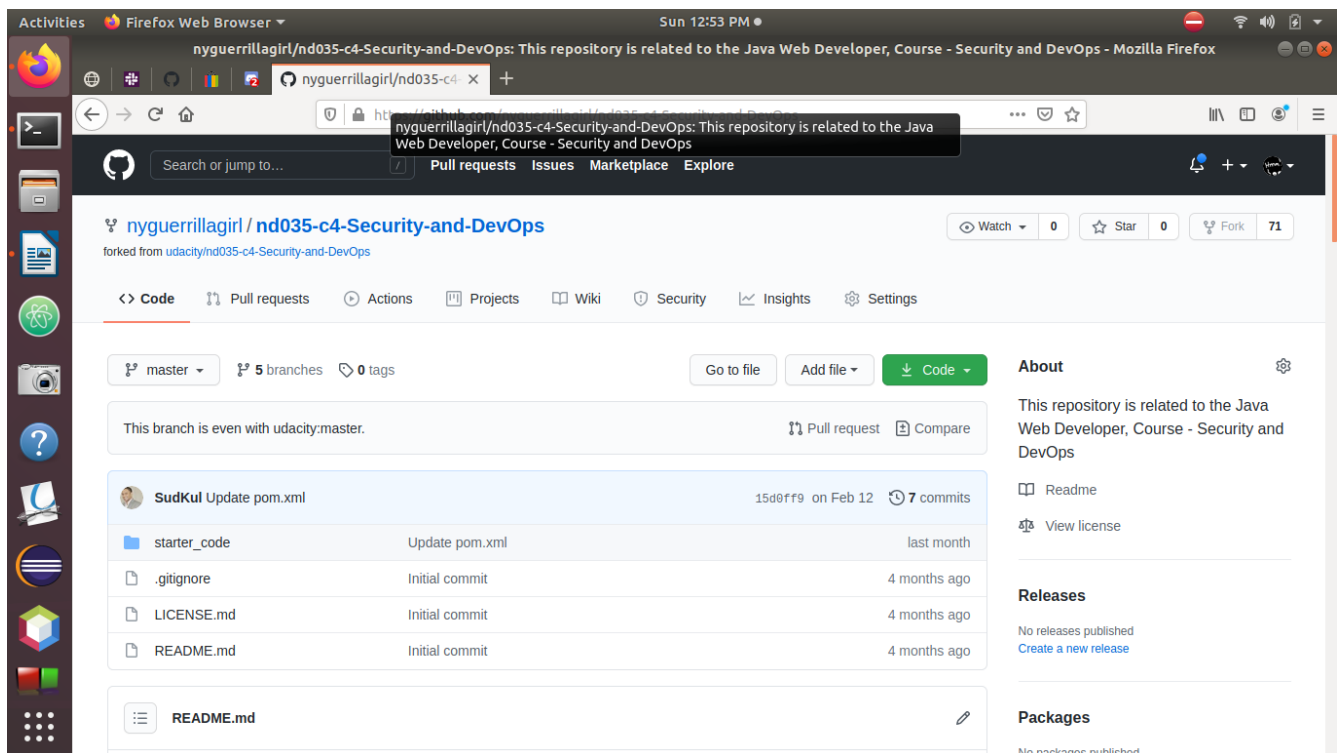


Jenkins and Tomcat on Ubuntu machine

This document captures the notes in setting up a pipeline between Jenkins and Github and then Jenkins and Tomcat. The only difference between previous attempts is that I am NOT using AWS instance.

Github candidate and setup

I will use the master branch in the repository



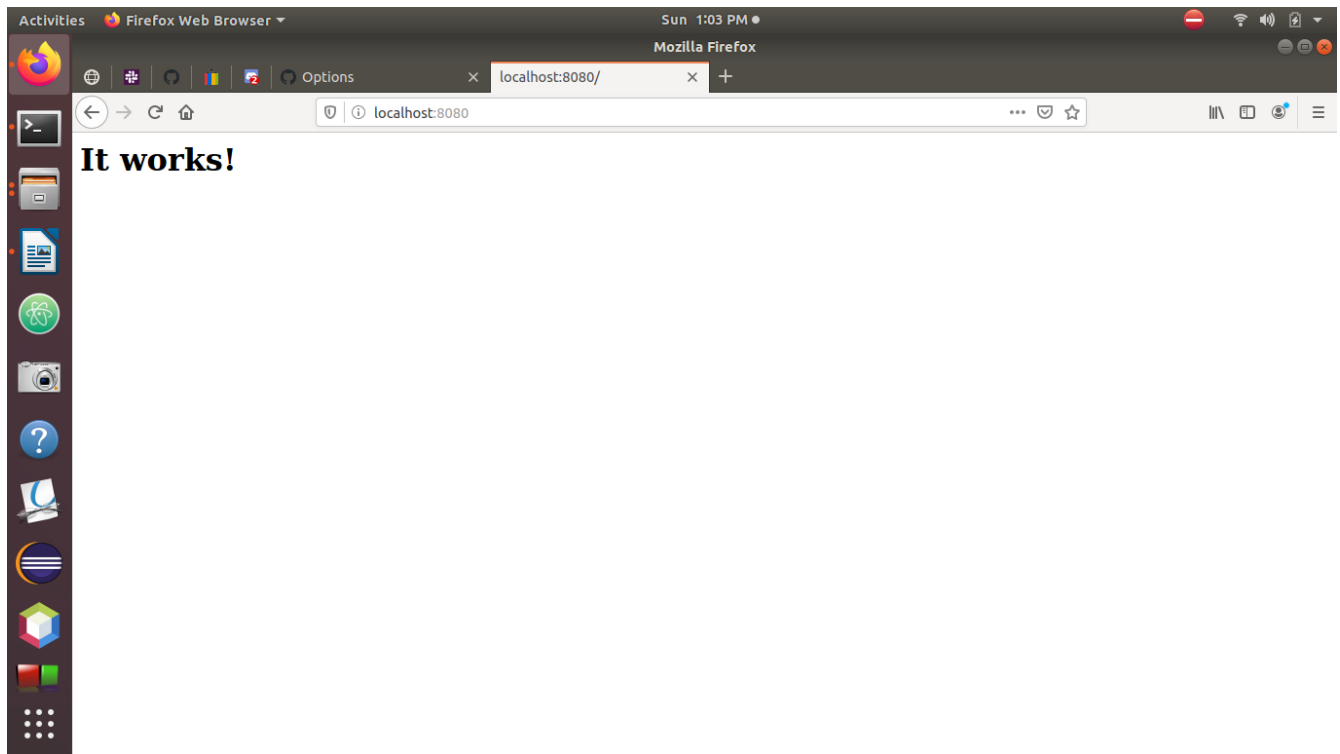
URL: <https://github.com/nyguerrillagirl/nd035-c4-Security-and-DevOps/>

branch: master

Running my first container

```
lorraine@lorraine-Latitude-E5440: ~  
File Edit View Search Terminal Help  
lorraine@lorraine-Latitude-E5440:~$ systemctl show --property ActiveState docker  
ActiveState=active  
lorraine@lorraine-Latitude-E5440:~$ docker ps  
CONTAINER ID        IMAGE               COMMAND             CREATED  
STATUS              PORTS              NAMES  
lorraine@lorraine-Latitude-E5440:~$ docker run -dit --name myApacheServer -p 808  
0:80 -v apacheData:/usr/local/apache2/htdocs/ -v myPages:/var/www/html httpd:2.4  
Unable to find image 'httpd:2.4' locally  
2.4: Pulling from library/httpd  
ac2522cc7269: Pull complete  
ea331039465c: Pull complete  
fa84f6b23622: Pull complete  
375e8fe6c4f6: Pull complete  
bba002695c79: Pull complete  
Digest: sha256:3769da9c8d8207503611bf86b60daf3754d84dcad2e32d333935c6c7777fd6bc  
Status: Downloaded newer image for httpd:2.4  
17efdec3015d9432572d222a675c20b4284760fbd3adfd87e098038c4bc034df  
lorraine@lorraine-Latitude-E5440:~$ docker ps  
CONTAINER ID        IMAGE               COMMAND             CREATED  
STATUS              PORTS              NAMES  
17efdec3015d        httpd:2.4          "httpd-foreground"  About a minute ago  
Up About a minute   0.0.0.0:8080->80/tcp    myApacheServer  
lorraine@lorraine-Latitude-E5440:~$
```

Check the image is running



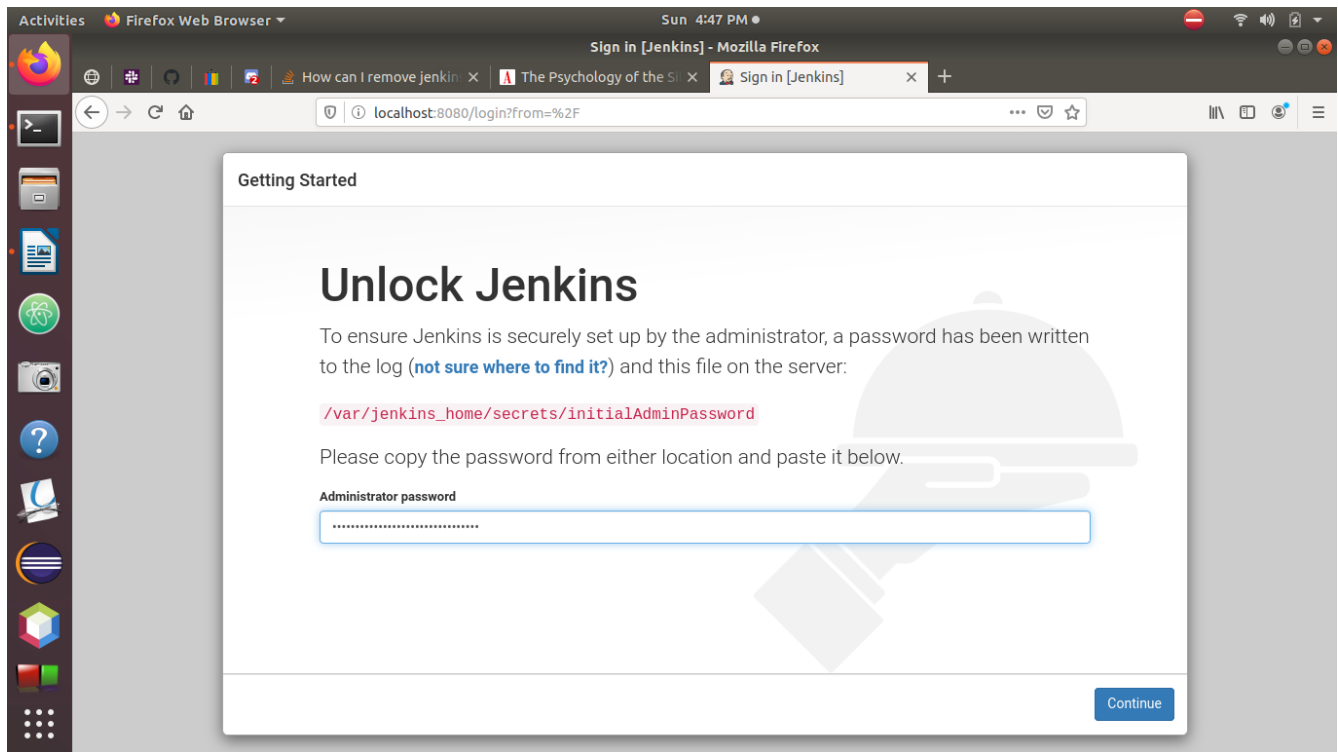
- Stop the above container:

Installing Jenkins

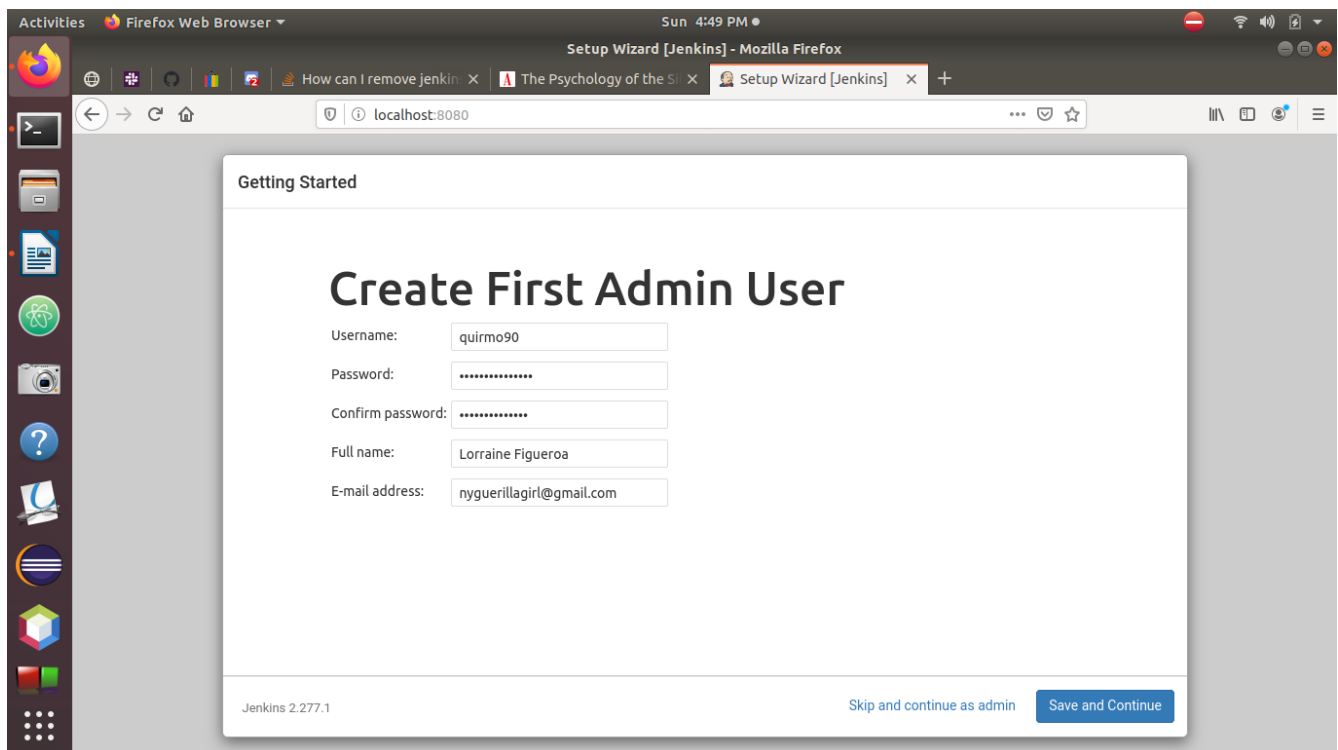
- Pulling image into docker
- Check that it is running

```
lorraine@lorraine-Latitude-E5440: ~  
File Edit View Search Terminal Help  
lorraine@lorraine-Latitude-E5440:~$ docker ps  
CONTAINER ID        IMAGE               COMMAND             CREATED  
STATUS             PORTS              NAMES  
c8118d11aaae       jenkinsci/blueocean  "/sbin/tini -- /usr/..."  2 hours ago  
Up 55 seconds      0.0.0.0:8080->8080/tcp, 50000/tcp  myContainer  
lorraine@lorraine-Latitude-E5440:~$
```

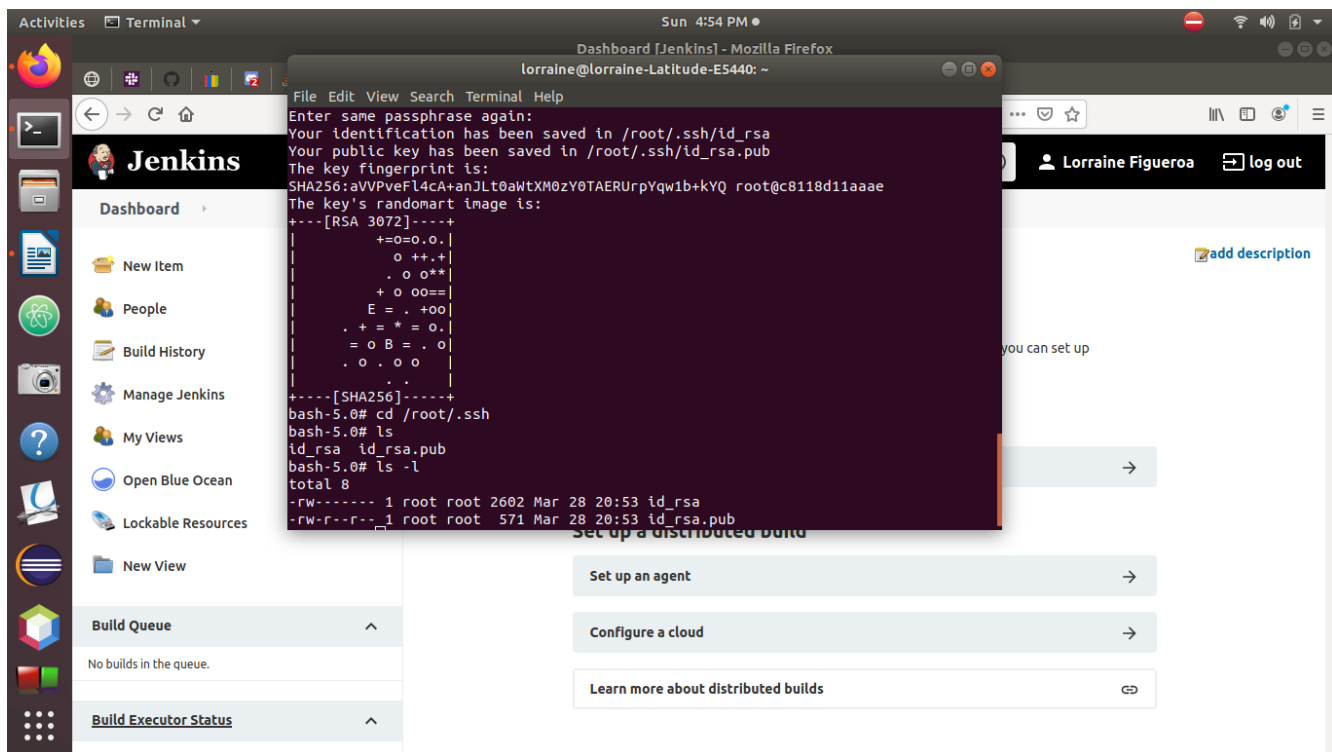
- Go to URL: <http://localhost:8080>



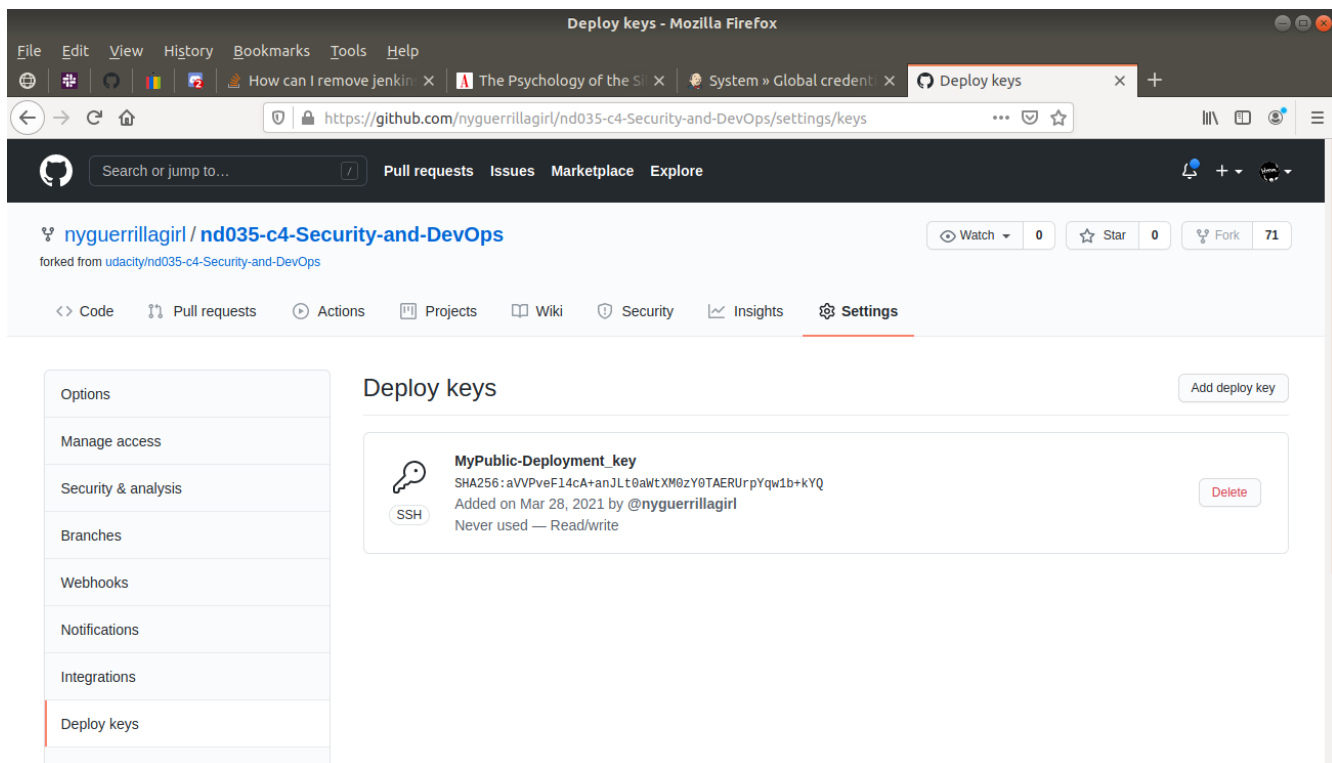
- Install suggested plugins
- Create user



- Create and RSA key pair inside the container



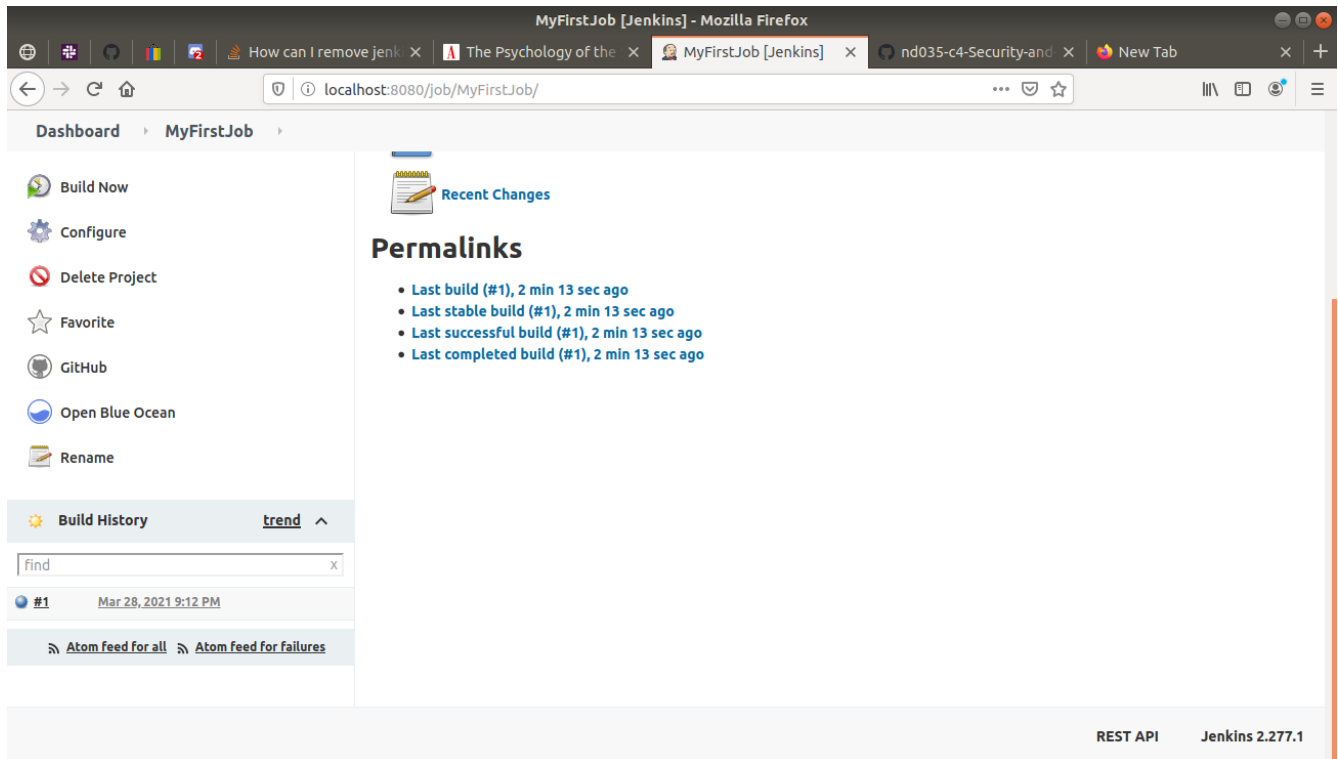
- Add private key to Jenkins global credentials
- Add public key to github



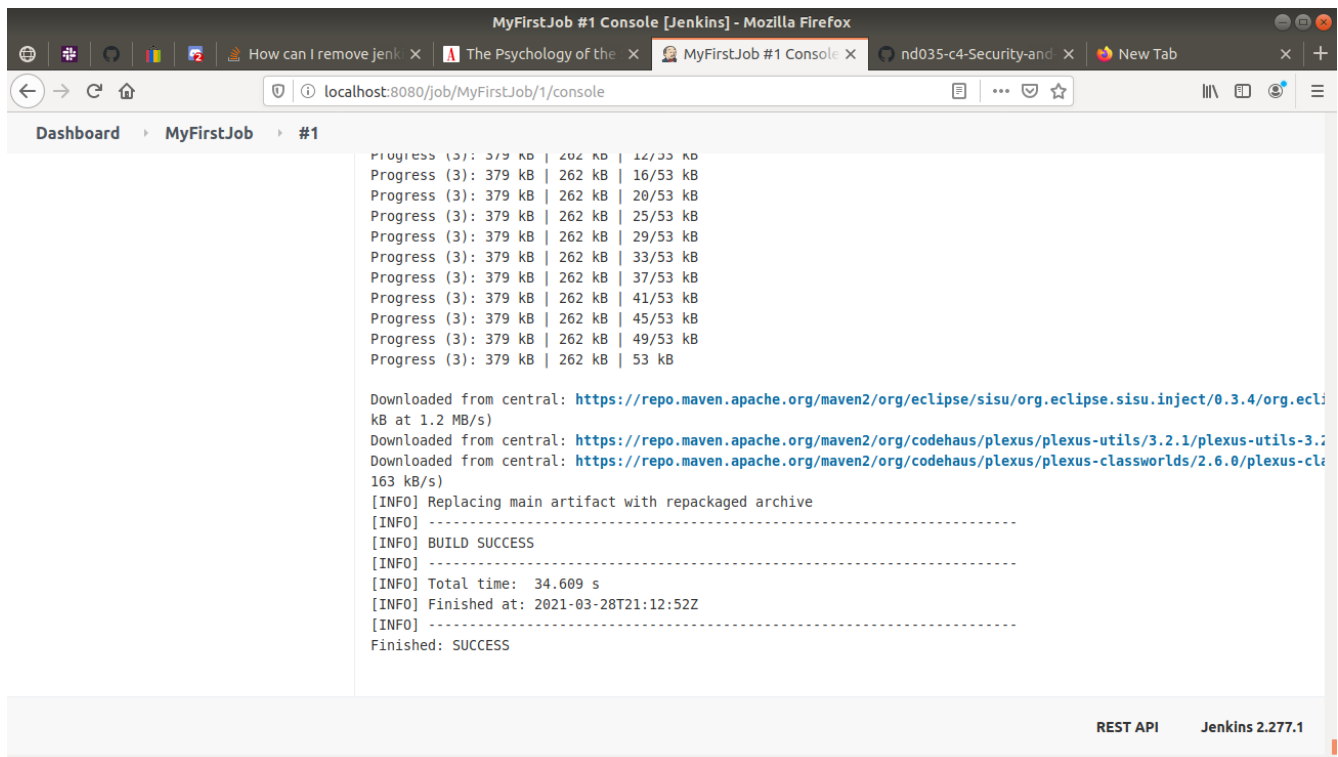
- Create and build myFirstJob

- Build Now

It worked:



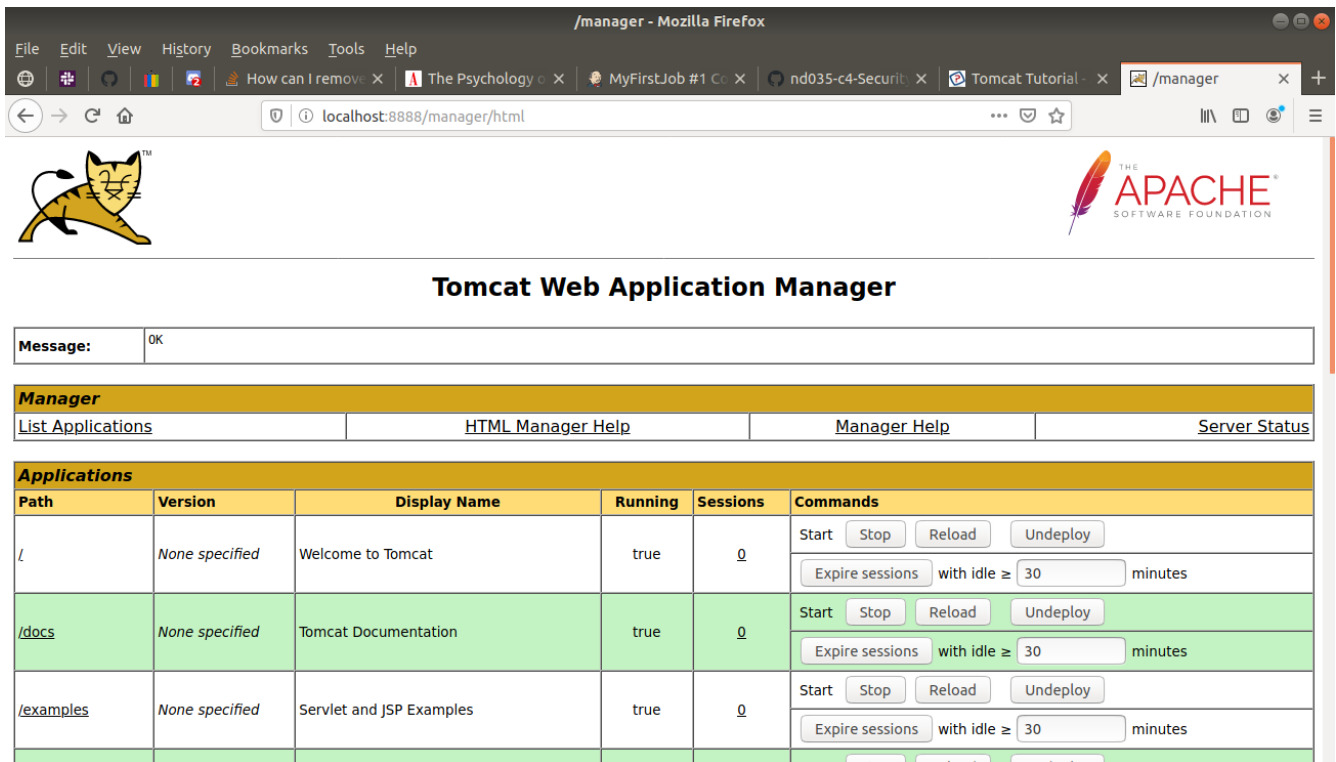
Console Logs:



Install a Docker Image for Tomcat

```
lorraine@lorraine-Latitude-E5440: ~
File Edit View Search Terminal Help
o9lIV/m6v63o4KvsTXI39ZqEq2CpBvGipziKcybMQW7l3xdP7a1dWeAYlxxNiGz9rVemkxk= root@c8
118d11aaae
bash-5.0# exit
exit
lorraine@lorraine-Latitude-E5440:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS            PORTS              NAMES
c8118d11aaae       jenkinsci/blueocean "/sbin/tini -- /usr/..." 3 hours ago
Up 38 minutes      0.0.0.0:8080->8080/tcp, 50000/tcp  myContainer
lorraine@lorraine-Latitude-E5440:~$ docker run -dit --name myTomcatServer -p 888
8:8080 tomcat:jdk8
Unable to find image 'tomcat:jdk8' locally
jdk8: Pulling from library/tomcat
8bf9c589d5f9: Pull complete
4c70e46d8b5f: Pull complete
ea848ad42f0d: Pull complete
48fe137f8d26: Extracting 22.02MB/51.84MB
c72106bf683d: Download complete
2ad2590571cf: Download complete
7d8c373bcd8: Download complete
814dae3c0857: Download complete
f4761306be72: Download complete
8c6264faae7b: Download complete
```

- Installing Tomcat
- Enter Tomcat container
- Copy webapps.dist over
- Check <http://localhost:8888>
- create admin account, edit both files specified
- first needed to install vim
- Restarted tomcat
- Test entering admin



Tomcat Web Application Manager

Message: OK

Manager

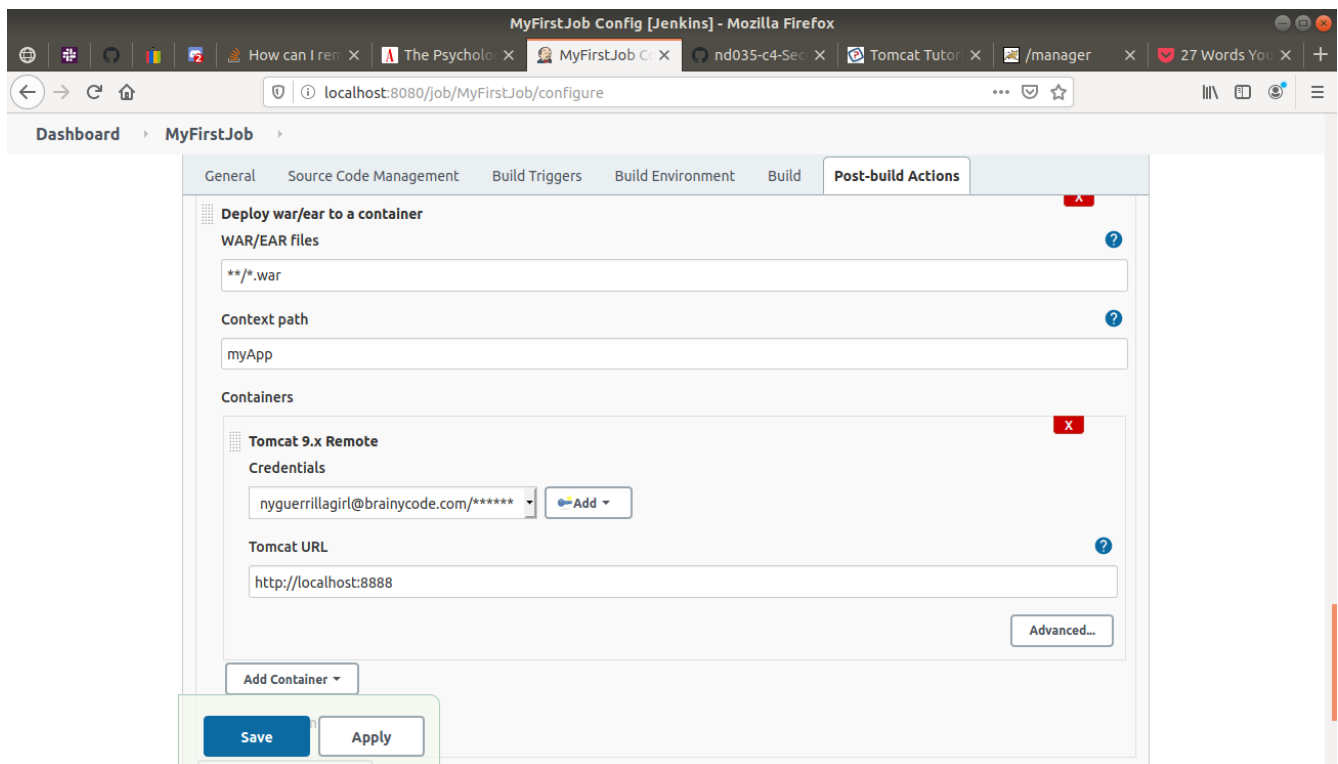
[List Applications](#) [HTML Manager Help](#) [Manager Help](#) [Server Status](#)

Applications

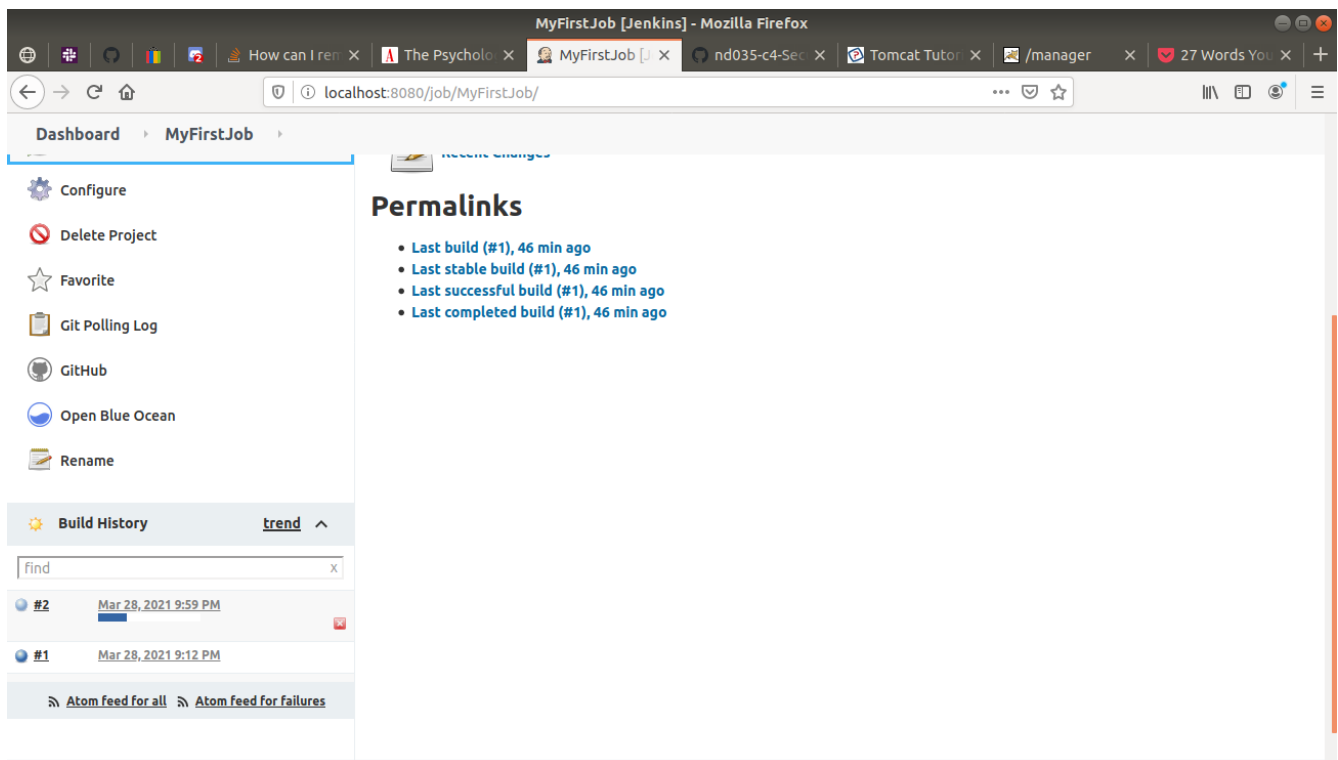
Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Configure Jenkins for Tomcat

- Add the plugins
- Configure myFirstJob for Tomcat



- Initiate build



Error:

[INFO] -----

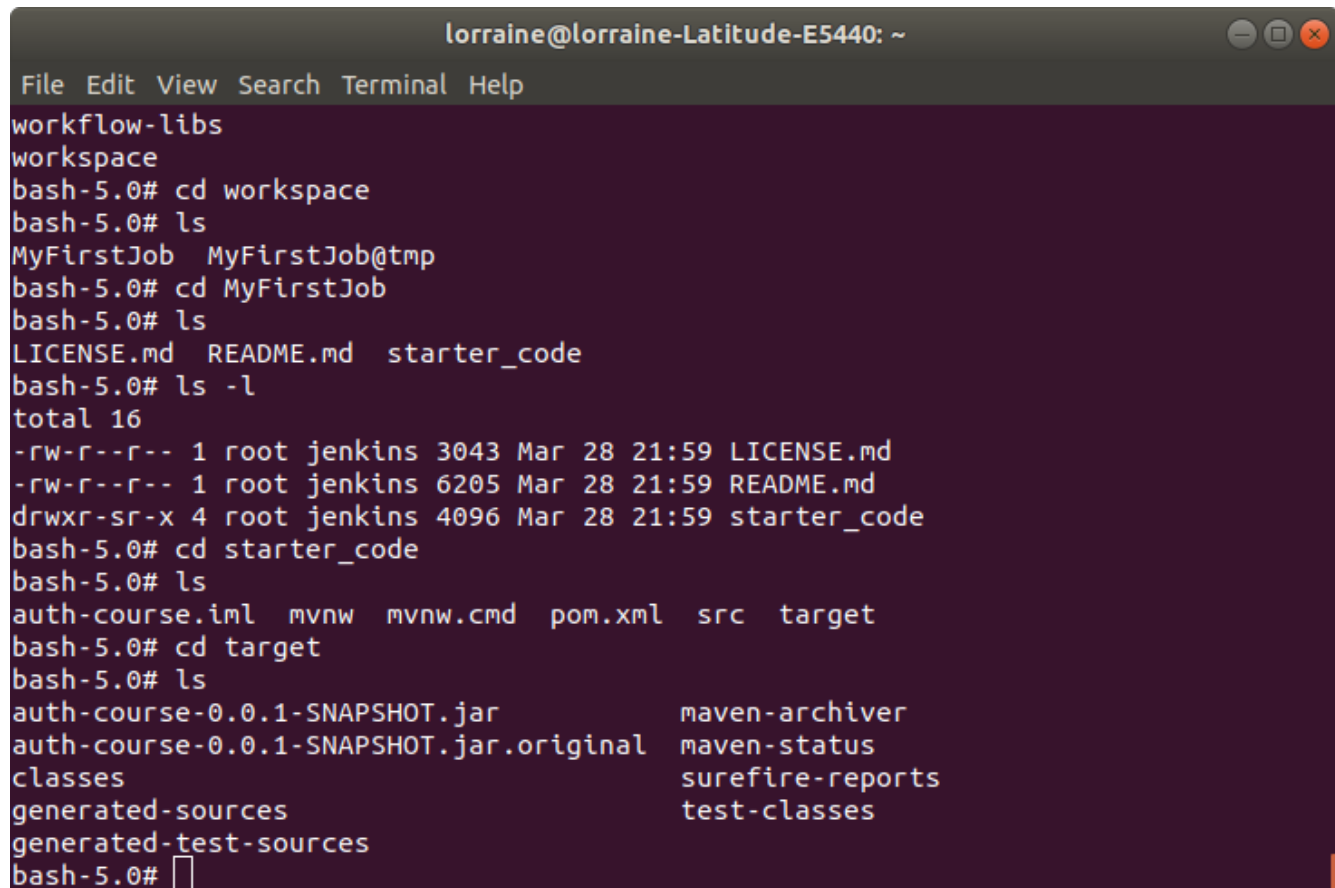
```

ERROR: Step 'Deploy war/ear to a container' aborted due to exception:
java.lang.InterruptedException: [DeployPublisher][WARN] No wars found. Deploy aborted. %n
    at hudson.plugins.deploy.DeployPublisher.perform(DeployPublisher.java:107)
    at jenkins.tasks.SimpleBuildStep.perform(SimpleBuildStep.java:123)
    at hudson.tasks.BuildStepCompatibilityLayer.perform(BuildStepCompatibilityLayer.java:80)
    at hudson.tasks.BuildStepMonitor$3.perform(BuildStepMonitor.java:45)
    at hudson.model.AbstractBuild$AbstractBuildExecution.perform(AbstractBuild.java:803)
    at hudson.model.AbstractBuild$AbstractBuildExecution.performAllBuildSteps(AbstractBuild.java:752)
    at hudson.model.Build$BuildExecution.post2(Build.java:177)
    at hudson.model.AbstractBuild$AbstractBuildExecution.post(AbstractBuild.java:697)
    at hudson.model.Run.execute(Run.java:1932)
    at hudson.model.FreeStyleBuild.run(FreeStyleBuild.java:43)
    at hudson.model.ResourceController.execute(ResourceController.java:97)
    at hudson.model.Executor.run(Executor.java:429)
Finished: FAILURE

```

- Checking Jenkins

The error message appears correct:



```

lorraine@lorraine-Latitude-E5440: ~
File Edit View Search Terminal Help
workflow-libs
workspace
bash-5.0# cd workspace
bash-5.0# ls
MyFirstJob MyFirstJob@tmp
bash-5.0# cd MyFirstJob
bash-5.0# ls
LICENSE.md README.md starter_code
bash-5.0# ls -l
total 16
-rw-r--r-- 1 root jenkins 3043 Mar 28 21:59 LICENSE.md
-rw-r--r-- 1 root jenkins 6205 Mar 28 21:59 README.md
drwxr-sr-x 4 root jenkins 4096 Mar 28 21:59 starter_code
bash-5.0# cd starter_code
bash-5.0# ls
auth-course.iml mvnw mvnw.cmd pom.xml src target
bash-5.0# cd target
bash-5.0# ls
auth-course-0.0.1-SNAPSHOT.jar          maven-archiver
auth-course-0.0.1-SNAPSHOT.jar.original maven-status
classes                                surefire-reports
generated-sources                       test-classes
generated-test-sources
bash-5.0#

```

I do not see a war but a jar...let me see if I selected the correct branch! I did not change to */master to match course instructions and pom!

It failed again but it appears to be a Tomcat access issue:

```
Downloaded from central:
https://repo.maven.apache.org/maven2/com/google/guava/guava/19.0/guava-19.0.jar
(2.3 MB at 5.0 MB/s)
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 28.738 s
[INFO] Finished at: 2021-03-28T22:06:32Z
[INFO] -----
[DeployPublisher][INFO] Attempting to deploy 1 war file(s)
[DeployPublisher][INFO] Deploying
/var/jenkins_home/workspace/MyFirstJob/starter_code/target/auth-course-0.0.1-
SNAPSHOT.war to container Tomcat 9.x Remote with context myApp
ERROR: Build step failed with exception
org.codehaus.cargo.container.ContainerException: Failed to redeploy
[/var/jenkins_home/workspace/MyFirstJob/starter_code/target/auth-course-0.0.1-
SNAPSHOT.war]
    at

    ... 19 more
java.net.ConnectException: Connection refused (Connection refused)
ar to a container' marked build as failure

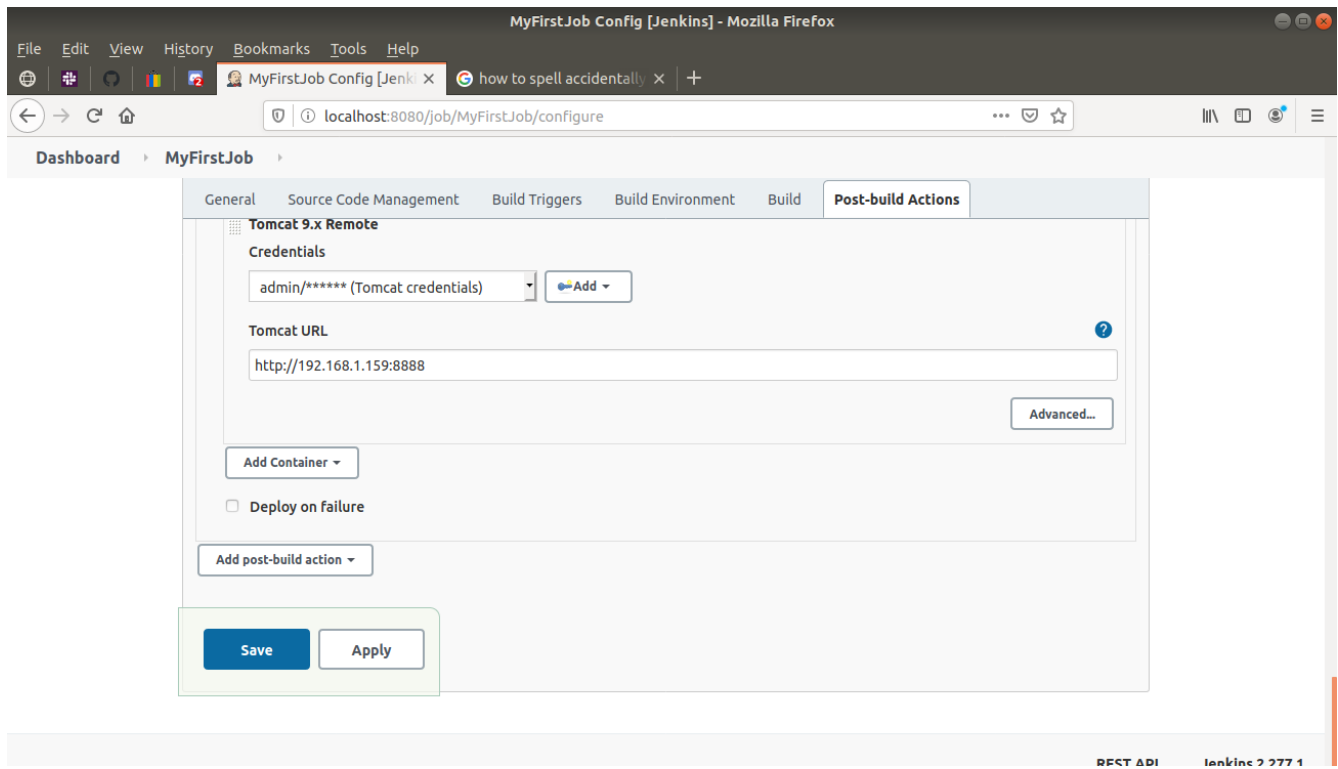
:
:
```

I would guess maybe the Tomcat login and password is incorrect

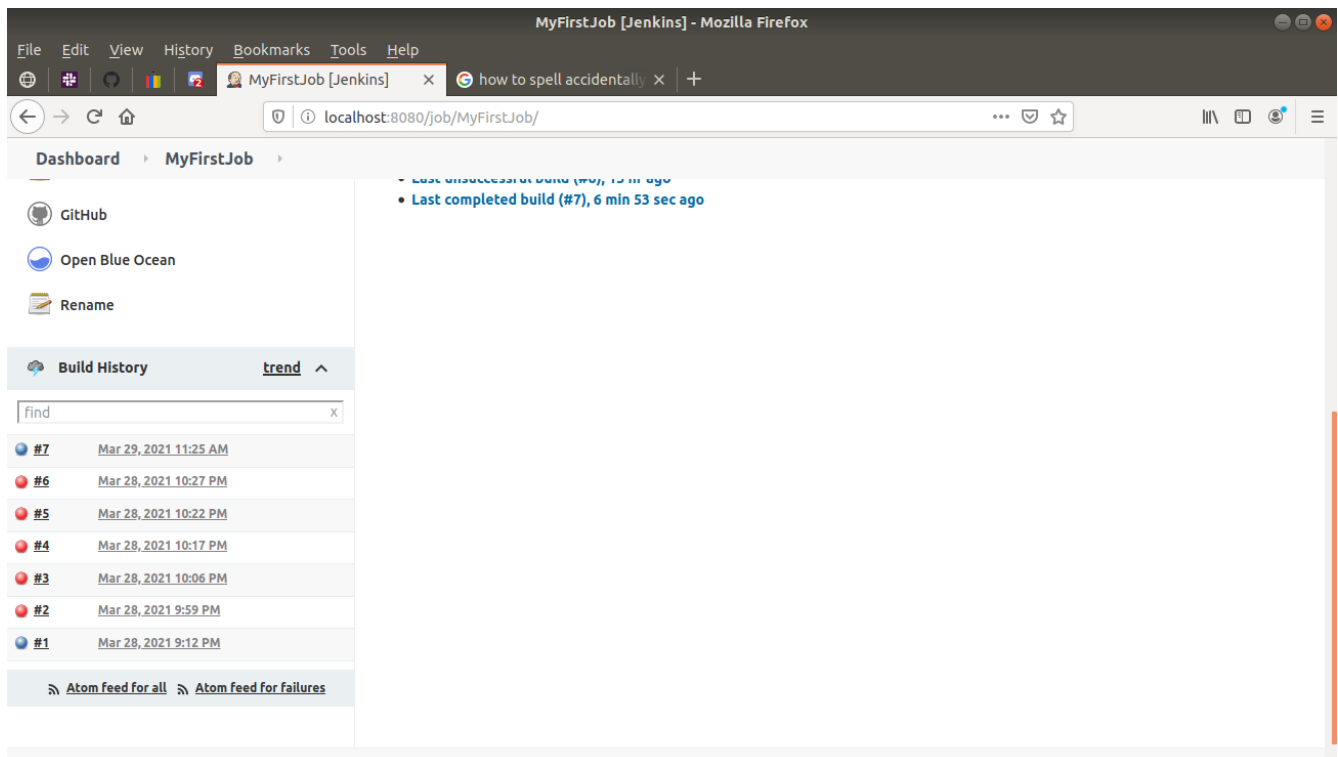
- Check Tomcat credentials – I am accidentally using the Github credentials
- I added Tomcat credentials to global and selected it

After a bit of trial and error (and failure)

- In addition, I changed the IP address to the machine IP of 192.168.1.159 for the Tomcat server:



- Build now – it worked!



Build #7 is the complete pipeline build from GitHub → Jenkins → Tomcat Server

Build Console Output:

```

Started by user Lorraine Figueroa
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/MyFirstJob
[WS-CLEANUP] Deleting project workspace...
[WS-CLEANUP] Deferred wipeout is used...
[WS-CLEANUP] Done
The recommended git tool is: NONE
using credential 1e71207c-c805-44f3-abc3-ffa5925050d1
Cloning the remote Git repository
Cloning repository https://github.com/nyguerrillagirl/nd035-c4-Security-and-DevOps.git
> git init /var/jenkins_home/workspace/MyFirstJob # timeout=10
Fetching upstream changes from https://github.com/nyguerrillagirl/nd035-c4-Security-and-DevOps.git
> git --version # timeout=10
> git --version # 'git version 2.26.3'
using GIT_ASKPASS to set credentials
> git fetch --tags --force --progress -- https://github.com/nyguerrillagirl/nd035-c4-Security-and-DevOps.git # timeout=10
> git config remote.origin.url https://github.com/nyguerrillagirl/nd035-c4-Security-and-DevOps.git # 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 15d0ff9cb2b4c78122935b5ee76ff076af3bb436 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f 15d0ff9cb2b4c78122935b5ee76ff076af3bb436 # timeout=10
Commit message: "Update pom.xml"
> git rev-list --no-walk 15d0ff9cb2b4c78122935b5ee76ff076af3bb436 # timeout=10
[MyFirstJob] $ mvn -f starter_code/pom.xml clean compile package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.example:auth-course >-----
[INFO] Building auth-course 0.0.1-SNAPSHOT
[INFO] -----[ war ]-----
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ auth-course ---
[INFO] Deleting /var/jenkins_home/workspace/MyFirstJob/starter_code/target
[INFO]
[INFO] --- maven-resources-plugin:3.1.0:resources (default-resources) @ auth-course ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ auth-course ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 15 source files to /var/jenkins_home/workspace/MyFirstJob/starter_code/target/classes
[INFO]
[INFO] --- maven-resources-plugin:3.1.0:resources (default-resources) @ auth-course ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] Copying 1 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:compile (default-compile) @ auth-course ---

```

```

[INFO] Changes detected - recompiling the module!
[INFO] Compiling 15 source files to /var/jenkins_home/workspace/MyFirstJob/starter_code/target
[INFO]
[INFO] --- maven-resources-plugin:3.1.0:testResources (default-testResources) @ auth-course ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /var/jenkins_home/workspace/MyFirstJob/starter_code/target
[INFO]
[INFO] --- maven-compiler-plugin:3.8.1:testCompile (default-testCompile) @ auth-course ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /var/jenkins_home/workspace/MyFirstJob/starter_code/target
[INFO]
[INFO] --- maven-surefire-plugin:2.22.2:test (default-test) @ auth-course ---
[INFO]
[INFO] -----
[INFO]   T E S T S
[INFO] -----
[INFO] Running com.example.demo.SareetaApplicationTests
11:25:59.073 [main] DEBUG org.springframework.test.context.junit4.SpringJUnit4ClassRunner -
com.example.demo.SareetaApplicationTests]
11:25:59.080 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating Ca
[org.springframework.test.context.cache.DefaultCacheAwareContextLoaderDelegate]
11:25:59.091 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating Bo
org.springframework.test.context.support.DefaultBootstrapContext(java.lang.Class,org.springf
11:25:59.115 [main] DEBUG org.springframework.test.context.BootstrapUtils - Instantiating Te
[com.example.demo.SareetaApplicationTests] from class [org.springframework.boot.test.context
11:25:59.149 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstra
@ContextHierarchy found for test class [com.example.demo.SareetaApplicationTests], using Spr
11:25:59.154 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - D
[com.example.demo.SareetaApplicationTests]: class path resource [com/example/demo/SareetaApp
11:25:59.154 [main] DEBUG org.springframework.test.context.support.AbstractContextLoader - D
[com.example.demo.SareetaApplicationTests]: class path resource [com/example/demo/SareetaApp
11:25:59.154 [main] INFO org.springframework.test.context.support.AbstractContextLoader - Co
class [com.example.demo.SareetaApplicationTests]: no resource found for suffixes {-context.x
11:25:59.155 [main] INFO org.springframework.test.context.support.AnnotationConfigContextLoa
classes for test class [com.example.demo.SareetaApplicationTests]: SareetaApplicationTests d
nested classes annotated with @Configuration.
11:25:59.235 [main] DEBUG org.springframework.test.context.support.ActiveProfilesUtils - Cou
annotation type [org.springframework.test.context.ActiveProfiles] and class [com.example.dem
11:25:59.355 [main] DEBUG org.springframework.context.annotation.ClassPathScanningCandidateC
class: file [/var/jenkins_home/workspace/MyFirstJob/starter_code/target/classes/com/example/
11:25:59.357 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstra
com.example.demo.SareetaApplication for test class com.example.demo.SareetaApplicationTests
11:25:59.593 [main] DEBUG org.springframework.boot.test.context.SpringBootTestContextBootstr
class [com.example.demo.SareetaApplicationTests]: using defaults.
11:25:59.594 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstra
from location [META-INF/spring.factories]: [org.springframework.boot.test.mock.mockito.Mocki
org.springframework.boot.test.mock.mockito.ResetMocksTestExecutionListener,
org.springframework.boot.test.autoconfigure.restdocs.RestDocsTestExecutionListener,
org.springframework.boot.test.autoconfigure.web.client.MockRestServiceServerResetTestExecuti
org.springframework.boot.test.autoconfigure.web.servlet.MockMvcPrintOnlyOnFailureTestExecuti
org.springframework.boot.test.autoconfigure.web.servlet.WebDriverTestExecutionListener,
org.springframework.test.context.web.ServletTestExecutionListener,
org.springframework.test.context.support DirtiesContextBeforeModesTestExecutionListener,
org.springframework.test.context.support.DependencyInjectionTestExecutionListener,
org.springframework.test.context.support DirtiesContextTestExecutionListener,
org.springframework.test.context.transaction.TransactionalTestExecutionListener,
org.springframework.test.context.jdbc.SqlScriptsTestExecutionListener]
11:25:59.638 [main] INFO org.springframework.boot.test.context.SpringBootTestContextBootstra
[org.springframework.test.context.web.ServletTestExecutionListener@3a93b025,

```



```

2021-03-29 11:26:01.802 INFO 2273 --- [main] .s.d.r.c.RepositoryConfigurationDel
117ms. Found 4 repository interfaces.
2021-03-29 11:26:02.689 INFO 2273 --- [main] trationDelegate$BeanPostProcessorCh
'org.springframework.transaction.annotation.ProxyTransactionManagementConfiguration' of type
[org.springframework.transaction.annotation.ProxyTransactionManagementConfiguration$$Enhance
processed by all BeanPostProcessors (for example: not eligible for auto-proxying)
2021-03-29 11:26:03.151 INFO 2273 --- [main] com.zaxxer.hikari.HikariDataSource
2021-03-29 11:26:03.918 INFO 2273 --- [main] com.zaxxer.hikari.HikariDataSource
2021-03-29 11:26:04.033 INFO 2273 --- [main] o.hibernate.jpaa.internal.util.LogHe
name: default
...]
2021-03-29 11:26:04.157 INFO 2273 --- [main] org.hibernate.Version
2021-03-29 11:26:04.160 INFO 2273 --- [main] org.hibernate.cfg.Environment
2021-03-29 11:26:04.396 INFO 2273 --- [main] o.hibernate.annotations.common.Vers
{5.0.4.Final}
2021-03-29 11:26:04.666 INFO 2273 --- [main] org.hibernate.dialect.Dialect
org.hibernate.dialect.H2Dialect
2021-03-29 11:26:05.713 INFO 2273 --- [main] j.LocalContainerEntityManagerFactor
persistence unit 'default'
2021-03-29 11:26:07.297 INFO 2273 --- [main] o.s.s.concurrent.ThreadPoolTaskExec
'applicationTaskExecutor'
2021-03-29 11:26:07.396 WARN 2273 --- [main] aWebConfiguration$JpaWebMvcConfigur
Therefore, database queries may be performed during view rendering. Explicitly configure spr
2021-03-29 11:26:08.160 INFO 2273 --- [main] c.example.demo.SareetaApplicationTe
seconds (JVM running for 9.88)
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 9.71 s - in com.examp
2021-03-29 11:26:08.614 INFO 2273 --- [Thread-3] o.s.s.concurrent.ThreadPoolTaskExec
'applicationTaskExecutor'
2021-03-29 11:26:08.621 INFO 2273 --- [Thread-3] j.LocalContainerEntityManagerFactor
persistence unit 'default'
2021-03-29 11:26:08.630 INFO 2273 --- [Thread-3] com.zaxxer.hikari.HikariDataSource
2021-03-29 11:26:08.650 INFO 2273 --- [Thread-3] com.zaxxer.hikari.HikariDataSource
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO]
[INFO] --- maven-war-plugin:3.2.2:war (default-war) @ auth-course ---
[INFO] Packaging webapp
[INFO] Assembling webapp [auth-course] in [/var/jenkins_home/workspace/MyFirstJob/starter_co
[INFO] Processing war project
[INFO] Webapp assembled in [853 msecs]
[INFO] Building war: /var/jenkins_home/workspace/MyFirstJob/starter_code/target/auth-course-
[INFO]
[INFO] --- spring-boot-maven-plugin:2.1.5.RELEASE:repackage (repackage) @ auth-course ---
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 24.388 s
[INFO] Finished at: 2021-03-29T11:26:14Z
[INFO] -----
[DeployPublisher][INFO] Attempting to deploy 1 war file(s)
[DeployPublisher][INFO] Deploying /var/jenkins_home/workspace/MyFirstJob/starter_code/target
Remote with context myApp
[/var/jenkins_home/workspace/MyFirstJob/starter_code/target/auth-course-0.0.1-SNAPSHOT.war
Deploying [/var/jenkins_home/workspace/MyFirstJob/starter_code/target/auth-course-0.0.1-SN

```

Finished: SUCCESS

- Checking Tomcat from manager's page:

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/myApp	None specified		true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Deploy

We see the /myApp application.

- Checking Tomcat directory:

```
lorraine@lorraine-Latitude-E5440: ~  
File Edit View Search Terminal Help  
lorraine@lorraine-Latitude-E5440:~$ docker exec -it myTomcatServer bash  
root@e4bdfd37e725:/usr/local/tomcat# ls  
BUILDING.txt      NOTICE          RUNNING.txt      lib              temp            work  
CONTRIBUTING.md  README.md       bin             logs            webapps  
LICENSE           RELEASE-NOTES   conf            native-jni-lib  webapps.dist  
root@e4bdfd37e725:/usr/local/tomcat# cd webapps  
root@e4bdfd37e725:/usr/local/tomcat/webapps# ls  
ROOT  docs  examples  host-manager  manager  myApp  myApp.war  
root@e4bdfd37e725:/usr/local/tomcat/webapps#
```

I have successfully completed the Jenkins pipeline!