



FEBRUARY 26, 2023

DevOps Classroomnotes 26/Feb/2023

Installing Maven

- Maven requires Java to be installed.
- Java:
 - Distributions:
 - OpenJDK
 - Oracle JDK
 - IBM JDK
 - Amazon Corretto JDK
 - Versions:
 - 8
 - 11
 - 17
 - 19
- Environmental Variables:
 - PATH
 - JAVA_HOME
 - M2_HOME
- JAVA Installation

```
# OpenJDK 8
sudo apt update
sudo apt install openjdk-8-jdk -y
java -version
```

- Maven Installation

```
sudo apt update
sudo apt install maven -y
mvn --version
```

```
ubuntu@ip-172-31-28-62:~$ java -version
openjdk version "1.8.0_352"
OpenJDK Runtime Environment (build 1.8.0_352-8u352-ga-1~22.04-b08)
OpenJDK 64-Bit Server VM (build 25.352-b08, mixed mode)
ubuntu@ip-172-31-28-62:~$ mvn --version
Apache Maven 3.6.3
Maven home: /usr/share/maven
Java version: 1.8.0_352, vendor: Private Build, runtime: /usr/lib/jvm/java-8-openjdk-amd64/jre
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.15.0-1028-aws", arch: "amd64", family: "unix"
ubuntu@ip-172-31-28-62:~$
```

- * Building a sample application using maven [Refer Here](#) for game of life code
- * This project requires jdk 8
- * To
 - * compile the code: mvn compile
 - * run the automated tests: mvn test
 - * create the package: mvn package
- * Lets try to build a project spring petclinic [Refer Here](#). This project requires JAVA 17
- * When we were compiling, testing and packaging maven is downloading lot of stuff what is that?

```

Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-
common-artifact-filters/1.2/maven-common-artifact-filters-1.2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-
common-artifact-filters/1.2/maven-common-artifact-filters-1.2.pom (4.5 kB at 174 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-
shared-components/11/maven-shared-components-11.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-
shared-components/11/maven-shared-components-11.pom (8.3 kB at 298 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent
11/maven-parent-11.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/
11/maven-parent-11.pom (32 kB at 1.1 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/5/apache-5.
pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/5/apache-5.p
om (4.1 kB at 171 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-model/
2.0.8/maven-model-2.0.8.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-model/2
0.8/maven-model-2.0.8.pom (3.1 kB at 143 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven/2.0.8/
maven-2.0.8.pom

```

* Maven will download all the necessary dependencies to compile/package/test from a maven central repository [Refer Here](#) and it downloads to M2_HOME which is by default <HOME-DIR>/.m2 which is referred as local repository.

- Maven Lifecycle Phases
 - compile: Will create .class files
 - test: will run unit tests
 - package: will create package (jar/war)
 - install: will copy the project which you have build to the local repository. Along with jar/war files a pom also gets copied

Jenkins

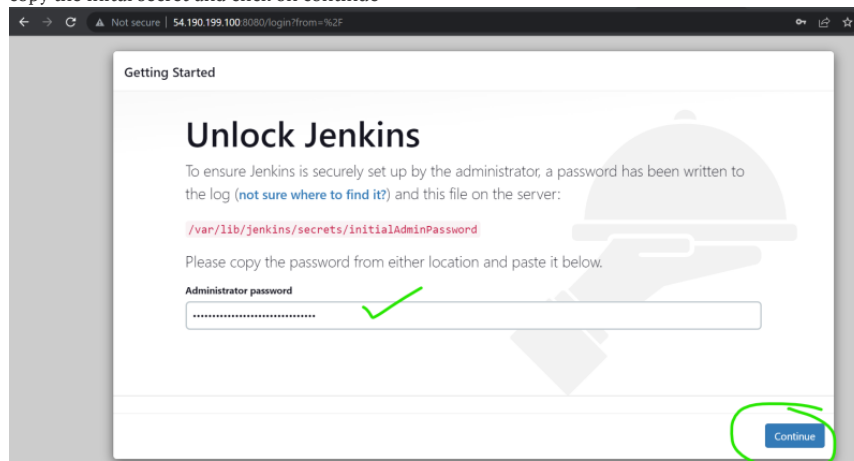
- Jenkins is an open source CI/CD Engine.
- Jenkins:
 - Using Package managers on Linux
 - Docker
 - Windows
 - WAR
- Lets install Jenkins [Refer Here](#)
- For installing in ubuntu [Refer Here](#)
- Lets install LTS (Long Term Support Version)

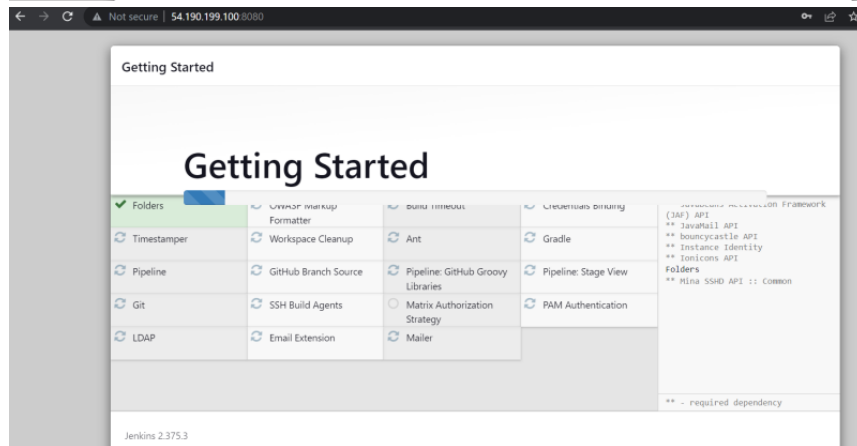
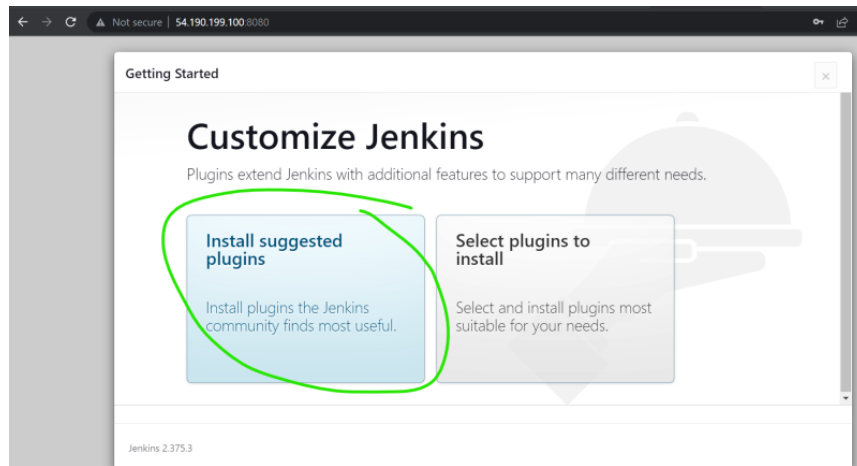
```

sudo apt-get update
sudo apt-get install openjdk-17-jdk -y
curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee \
  /usr/share/keyrings/jenkins-keyring.asc > /dev/null
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.jenkins.io/debian-stable binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get install jenkins -y

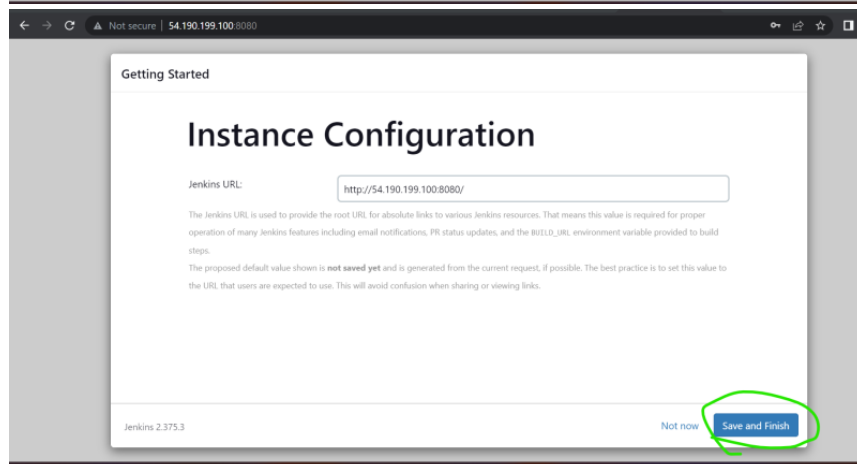
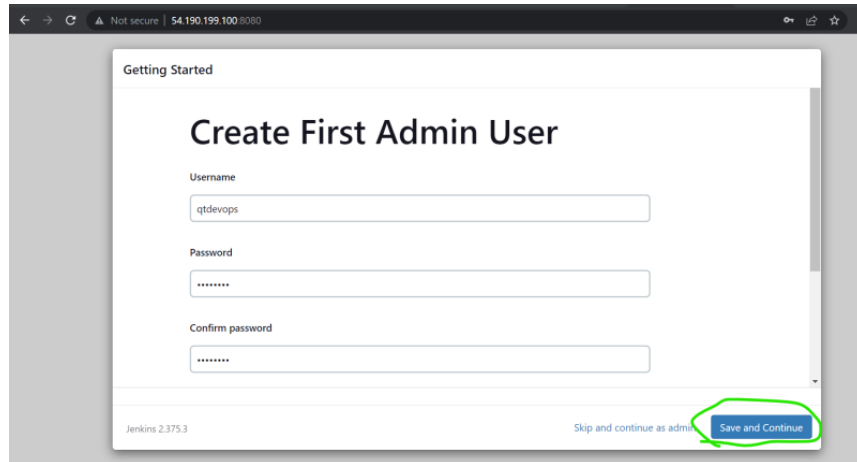
```

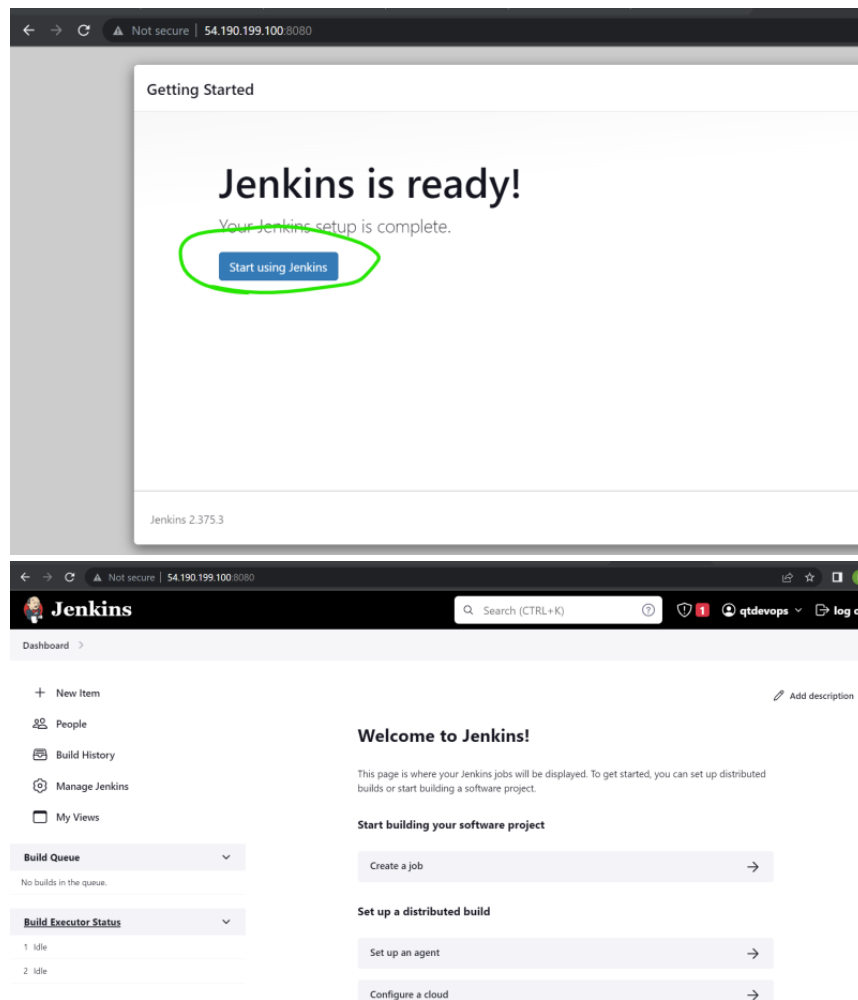
- After installing jenkins a user jenkins got created with
 - /var/lib/jenkins as Home directory
 - /bin/bash as default shell
- Now access jenkins using http://<publicip>:8080
- copy the initial secret and click on continue





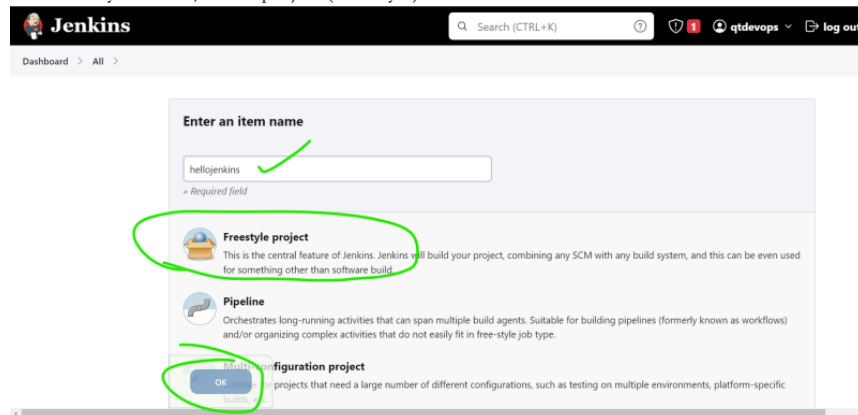
- Create an admin user





First Project to display some system information

- Lets create a Jenkins project which displays
 - username
 - current working directory
 - all the environmental variables
- Lets start by create a Jenkins project (Freestyle)



- Now navigate to build steps

Jenkins

Search (CTRL+K)

1 qtdevops log out

Dashboard

hellojenkins

Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

General

Description

Discard old builds ?

GitHub project

This project is parameterized ?

Throttle builds ?

Save

Apply

Dashboard

hellojenkins

Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

Build Steps

Add build step +

Filter

Execute Windows batch command

Execute shell

Invoke Ant

Invoke Gradle script

Invoke top-level Maven targets

Run with timeout

Set build status to "pending" on GitHub commit

REST API

Jenkins 2.375.3

Dashboard

hellojenkins

Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

Build Steps

Execute shell ?

Command

See the list of available environment variables

whoami

pwd

printenv

Save

Apply

78°F

Jenkins

Search (CTRL+K)

1 qtdevops

Dashboard

hellojenkins

Status

Changes

Workspace

Build Now

Configure

Delete Project

Rename

Build History

trend

Filter builds...

No builds

Project hellojenkins

Permalinks

Add de

Disable

Dashboard > hellojenkins >

Status

Project hellojenkins

</> Changes

Workspace

Build Now

Configure

Delete Project

Rename

Build History

trend

Filter builds...

#1

Feb 26, 2023, 3:42 AM

Atom feed for all

Atom feed for failures

Not secure | 54.190.199.100:8080/job/hellojenkins/1/console

Jenkins

Search (CTRL+K)

qtdevops

log

Dashboard > hellojenkins > #1

Status

</> Changes

Console Output

View as plain text

Edit Build Information

Delete build '#1'

Started by user qtdevops

Running as SYSTEM

Building in workspace /var/lib/jenkins/workspace/hellojenkins

[hellojenkins] \$ /bin/sh -xe /tmp/jenkins8510070109998991888.sh

+ whoami

jenkins

+ pwd

/var/lib/jenkins/workspace/hellojenkins

+ printenv

JENKINS_HOME=/var/lib/jenkins

USER=jenkins

CI=true

RUI_CHANGES_DISPLAY_URL=http://54.190.199.100:8080/job/hellojenkins/1/display/redirect?page=changes

NODE_LABELS=built-in

HUDSON_URL=http://54.190.199.100:8080/

HOME=/var/lib/jenkins

BUILD_URL=http://54.190.199.100:8080/job/hellojenkins/1/

- Now change the invoke shell steps to something as shown below

Dashboard > hellojenkins > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

Build Steps

Execute shell

Command

See the list of available environment variables

sudo apt update

Advanced...

Add build step

Save

Apply

- Build the jenkins job

Dashboard > hellojenkins >

Workspace

Build Now

Configure

Delete Project

Rename

Permalinks

- Last build (#1), 3 min 19 sec ago
- Last stable build (#1), 3 min 19 sec ago
- Last successful build (#1), 3 min 19 sec ago
- Last completed build (#1), 3 min 19 sec ago

Build History trend

Filter builds...

Build	Status	Timestamp
#2	Failed	Feb 26, 2023, 3:46 AM
#1	Successful	Feb 26, 2023, 3:42 AM

Atom feed for all Atom feed for failures

Jenkins Search (CTRL+K) qtdevops

Dashboard > hellojenkins > #2

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build '#2'

Previous Build

Console Output

```
Started by user qtdevops
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/hellojenkins
[hellojenkins] $ /bin/sh -xe /tmp/jenkins2528613828963499249.sh
+ sudo apt update
sudo: a terminal is required to read the password; either use the -S option to read from standard input or
configure an askpass helper
sudo: a password is required
Build step 'Execute shell' marked build as failure
Finished: FAILURE
```

Create a Jenkins Project to build spring petclinic

- Manual steps

```
git clone https://github.com/spring-projects/spring-petclinic.git
cd spring-petclinic
mvn package
```

- Create a Jenkins job with name spc and in build steps invoke shell and execute the following

```
git clone https://github.com/spring-projects/spring-petclinic.git
cd spring-petclinic
mvn package
```

Dashboard > spc > Configuration

Configure

- General
- Source Code Management
- Build Triggers
- Build Environment**
- Build Steps
- Post-build Actions

☐ Terminate a build if it's stuck

☐ With Ant ?

Build Steps

Execute shell ?

Command

See the list of available environment variables

```
git clone https://github.com/spring-projects/spring-petclinic.git
cd spring-petclinic
mvn package
```

Save **Apply**

Jenkins

Search (CTRL+K)

Dashboard > spc > #1

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build '#1'

Console Output

```
Started by user qtdevops
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/spc
[spc] $ /bin/sh -xe /tmp/jenkins18364638698329911390.sh
+ git clone https://github.com/spring-projects/spring-petclinic.git
Cloning into 'spring-petclinic'...
+ cd spring-petclinic
+ mvn package
/tmp/jenkins18364638698329911390.sh: 4: mvn: not found
Build step 'Execute shell' marked build as failure
Finished: FAILURE
```

* Install maven and rerun the same job

Dashboard > spc > #2

```
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-jar-plugin/3.3.0/maven-jar-plugin-3.3.0.jar (27 KB at 828 KB/s)
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-actuator/3.0.2/spring-boot-starter-actuator-3.0.2.pom
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter-actuator/3.0.2/spring-boot-starter-actuator-3.0.2.pom
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-starter-actuator/3.0.2/spring-boot-starter-actuator-3.0.2.pom
Progress (1): 2.8 kB

Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-starter-actuator/3.0.2/spring-boot-starter-actuator-3.0.2.pom (2.8 kB at 102 KB/s)
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter/3.0.2/spring-boot-starter-3.0.2.pom
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter/3.0.2/spring-boot-starter-3.0.2.pom
```

Exercise

- Install Jenkins on a ubuntu vm
- Try to build game of life using jenkins free style project mvn package
- [Refer Here](#) for the the project

Jenkins Projects

- Jenkins has 3 project types (majorly)
 - Free Style: These projects are UI Based.
 - Scripted Pipeline
 - Declarative Pipeline

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