LAB1

01) What is Jenkins used for?

Jenkins is used to build and test your product continuously, so developers can continuously integrate changes into the build. Jenkins is the most popular open-source CI/CD tool on the market today and is used in support of DevOps, alongside other cloud native tools.

02) What is Jenkins agent? What is Jenkins executor (Build Executor)?

- An agent is typically a machine, or container, which connects to a Jenkins controller and executes tasks when directed by the controller.

- A slot for execution of work defined by a Pipeline or job on a Node. A Node may have zero or more Executors configured which corresponds to how many concurrent Jobs or Pipelines are able to execute on that Node.

03) Explain Jenkins master-slave architecture?

Master:

The main Jenkins Server is the Master Server of Jenkins. This acts as a control server that arranges the defined workflow of the pipeline. The jobs of this Master are as follows:
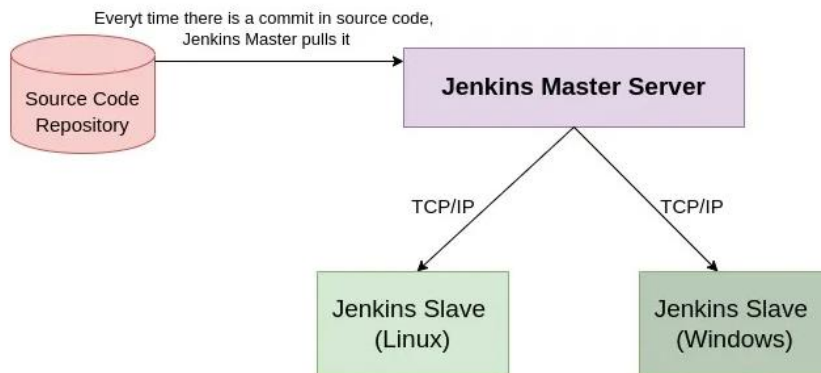
- scheduling jobs
- sending builds to slaves to execute the job
- keeping track of the slaves states (online/offline)
- can also directly execute build jobs

Slave:

The slave is a part of the Jenkins environment that runs on a remote environment. The characteristics of slaves include:
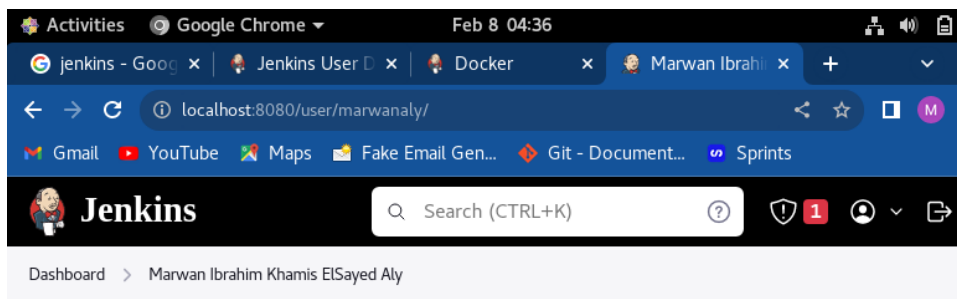
- it listens to the Master instance
- it's job is to do as they are told to, that includes executing build jobs conveyed by the Master

Working of Jenkins Architecture

Everyt time there is a commit in source code,
Jenkins Master pulls it

Source Code
Repository

Jenkins Master Server

TCP/IP   TCP/IP

Jenkins Slave
(Linux)

Jenkins Slave
(Windows)

04) Install jenkins with docker image.

```
[maly@localhost ~]$ sudo docker ps
CONTAINER ID   IMAGE              COMMAND                CREATED      STATUS           POR
TS                                                                            NAMES
07ada6131473   jenkins/jenkins:lts  "/usr/bin/tini -- /u…"  7 days ago   Up About a minute  0.0
.0.0:8080->8080/tcp, :::8080->8080/tcp, 0.0.0.0:50000->50000/tcp, :::50000->50000/tcp   ecstatic_a
ryabhata
[maly@localhost ~]$
```

Activities   Google Chrome ▾   Feb 8 04:36

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Jenkins   Q Search (CTRL+K)   ⑦   🛡 1   ☺ ∨   ⤷

Dashboard > Marwan Ibrahim Khamis ElSayed Aly

People

Status

Builds

Configure

My Views

Credentials

05) Create free style project and link it to private git repo containing any dockerfile then biuld an image from this dockerfile and push it to private docker repo

Dashboard > my-freestyle-project > Configuration

Build Steps

≡ **Execute shell** ? ✕

Command

See **the list of available environment variables**

```
docker build -t marwanibrahimkhamis/jenkins-images:2 .
docker login -u $USER -p $PASSWORD
docker push marwanibrahimkhamis/jenkins-images:2
```

✅ Build #7 (Jan 31, 2023, 2:31:52 PM)

🖊 Add description

Starte
Took

</> **Changes**

1. Update Jenkinsfile (details / githubweb)

🕐 Started by user **Marwan Ibrahim Khamis ElSayed Aly**

◆ git **Revision**: b249ba4a165a6b88533ac35e09dd18a408a8a70f
Repository: https://github.com/swelams/jenkins-demo.git

- refs/remotes/origin/master

REST A

✅ Console Output

```
Started by user Marwan Ibrahim Khamis ElSayed Aly
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/my-freestyle-project
The recommended git tool is: NONE
using credential github-token
 > git rev-parse --resolve-git-dir /var/jenkins_home/workspace/my-freestyle-project/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/swelams/jenkins-demo.git # timeout=10
Fetching upstream changes from https://github.com/swelams/jenkins-demo.git
 > git --version # timeout=10
 > git --version # 'git version 2.38.2'
using GIT_ASKPASS to set credentials
 > git fetch --tags --force --progress -- https://github.com/swelams/jenkins-demo.git +refs/heads/*:refs/remotes/origin/* # timeout=10
 > git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision b249ba4a165a6b88533ac35e09dd18a408a8a70f (refs/remotes/origin/master)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f b249ba4a165a6b88533ac35e09dd18a408a8a70f # timeout=10
Commit message: "Update Jenkinsfile"
 > git rev-list --no-walk 54d7b2f14a80622ba8f5c1a34e1616bbecbef3b4 # timeout=10
[my-freestyle-project] $ /bin/sh -xe /tmp/jenkins3343985345315654079.sh
+ docker build -t marwanibrahimkhamis/jenkins-images:2 .
Sending build context to Docker daemon  5.788MB

Step 1/4 : FROM openjdk:8
 ---> b273084037cc
Step 2/4 : ADD target/my-maven-docker-project.jar my-maven-docker-project.jar
 ---> Using cache
 ---> 7047eea3152d
Step 3/4 : ENTRYPOINT ["java", "-jar","my-maven-docker-project.jar"]
 ---> Using cache
 ---> 61c6427cda05
Step 4/4 : EXPOSE 8080
 ---> Using cache
 ---> be5c2142c8ee
Successfully built be5c2142c8ee
```

```
 ---> be5c2142c8ee
Successfully built be5c2142c8ee
Successfully tagged marwanibrahimkhamis/jenkins-images:2
+ docker login -u marwanibrahimkhamis -p ****
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
WARNING! Your password will be stored unencrypted in /var/jenkins_home/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
+ docker push marwanibrahimkhamis/jenkins-images:2
The push refers to repository [docker.io/marwanibrahimkhamis/jenkins-images]
0a788da391b3: Preparing
6b5aaff44254: Preparing
53a8b163e995: Preparing
b626401ef603: Preparing
9b55156abf26: Preparing
293d5db30c9f: Preparing
03127cdb479b: Preparing
9c742cd6c7a5: Preparing
293d5db30c9f: Waiting
03127cdb479b: Waiting
9c742cd6c7a5: Waiting
6b5aaff44254: Layer already exists
9b55156abf26: Layer already exists
53a8b163e995: Layer already exists
b626401ef603: Layer already exists
0a788da391b3: Layer already exists
293d5db30c9f: Layer already exists
9c742cd6c7a5: Layer already exists
03127cdb479b: Layer already exists
2: digest: sha256:f77ebbdb2a7fb50c2dbf2a249a158de43712bbd8db95a964b02d52d89806f285 size: 2003
Finished: SUCCESS
```

Workspace of my-freestyle-project on Built-In Node

my-freestyle-project /

📁 **.git**
📁 **jenkins installation**
📁 **src**
📁 **target**

📄 **CICD with jenkins (1).pptx**	Jan 31, 2023, 12:40:12 PM	2.68 MB		
📄 **Dockerfile**	Jan 31, 2023, 12:40:12 PM	152 B		
📄 **freestyle.sh**	Jan 31, 2023, 12:40:12 PM	14 B		
📄 **Jenkinsfile**	Jan 31, 2023, 2:31:54 PM	876 B		
📄 **pom.xml**	Jan 31, 2023, 12:40:12 PM	3.19 KB		

⤓ **(all files in zip)**