
Results :

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

[INFO]
[INFO] --- jacoco-maven-plugin:0.7.7.201606060606:report (default-report) (
[INFO] Loading execution data file /home/vagrant/Documents/JenkinsPluralSig
ing-boot-sample-atmosphere/target/jacoco.exec
[INFO] Analyzed bundle 'Spring Boot Atmosphere Sample' with 6 classes
[INFO]
[INFO] --- maven-jar-plugin:2.6:jar (default-jar) @ spring-boot-sample-atmo
[INFO] Building jar: /home/vagrant/Documents/JenkinsPluralSightLH/jenkins2-
e-atmosphere/target/spring-boot-sample-atmosphere-1.4.0.BUILD-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot-maven-plugin:1.4.0.BUILD-SNAPSHOT:repackage (defaul
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 34.807 s
[INFO] Finished at: 2017-06-26T11:02:55-05:00
[INFO] Final Memory: 25M/206M
[INFO] ------------------------------------------------------------------------
```

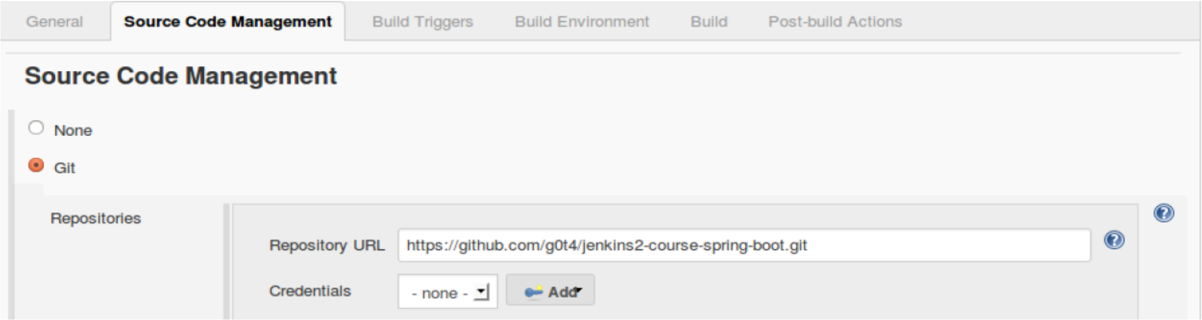
Generated jar file within target directory



```
vagrant@masteransible:~/Documents/JenkinsPluralSightLH/jenkins2-course-spring-boot/spring-boot-samples/sp
e$ ls target
classes                 jacoco.exec     site
generated-sources       maven-archiver  spring-boot-sample-atmosphere-1.4.0.BUILD-SNAPSHOT.jar
generated-test-sources  maven-status    spring-boot-sample-atmosphere-1.4.0.BUILD-SNAPSHOT.jar.original
```

Compiling in Jenkins

1) Create Freestyle Project
2) Build > Invoke Top-Level Maven targets
3) Add Repository Link



Source Code Management

○ None

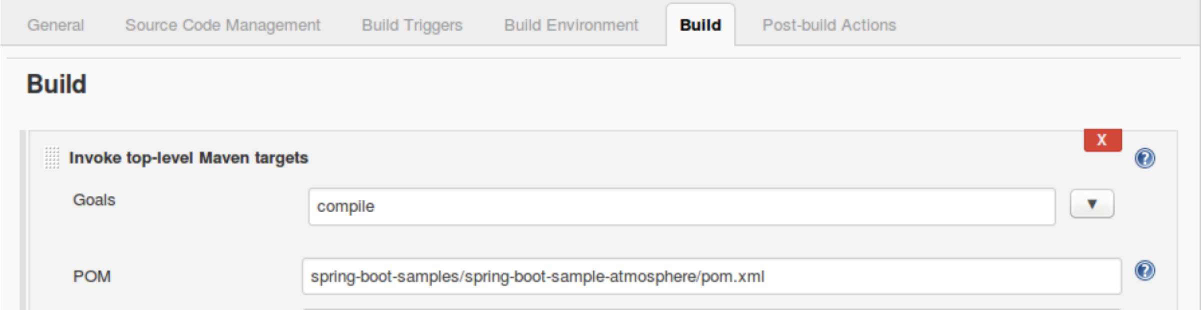
● Git

Repositories

Repository URL https://github.com/g0t4/jenkins2-course-spring-boot.git

Credentials - none - Add

4) Specify Task (Goals) > Specify directory to pom.xml file



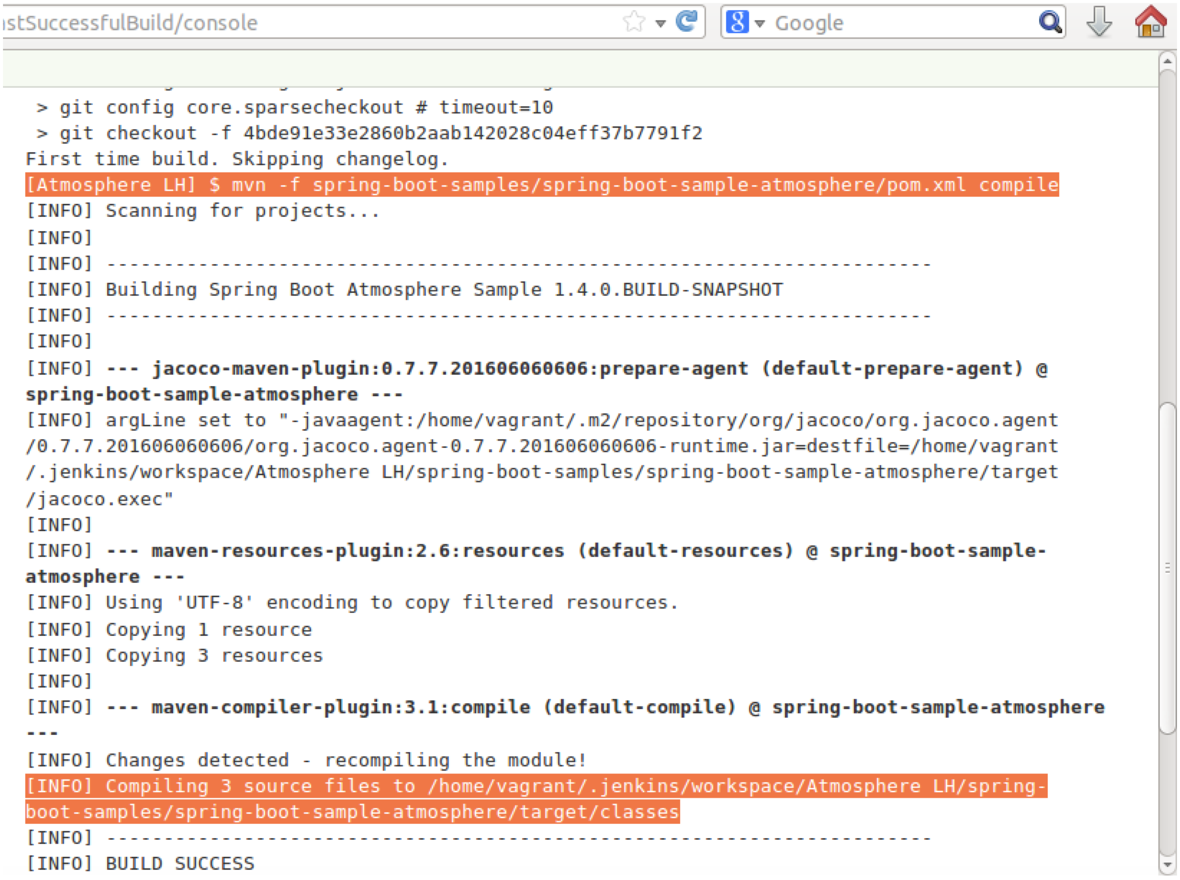
Build

Invoke top-level Maven targets

Goals: compile

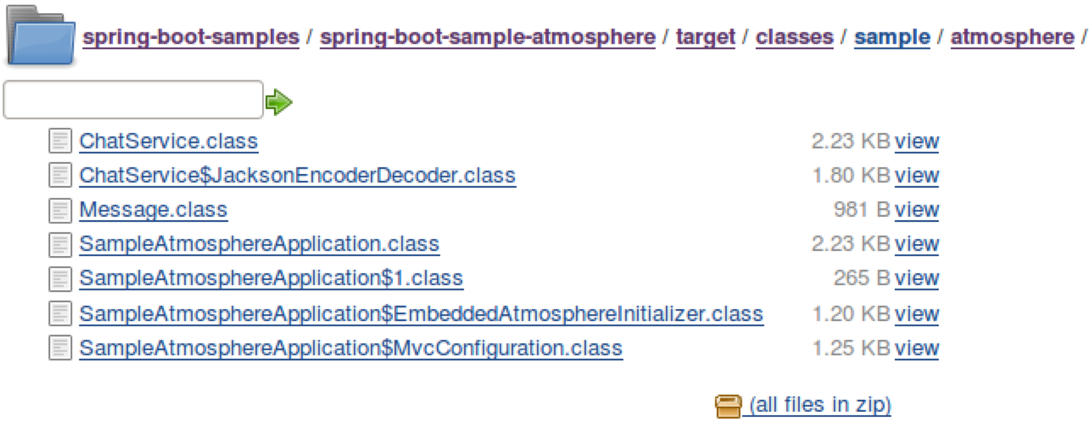
POM: spring-boot-samples/spring-boot-sample-atmosphere/pom.xml

Console Output - Successful Compiled Project within Jenkins



```
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 4bde91e33e2860b2aab142028c04eff37b7791f2
First time build. Skipping changelog.
[Atmosphere LH] $ mvn -f spring-boot-samples/spring-boot-sample-atmosphere/pom.xml compile
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building Spring Boot Atmosphere Sample 1.4.0.BUILD-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- jacoco-maven-plugin:0.7.7.201606060606:prepare-agent (default-prepare-agent) @
spring-boot-sample-atmosphere ---
[INFO] argLine set to "-javaagent:/home/vagrant/.m2/repository/org/jacoco/org.jacoco.agent
/0.7.7.201606060606/org.jacoco.agent-0.7.7.201606060606-runtime.jar=destfile=/home/vagrant
/.jenkins/workspace/Atmosphere LH/spring-boot-samples/spring-boot-sample-atmosphere/target
/jacoco.exec"
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ spring-boot-sample-
atmosphere ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] Copying 3 resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ spring-boot-sample-atmosphere
---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 3 source files to /home/vagrant/.jenkins/workspace/Atmosphere LH/spring-
boot-samples/spring-boot-sample-atmosphere/target/classes
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
```

Workspace Location - Class files generated within target directory



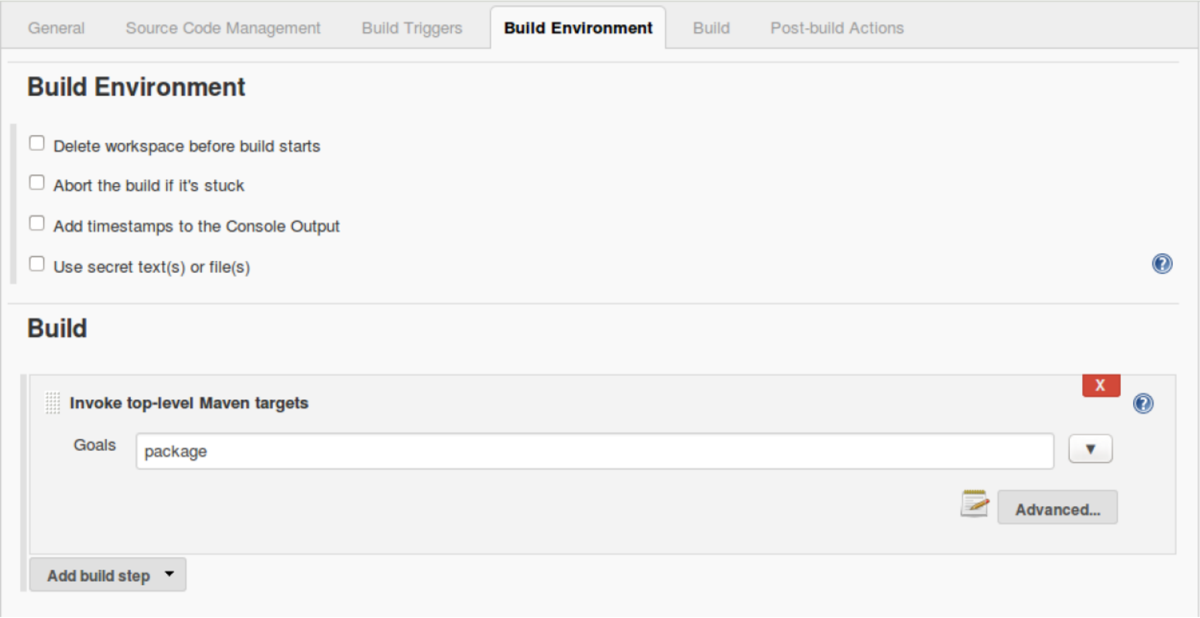
spring-boot-samples / spring-boot-sample-atmosphere / target / classes / sample / atmosphere /

ChatService.class	2.23 KB	view
ChatService$JacksonEncoderDecoder.class	1.80 KB	view
Message.class	981 B	view
SampleAtmosphereApplication.class	2.23 KB	view
SampleAtmosphereApplication$1.class	265 B	view
SampleAtmosphereApplication$EmbeddedAtmosphereInitializer.class	1.20 KB	view
SampleAtmosphereApplication$MvcConfiguration.class	1.25 KB	view

(all files in zip)

Packaging in Jenkins

Packaging project within Jenkins then building project



Build Environment

- □ Delete workspace before build starts
- □ Abort the build if it's stuck
- □ Add timestamps to the Console Output
- □ Use secret text(s) or file(s)

Build

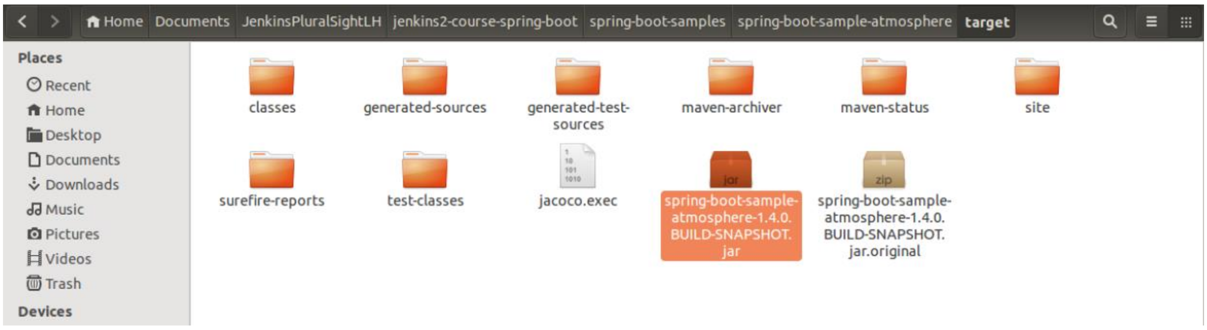
Invoke top-level Maven targets

Goals: package

Jar file created after successful build

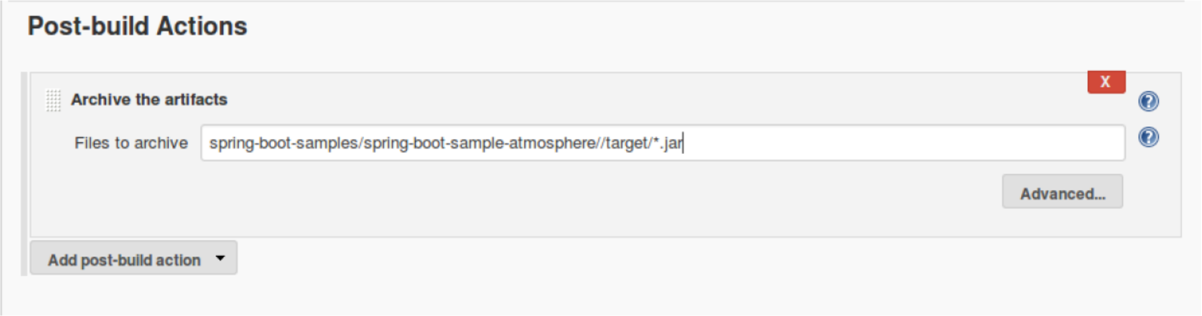
```
[INFO] --- maven-jar-plugin:2.6:jar (default-jar) @ spring-boot-sample-atmosphere ---
[INFO] Building jar: /home/vagrant/.jenkins/workspace/Atmosphere LH/spring-boot-samples/spring-
boot-sample-atmosphere/target/spring-boot-sample-atmosphere-1.4.0.BUILD-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot-maven-plugin:1.4.0.BUILD-SNAPSHOT:repackage (default) @ spring-
boot-sample-atmosphere ---
Downloading: http://repo.spring.io/snapshot/org/springframework/boot/spring-boot-loader-
tools/1.4.0.BUILD-SNAPSHOT/maven-metadata.xml
3/3 KB

Downloaded: http://repo.spring.io/snapshot/org/springframework/boot/spring-boot-loader-
tools/1.4.0.BUILD-SNAPSHOT/maven-metadata.xml (3 KB at 5.4 KB/sec)
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 01:19 min
[INFO] Finished at: 2017-06-27T03:13:28-05:00
[INFO] Final Memory: 35M/197M
```

File location in working directory



Archiving Artifacts

Using wildcard i.e. specifying target folder as directory that looks for all jar files within that directory



Post-build Actions

Archive the artifacts

Files to archive: spring-boot-samples/spring-boot-sample-atmosphere//target/*.jar

Difference between 'Job' and 'Build'

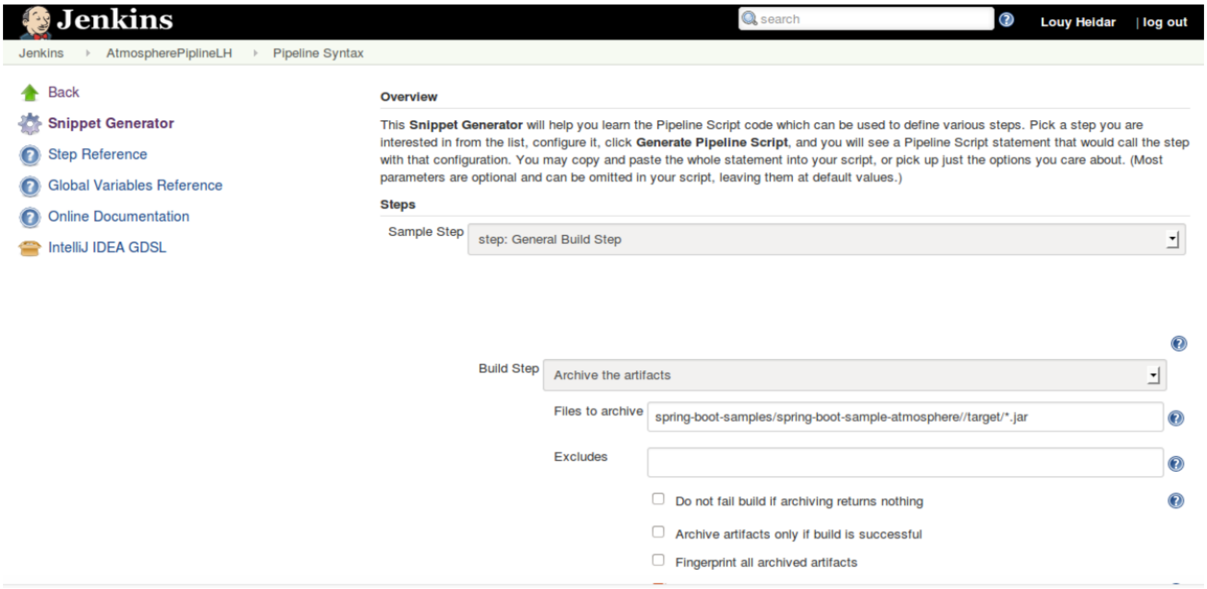
Job is a process that is defined e.g. compiling, testing or packaging applications
Artifacts are produce as result of process that are defined

Job can have many builds associated with it

Build represent the results of executing a job

Testing and Continuous Integration

Snippet generator which creates groovy script as output



Overview

This **Snippet Generator** will help you learn the Pipeline Script code which can be used to define various steps. Pick a step you are interested in from the list, configure it, click **Generate Pipeline Script**, and you will see a Pipeline Script statement that would call the step with that configuration. You may copy and paste the whole statement into your script, or pick up just the options you care about. (Most parameters are optional and can be omitted in your script, leaving them at default values.)

Steps

Sample Step: step: General Build Step

Build Step: Archive the artifacts

Files to archive: spring-boot-samples/spring-boot-sample-atmosphere//target/*.jar

Excludes:

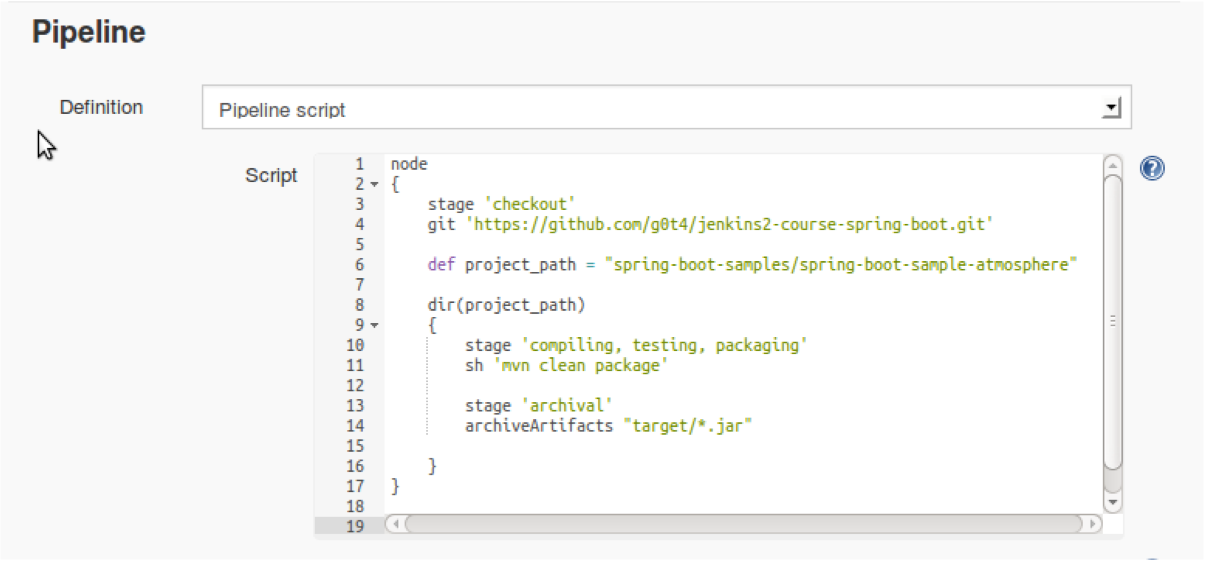
□ Do not fail build if archiving returns nothing

□ Archive artifacts only if build is successful

□ Fingerprint all archived artifacts

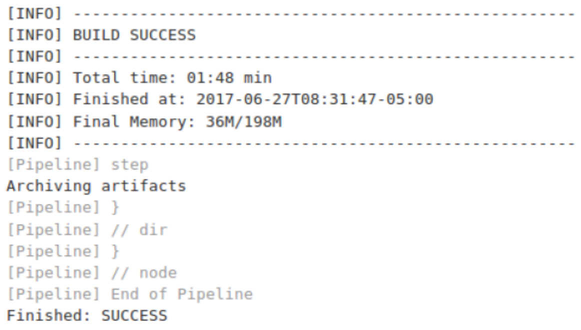
High level progress with Pipeline

Groovy Pipeline Script



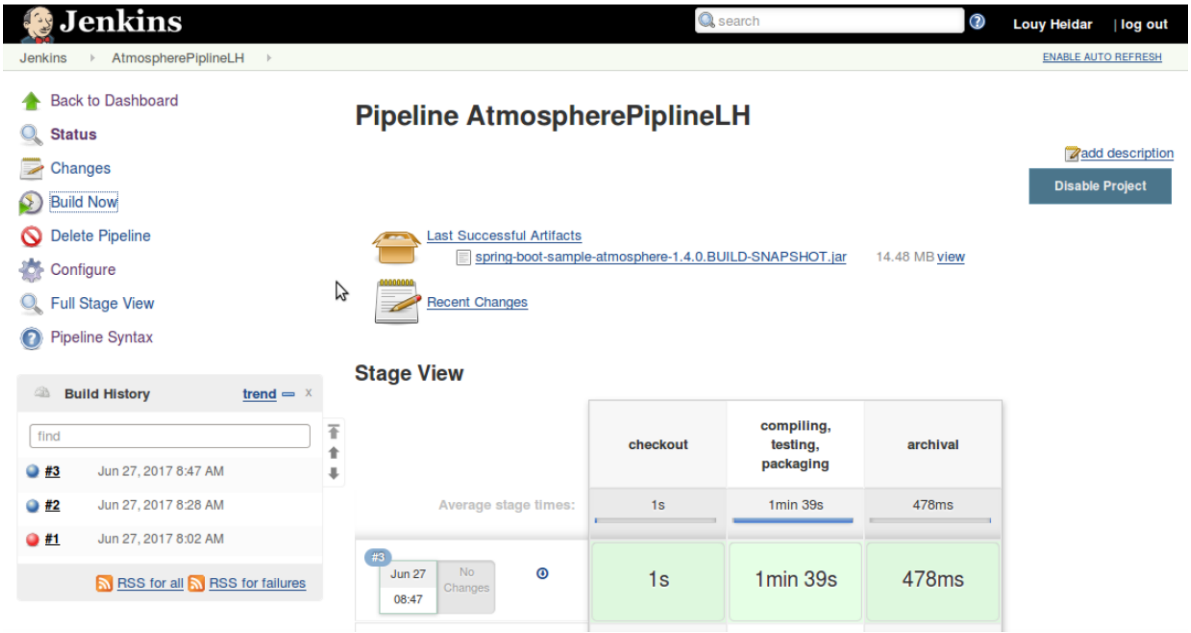
```
node
{
    stage 'checkout'
    git 'https://github.com/g0t4/jenkins2-course-spring-boot.git'

    def project_path = "spring-boot-samples/spring-boot-sample-atmosphere"

    dir(project_path)
    {
        stage 'compiling, testing, packaging'
        sh 'mvn clean package'

        stage 'archival'
        archiveArtifacts "target/*.jar"

    }
}
```

Successful build after running pipeline script



```
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 01:48 min
[INFO] Finished at: 2017-06-27T08:31:47-05:00
[INFO] Final Memory: 36M/198M
[INFO] ------------------------------------------------------------------------
[Pipeline] step
Archiving artifacts
[Pipeline] }
[Pipeline] // dir
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

Successful completion of each stage (log output is also available for each stage)



Pipeline AtmospherePiplineLH

Last Successful Artifacts
spring-boot-sample-atmosphere-1.4.0.BUILD-SNAPSHOT.jar 14.48 MB view

Recent Changes

Build History

#3	Jun 27, 2017 8:47 AM
#2	Jun 27, 2017 8:28 AM
#1	Jun 27, 2017 8:02 AM

Stage View

	checkout	compiling, testing, packaging	archival
Average stage times:	1s	1min 39s	478ms
#3 Jun 27 08:47 No Changes	1s	1min 39s	478ms