01) What is Jenkins used for?

Jenkins is an open source continuous integration/continuous delivery and deployment (CI/CD) automation software DevOps tool written in the java programming language. It is used to implement CI/CD workflows, called pipelines.

Pipelines automate testing and reporting on isolated changes in a larger code base in real time and facilitates the integration of disparate branches of the code into a main branch. They also rapidly detect defects in a code base, build the software, automate testing of their builds, prepare the code base for deployment (delivery), and ultimately deploy code to containers and virtual machines, as well as bare metal and cloud servers. There are several commercial versions of Jenkins. This definition only describes the upstream open source project.

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:

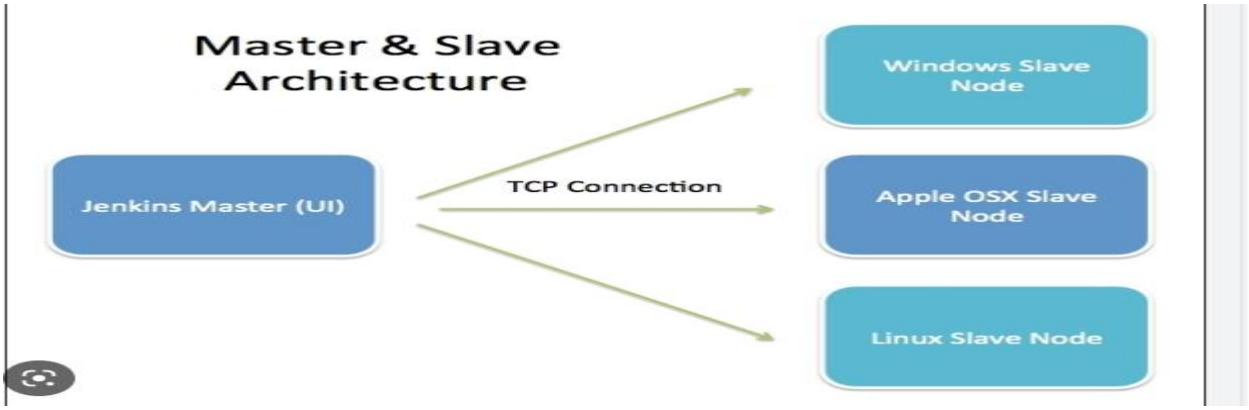
- scheduling jobs
- sending builds to slaves to execute the job
- keeping track of the slaves states (online/offline)
- can also directly execute build jobs

Slave-

The slave is a part of the Jenkins environment that runs on a remote environment. The characteristics of slaves include:

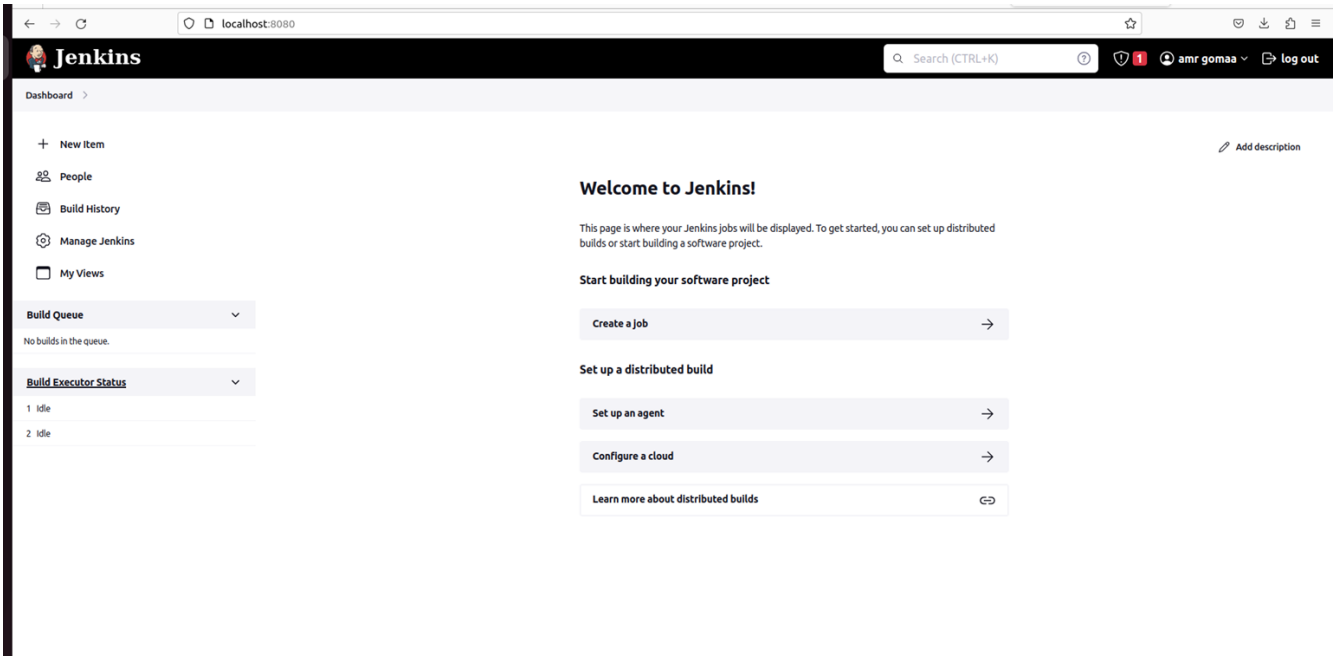
- it listens to the Master instance

⑩ it’s job is to do as they are told to, that includes executing build jobs conveyed by the Master

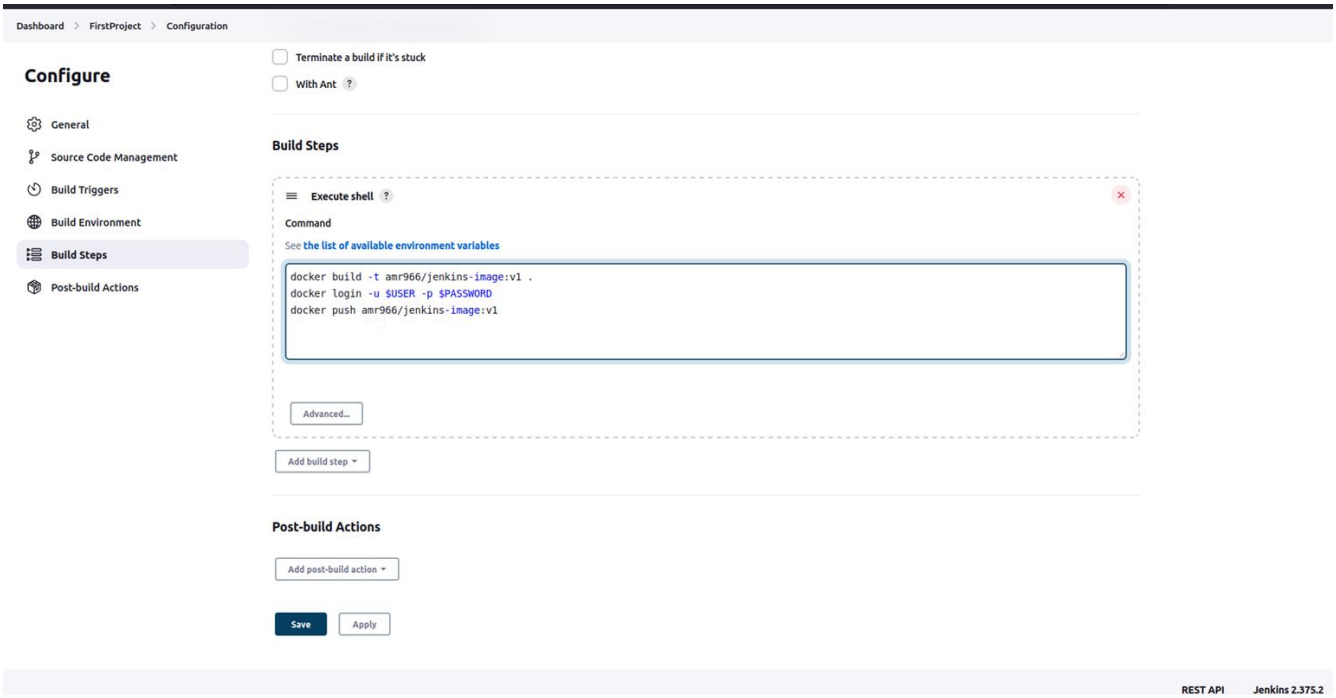


04) Install jenkins with docker image.

```
amr@amrgomaa:/etc/nginx$ sudo docker run -p 8080:8080 -p 50000:50000 -d \
 -v jenkins_home:/var/jenkins_home \
 -v /var/run/docker.sock:/var/run/docker.sock \
 -v $(which docker):/usr/bin/docker jenkins/jenkins:lts
[sudo] password for amr:
3ebd464ab8b594d4fded5b30b1e12d9e4df27c6ea1a2f07053f37ca1f6342463
amr@amrgomaa:/etc/nginx$ docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED         STATUS         PORTS
                                NAMES
3ebd464ab8b5   jenkins/jenkins:lts   "/usr/bin/tini -- /u…"   7 seconds ago   Up 5 seconds   0.0.0.0:8080->8080/tcp, :::8080->8080/tcp, 0.0.0.0:50000->5
0000/tcp, :::50000->50000/tcp   condescending_volhard
amr@amrgomaa:/etc/nginx$
```



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




```
 ---> ee37a3ff4d3a
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
 ---> Using cache
 ---> 6f7026a4dc47
Successfully built 6f7026a4dc47
Successfully tagged amr966/jenkins-image:v1
```