01) What is Jenkins used for?

Jenkins is a CI/CD tool with it we can create pipelines to make sure that the software project is ready for deployments at any time during development by automatically build, test, stage and deploy it and by automating the process it reduces time to market

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

Agent: is a machine or a container that executes tasks directed by controller

Executor: governs resources allocation in Jenkins so if the server has three executors it can process three tasks concurrently

03) Explain Jenkins master-slave architecture?

Master: schedule jobs, assign and monitor slaves and send jobs to slaves to execute the tasks

Slave: hears requests from master and only executes jobs assigned to them

04) Install Jenkins with docker image.

```
ubuntu $ 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
Unable to find image 'jenkins/jenkins:lts' locally
lts: Pulling from jenkins/jenkins
699c8a97647f: Pull complete
656837bc63c3: Pull complete
81ba85001557: Pull complete
f565cdb160fe: Pull complete
7f0db80857b0: Pull complete
b51e09c8a0bd: Pull complete
a02b1ab95401: Pull complete
b113c3f8acf6: Pull complete
90c616f07a2d: Pull complete
22b926230283: Pull complete
32fdd8eaf030: Pull complete
e04af8aa1a05: Pull complete
3938fe646b55: Pull complete
Digest: sha256:8656eb80548f7d9c7be5d1f4c367ef432f2dd62f81efa86795c9155258010d99
Status: Downloaded newer image for jenkins/jenkins:lts
8232fca0db2613881d91fa670c42d516846255f5265882205b763a7745a9cb3f
```

05) Create free style project and link it to private Git repo containing any Docker file

then build an image from this Docker file

and push it to private docker repo

```
> git --version # timeout=10
> git --version # 'git version 2.30.2'
using GIT_ASKPASS to set credentials
> git fetch --tags --force --progress -- https://github.com/Ahmed-Shoushaa/prv-jenki
> git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision 0ddcf3f15196742de55913f262470775b33c06e3 (refs/remotes/origin/m
> git config core.sparsecheckout # timeout=10
> git checkout -f 0ddcf3f15196742de55913f262470775b33c06e3 # timeout=10
Commit message: "Update dockerfile"
> git rev-list --no-walk 0ddcf3f15196742de55913f262470775b33c06e3 # timeout=10
[docker-git-push pull testt] $ /bin/sh -xe /tmp/jenkins6757117830375758769.sh
+ cat dockerfile
FROM ubuntu
CMD echo "hello from ubuntu"

+ docker build .
Sending build context to Docker daemon  74.24kB

Step 1/2 : FROM ubuntu
 ---> 58db3edaf2be
Step 2/2 : CMD echo "hello from ubuntu"
 ---> Using cache
 ---> 7338747c3eb8
Successfully built 7338747c3eb8
Finished: SUCCESS
```

≡ **Execute shell** ?

Command

See the list of available environment variables

```
cat dockerfile
docker build .
git init
git add .
git commit -m "Your First commit"
git config --global user.name "Ahmed-Shoushaa"
git remote add origin https://github.com/Ahmed-Shoushaa/prv-jenkins-start
git remote -v
git push --force origin main
```