01) What is Jenkins used for?

Jenkins is used to build and test the product continuously so developers can continuously integrate changes into the build.

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

- A Jenkins agent is an executable, residing on a node, that is tasked by the controller to run a job.

- A Jenkins executor is one of the basic building blocks which allow a build to run on a node/agent

03) Explain Jenkins master-slave architecture?

The Jenkins master acts to schedule the jobs, assign slaves, and send builds to slaves to execute the jobs. It will also monitor the slave state and get back the build result responses from slaves and the display build results on the console output.

04) Mention three security mechanisms used by Jenkins to authenticate users?

- Default Mechanism - Choose an internal database to store user data and credentials.
- Authenticate against a Lightweight Directory Access Protocol (LDAP) server.
- Use the authentication mechanism used by the application server upon which it is deployed.

05) Mention ways that a job can be run/scheduled in Jenkins?

- Builds can be triggered by source code management commits.
- Builds can be triggered sequentially after completion of other builds.
- Can be scheduled to run at a specified time using the CRON jobs
- Manual Build Requests.

06) How can we restart Jenkins server (Hint it's an endpoint we visit in the browser)?

Type in the browser "${jenkins_url}/restart"

07) Install jenkins with docker image.

```
bayaderalomari — com.docker.cli ‹ docker run -p 8080:8080 -v ~/jenkins:/var/jenkins_home --name jenkins jenkins/jenkins — 132×..
bayaderalomari@Bayaders-MacBook-Pro ~ % docker run -p 8080:8080 -v ~/jenkins:/var/jenkins_home --name jenkins jenkins/jenkins
Unable to find image 'jenkins/jenkins:latest' locally
latest: Pulling from jenkins/jenkins
39ab78bc09e7: Already exists
21a4b2a971d8: Pull complete
ffec9d35d7b8: Pull complete
74ba106797c6: Pull complete
34a512be6800: Pull complete
dfde04d74e05: Pull complete
463771cf277f: Pull complete
817f8edb9f7e: Pull complete
018d997158d3: Pull complete
9b2b960a4fc1: Pull complete
535785887972: Pull complete
2d131ecc0871: Pull complete
1e90391efcf4: Pull complete
80e7f6cf03fa: Pull complete
b93098e56741: Pull complete
f460cc3b7edf: Pull complete
a93161741768: Pull complete
Digest: sha256:847c537ae0c519977c424d591805f18f0644cfcc58a0a5c8cff3136f975d60e0
Status: Downloaded newer image for jenkins/jenkins:latest
Running from: /usr/share/jenkins/jenkins.war
webroot: EnvVars.masterEnvVars.get("JENKINS_HOME")
2022-03-01 12:15:01.456+0000 [id=1]     INFO    org.eclipse.jetty.util.log.Log#initialized: Logging initialized @319ms to org.eclip
e.jetty.util.log.JavaUtilLog
2022-03-01 12:15:01.504+0000 [id=1]     INFO    winstone.Logger#logInternal: Beginning extraction from war file
2022-03-01 12:15:41.209+0000 [id=1]     WARNING o.e.j.s.handler.ContextHandler#setContextPath: Empty contextPath
2022-03-01 12:15:41.260+0000 [id=1]     INFO    org.eclipse.jetty.server.Server#doStart: jetty-9.4.45.v20220203; built: 2022-02-03
9:14:34.105Z; git: 4a0c91c0be53805e3fcffdcdcc9587d5301863db; jvm 11.0.14.1+1
```

08) Install role based authorization plugin.

Installing Plugins/Upgrades

Preparation

- Checking internet connectivity
- Checking update center connectivity
- Success

Role-based Authorization Strategy ✓ Success

Loading plugin extensions ✓ Success

➡ **Go back to the top page**
(you can start using the installed plugins right away)

➡ ☐ Restart Jenkins when installation is complete and no jobs are running

09) Create new user.

Create User

Username:	bayader12
Password:	•••••
Confirm password:	•••••
Full name:	bayader12
E-mail address:	b@yahoo.com

Create User

10) Create read role and assign it to the new user

Assign Roles

Global roles

User/group	admin	viewer
⛔ **No type prefix: bayader**	✅	☐
Anonymous	☐	☐
bayader12	☐	✅

11) Create free style project and link it to private git repo(inside it create directory and create file with "hello world").

✅ Console Output

```
Started by user bayader alomari
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/job2
The recommended git tool is: NONE
using credential GitHub_new
 > git rev-parse --resolve-git-dir /var/jenkins_home/workspace/job2/.git # timeout=10
Fetching changes from the remote Git repository
 > git config remote.origin.url https://github.com/bayader93/jenkinsLab # timeout=10
Fetching upstream changes from https://github.com/bayader93/jenkinsLab
 > git --version # timeout=10
 > git --version # 'git version 2.30.2'
using GIT_ASKPASS to set credentials for accessing to repo
 > git fetch --tags --force --progress -- https://github.com/bayader93/jenkinsLab +refs/heads/*:refs/remotes/origin/* #
timeout=10
 > git rev-parse refs/remotes/origin/main^{commit} # timeout=10
Checking out Revision 8191405b88e8a76b7ae0d4aae7c59766f067a1ca (refs/remotes/origin/main)
 > git config core.sparsecheckout # timeout=10
 > git checkout -f 8191405b88e8a76b7ae0d4aae7c59766f067a1ca # timeout=10
Commit message: "Create README.md"
First time build. Skipping changelog.
[job2] $ /bin/sh -xe /tmp/jenkins7340021953583376631.sh
+ mkdir first
+ cd first
+ touch hello_world
Finished: SUCCESS
```