1. **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](https://www.openlogic.com/solutions/development) on the market today and is used in support of DevOps.

1. **What is Jenkins agent?**

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

1. **What is Jenkins executer?**

* The maximum number of concurrent build that Jenkins may perform on this agent, it is a designation in the Jenkins controller server's settings that governs resource allocation (e.g., CPU and RAM) on any Jenkins nodes and the controller server itself. When a server (either the controller or agent) is designated as having two or more executors, the server can process as many jobs simultaneously as the number of executors for which it has been designated.
* In other words, if a server has been configured to have three executors, this server can process three jobs concurrently. If the server has been configured to have one or zero executors, then the server can process only one Jenkins job.

1. **Explain Jenkins master-slave architecture**

* A Jenkins master comes with the basic installation of Jenkins, and in this configuration, the master handles all the tasks for your build system.
* If you are working on multiple projects, you may run multiple jobs on each project. Some projects need to run on some nodes, and in this process, we need to configure slaves. [Jenkins slaves connect to the Jenkins master](https://dzone.com/articles/asynchronous-master-slave-replication-of-postgresq) using the Java Network Launch Protocol.

![Diagram

Description automatically generated]()

* 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 (offline or online) and get back the build result responses from slaves and the display build results on the console output. The workload of building jobs is delegated to multiple slaves.

1. **Mention three security mechanisms used by Jenkins to authenticate users?**

* **Delegate to servlet container:**
* For delegating authentication, a servlet container running the Jenkins controller, such as [Jetty](https://www.eclipse.org/jetty/).
* **Jenkins own user database:**
* Use Jenkins’s own built-in user data store for authentication instead of delegating to an external system. This is enabled by default with new Jenkins 2.0 or later installations and is suitable for smaller environments.
* **Lightweight Directory Access Protocol (LDAP):**
* Delegate all authentication to a configured LDAP server, including both users and groups. This option is more common for larger installations in organizations which already have configured an external identity provider such as LDAP. This also supports Active Directory installations.

1. **Mention ways that a job can be run/scheduled in Jenkins**

* You can run a job by just building one
* you can use the building trigger menu to make it run periodically when a specific action is done (e.g.: CRON job to run every 5 mins)
* To run it with parameters

1. **How can we restart Jenkins server (hint it’s an endpoint we visit in the browser)?**

* **SafeRestart**
* Allows all running jobs to complete. New jobs will remain in the queue to run after the restart is complete.
* **Restart**
* Forces a restart without waiting for builds to complete.

1. **Install Jenkins with docker image**

* **Text

  Description automatically generated**docker run -d --name myjenkins -v jenkins\_home:/var/jenkins\_home -p 8080:8080 -p 50000:50000 jenkins/jenkins

1. **Graphical user interface, text, application, email

   Description automatically generatedInstall role-based authorization strategy plugin**
2. **Create new user**

**Graphical user interface, text, application, email, website

Description automatically generated**

1. **Create read role and assign it to the new user**

**Graphical user interface

Description automatically generatedGraphical user interface, application, table, Excel

Description automatically generated**

1. **Create free style project and link it to private git repo (inside it create directory and create file with “hello world”)**

**Graphical user interface, text, application, email

Description automatically generated**