## Jenkins Interview Questions

### 1. What is Jenkins?

### Jenkins is an open-source automation server used to automate tasks related to building, testing, and deploying software. It can be installed through native system packages, Docker, or run standalone on any machine with a Java Runtime Environment (JRE) installed.

### 2. Tell me something about Continuous Integration, Continuous Delivery, and Continuous Deployment?

* Continuous Integration (CI) involves integrating changes to software continuously so that it's always ready to be built, tested, and deployed.
* Continuous Delivery (CD) tests and deploys integrated changes continuously into a specific environment after manual quality checks.
* Continuous Deployment automatically deploys integrated changes into the target environment after successful quality checks.

### 3. What are the common use cases Jenkins is used for?

### Jenkins can be used for various automation tasks, including software build jobs, testing, web/data scraping, code coverage measurement, general-purpose automation, reverse engineering, and other software automation tasks.

### 4. What are the ways to install Jenkins?

Jenkins can be installed using -

* Jenkins can be installed using native system package managers, Docker, Kubernetes, or as a standalone application on any machine with a Java Runtime Environment.

### 5. What is a Jenkins job?

* A Jenkins job is the fundamental unit of work in Jenkins, used for tasks such as software builds, automation, and test execution.

Jobs can be of different types like - a freestyle project, a multi-configuration project, a pipeline project, a multi-branch project, etc.  
  
6. What is a Jenkins Pipeline?  
A Jenkins pipeline is a sequence of steps controlled by defined logic, used to orchestrate long-running activities that can span across multiple build agents.

### 7. What are the types of Jenkins pipelines?

### Jenkins Pipelines can be either declarative or scripted, with declarative pipelines using predefined build steps and scripted pipelines allowing custom-defined steps using a groovy syntax.

### 8. Explain Jenkins Multibranch Pipeline?

### A Jenkins Multibranch Pipeline creates a set of Pipeline projects according to the detected branches in a source code management (SCM) repository.

### 9. How do you store credentials in Jenkins securely?

### Credentials can be stored securely in Jenkins using the Credentials plugin, which supports various types of credentials such as usernames with passwords, SSH credentials, and certificates.

### 10. How can we stop a scheduled job from being executed temporarily?

Disable the job from the job details page to temporarily stop all scheduled executions & other factors/events from triggering the job and enable it back to resume the job schedules/triggers. If a job is not required permanently, we can delete the job from the jobs list view page.

## Intermediate Questions

### 1. What are the ways to trigger a Jenkins Job/Pipeline?

* Jobs can be triggered by sending an API request, manual triggering from the Jenkins web app, using the Jenkins CLI, time-based or event-based triggers, and upstream/downstream triggers by other Jenkins jobs.

### 2. What is Jenkins Build Cause?

### Build Cause is a text attribute that represents what triggered a job's build, such as a Jenkins User, Timer for Scheduled jobs, or Upstream jobs. It's used to identify the nature of the builds - be it nightly, manual, or automated.

### 3. How Jenkins knows when to execute a Scheduled job/pipeline and how it is triggered?

### Jenkins master has cron entries set up for scheduled jobs. When the time for a job comes, it commands agents to execute the job with the required configurations.

### 4. What are the credential types supported by Jenkins?

### Jenkins supports various credential types such as Secret text, Username and password, Secret file, SSH Username with a private key, Certificate, and Docker Host Certificate Authentication credentials.

### 5. What are the Scopes of Jenkins Credentials?

### Jenkins credentials can be of two scopes - Global and System. Global credentials are usable across all jobs, while System credentials allow Jenkins itself to authenticate to external services.

### 6. What is a Jenkins Shared Library and how is it useful?

* Shared libraries are a set of code that can be common for more than one pipeline job and can be maintained separately. They improve maintenance, modularity, readability of the pipeline code, and speed up the automation for new jobs.

### 7. How Jenkins jobs can be Triggered/Stopped/Controlled programmatically?

* Jenkins Remote Access API can be used to retrieve information about jobs, trigger/stop/abort builds, enable/disable jobs, and create/copy/modify/delete jobs.

### 8. How to get the Jenkins version programmatically in Jobs/Pipelines or nodes other than master?

### To check the version of Jenkins, load the top-level page or any top-level Remote Access API path and then check for the 'X-Jenkins' response header, which contains the version number of Jenkins.

### 9. What happens when a Jenkins agent is offline and what is the best practice in that situation?

### It's best to tie jobs to a group of nodes & agents, referred to with a 'Label', so any of the nodes/agents falling under the label can fulfill a build request when a job is triggered. If a job is waiting for more time for the nodes/agents, consider adding more nodes/agents.

### 10. What is the Blue Ocean?

### Blue Ocean is the redefined user experience for Jenkins, designed for Jenkins Pipeline. It reduces clutter, increases clarity, and provides sophisticated visualizations of continuous delivery (CD) Pipelines.

### These simplified answers provide an overview of various Jenkins concepts and features.

### 11. What is the Jenkins User Content service?

Jenkins has a mechanism known as "User Content", where administrators can place files inside the $JENKINS\_HOME/userContent folder and these files are served from yourhost/jenkins/userContent.

This can be thought of as a mini HTTP server to serve images, stylesheets, and other static resources that you can use from various description fields inside Jenkins.

## Advanced Interview Questions

1. How is continuous integration achieved using Jenkins?
   * Developers make changes in a feature/dev branch.
   * SCM generates events, and Jenkins plugins trigger build/test jobs.
   * Test results determine deployment readiness.
2. What is Artifact Archival, and how is it done in Pipelines?
   * Artifacts are job build results.
   * Use 'Copy Artifact' plugin to archive files/directories based on configured patterns.
   * In pipelines: archiveArtifacts artifacts: 'output/\*\*/\*'
3. How can inclusions and exclusions be configured in Artifacts Archival?
   * Archive artifacts with patterns.
   * Exclude specific files using patterns, e.g., archiveArtifacts artifacts: 'output/\*.txt', excludes: 'output/specific\_file.txt'
4. How can information be shared between different build steps or stages in a Jenkins Job?
   * Use files, database entries, or environment variables for information sharing.
5. How is code coverage measured/tracked using Jenkins in a CI environment?
   * Utilize language-specific plugins like JaCoCo or CodeCov.
   * Generic tools like Sonarqube display code coverage data in Jenkins.
6. What are the default environment variables provided by Jenkins, and how can custom ones be introduced?
   * Jenkins provides default variables like BRANCH\_NAME, BUILD\_NUMBER.
   * Introduce custom variables as needed.
7. How can a job configuration be reset to an earlier version/state in Jenkins?
   * Use Job Config History on the Job details page to review and revert configurations.
8. How is Global Tools Configuration done in Jenkins?
   * Install tool plugins, configure in Manage Jenkins -> Global Tools Configuration.
9. How can a Shared Library be created and used in Jenkins?
   * Requirements include a repository, SCM plugin configuration, and Jenkins global configuration.
   * Include the library in pipeline code, e.g., @Library('library@version')
10. How can a Custom Jenkins Plugin or an outdated Plugin version be installed?
    * Use Jenkins CLI or web UI to install plugins.
    * CLI command example: java -jar jenkins-cli.jar -s http://localhost:8080/ install-plugin SOURCE ...
11. How can the Console log for a specific Jenkins build be downloaded programmatically?
    * Use Jenkins CLI command: java -jar jenkins-cli.jar console JOB [BUILD] [-f] [-n N]
    * Example: ssh -l <ssh\_username> -p <port\_no> <Jenkins\_URL> console <JOB\_NAME>
12. What is Jenkins Remote Access API, and how does it work?
    * Provides XML, JSON, and Python interfaces.
    * Accessible under ".../api/" URL, offering REST-like access to Jenkins features.
13. What is In-process Script Approval in Jenkins, and how does it work?
    * Protects Jenkins from executing malicious scripts.
    * Appears in "Manage Jenkins" to allow administrators to approve unsafe methods.
14. Can Jenkins be monitored using common Observability tools?
    * Yes, plugins for tools like DataDog, Prometheus, and JavaMelody send metrics for monitoring.
15. What is a Ping Thread in Jenkins, and how does it work?
    * Installed on every remote connection.
    * Periodically sends ping messages to detect connection issues and initiates a close-down if needed.