DevOps Shack

Top 50 Jenkins Commands and Concepts asked in MNC interviews

1. What is Jenkins?

- **Answer: Jenkins is an open-source automation server written in Java. It helps automate parts of software development, such as building, testing, and deploying.**

Key Points:

- **Built-in plugins for CI/CD.**
- **Supports distributed builds across multiple machines.**

2. What is Continuous Integration in Jenkins?

- **Answer: Continuous Integration (CI) is a software development practice where developers regularly integrate code changes into a shared repository.**

Jenkins Role:

- **Automates build and testing processes.**
- **Detects integration issues early.**

3. How do you install Jenkins?

- **Command (Linux):**

```
wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key |
```

```
sudo apt-key add -
sudo apt update
sudo apt install jenkins
```

Explanation:

- **Installs Jenkins on a Debian-based Linux system.**
- **Uses the Jenkins repository for package installation.**

4. How do you start/stop Jenkins?

- **Commands:**

```
sudo systemctl start jenkins
sudo systemctl stop jenkins
sudo systemctl restart jenkins
```

Explanation:

- **Controls Jenkins service via `systemd`.**

5. Where are Jenkins configuration files stored?

- **Location:**

```
/var/lib/jenkins
```

- **Explanation: Jenkins home directory stores configuration files, plugins, and job data.**

6. How to check Jenkins logs?

- **Command:**

```
sudo tail -f /var/log/jenkins/jenkins.log
```

Explanation:

- **Monitors real-time logs for troubleshooting.**

7. How do you secure Jenkins?

- **Answer:**
1. **Enable Role-based Access Control.**
2. **Use an SSL certificate.**
3. **Configure credentials securely.**

8. How do you create a Jenkins pipeline?

- **Command (Declarative Pipeline):**

```
pipeline {
    agent any
    stages {
        stage('Build') {
            steps {
                echo 'Building...'
            }
        }
    }
}
```

Explanation:

- **Declarative pipelines use a script-like structure to define CI/CD processes.**

9. How do you set environment variables in Jenkins pipelines?

- **Command:**

```
pipeline {
    environment {
        ENV_VAR = 'value'
    }
    stages {
        stage('Test') {
            steps {
                echo "Environment variable: ${ENV_VAR}"
            }
        }
    }
}
```

Explanation:

- The `environment` block sets variables globally for pipeline stages.

10. What is the difference between Freestyle and Pipeline jobs?

- **Answer:**
  - **Freestyle:** Basic job setup with GUI.
  - **Pipeline:** Scripted or declarative workflows for complex automation.

11. How do you schedule a Jenkins job?

- **Command:** Use CRON syntax.

```
H/15 * * * *
```

- **Explanation: Runs the job every 15 minutes.**

12. How do you trigger a build remotely in Jenkins?

- **Command:**

```
curl -X POST http://<JENKINS_URL>/job/<JOB_NAME>/build
--user <USER>:<TOKEN>
```

Explanation:

- **Triggers builds using the Jenkins REST API.**

13. What is Jenkinsfile?

- **Answer: A text file that stores pipeline as code. Typically stored in a repository.**

14. How do you back up Jenkins?

- **Command:**

```
cp -r /var/lib/jenkins /backup/location
```

Explanation:

- **Copies configuration, plugins, and job data.**

15. How do you install plugins in Jenkins?

- **Command (CLI):**

```
java -jar jenkins-cli.jar -s http://<JENKINS_URL>
install-plugin <PLUGIN_NAME>
```

16. What are Jenkins agents and nodes?

- **Answer:**
  - ○ **Agent: A remote system that builds jobs.**
  - ○ **Node: A machine where Jenkins runs jobs.**

17. How do you configure a Jenkins agent?

- **Command:**

```
java -jar agent.jar -jnlpUrl <URL> -secret <SECRET> -workDir
"/path/to/workdir"
```

18. How do you archive artifacts in Jenkins?

- **Command:**

```
archiveArtifacts artifacts: 'target/*.jar'
```

Explanation:

- **Saves build outputs (e.g., JAR files) for future use.**

19. How do you set up Git in Jenkins?

- **Command:**

```
git config --global user.name "Your Name"
git config --global user.email "youremail@example.com"
```

- **Add Git plugin in Jenkins.**

20. What is Jenkins Blue Ocean?

- **Answer: A modern UI for Jenkins pipelines with a user-friendly design.**

21. How do you integrate Jenkins with Docker?

- **Command (Pipeline example):**

```
pipeline {
    agent {
        docker { image 'node:14' }
    }
    stages {
        stage('Build') {
            steps {
                sh 'npm install'
            }
        }
    }
}
```

22. How do you restart Jenkins?

- **Command:**

```
sudo systemctl restart jenkins
```

23. What is Jenkins CLI?

- **Answer: Command-line interface for managing Jenkins.**

Example Command:

```
java -jar jenkins-cli.jar -s http://<JENKINS_URL> list-jobs
```

24. What is the purpose of Jenkins pipeline syntax generator?

- **Answer: Helps users create pipeline scripts using a GUI.**

25. How do you deploy code using Jenkins?

- **Command:**

```
sh 'scp target/app.war user@server:/path/to/deploy'
```

26. What are shared libraries in Jenkins?

- **Answer: Reusable pipeline code stored in a Git repository.**

27. How do you monitor Jenkins jobs?

- **Answer:**
  - **Use the Build History and Dashboard.**
  - **Integrate monitoring tools like Prometheus.**

28. How do you configure Jenkins to run in Docker?

- **Command:**

```
docker run -d -p 8080:8080 -p 50000:50000
jenkins/jenkins:lts
```

29. What are the stages in Jenkins pipelines?

- **Answer:**
  - **Stages represent the steps of the CI/CD process (e.g., Build, Test, Deploy).**

30. How do you parameterize a Jenkins build?

- **Command:**

```
parameters {
    string(name: 'BRANCH', defaultValue: 'main',
description: 'Branch to build')
}
```

31. How do you use a Docker agent in Jenkins?

- Command:

```
agent { docker { image 'maven:3.8.4' } }
```

32. How do you perform post-build actions in Jenkins?

- Command:

```
post {
    always {
        mail to: 'team@example.com', subject: 'Build
Complete', body: 'Details...'
    }
}
```

33. How do you implement parallel execution in Jenkins?

- Command:

```
parallel {
    stage('Test A') { steps { echo 'Running Test A' } }
```

```
    stage('Test B') { steps { echo 'Running Test B' } }
}
```

34. How do you integrate Jenkins with Maven?

- **Command:**

```
sh 'mvn clean install'
```

35. What is the use of workspace in Jenkins?

- **Answer: Temporary location for job execution files.**

36. What is the Jenkins environment variable BUILD_NUMBER?

- **Answer: Represents the current build number.**

37. How do you troubleshoot Jenkins pipeline errors?

- **Answer:**
  - **Check the Console Output.**
  - **Analyze logs in /var/log/jenkins.**

38. What is a webhook in Jenkins?

- **Answer: A trigger mechanism for CI when changes are pushed to the repository.**

39. How do you handle secrets in Jenkins?

- **Answer:**
  - **Use the Credentials plugin.**
  - **Mask secrets in pipelines.**

40. What is the JENKINS_HOME variable?

- **Answer: Points to the Jenkins root directory.**

41. How do you debug Jenkins pipelines?

- **Answer: Add `echo` and use `debug` options.**

42. How do you trigger a downstream job in Jenkins?

- **Command:**

```
build job: 'Downstream_Job_Name'
```

43. How do you integrate Slack with Jenkins?

- **Answer: Use the Slack plugin and configure it with a webhook.**

44. What is the role of a Jenkinsfile?

- **Answer: Pipeline-as-code for version-controlled CI/CD.**

45. How do you test Jenkins pipelines locally?

- **Answer: Use tools like `Jenkinsfile Runner`.**

46. What is the difference between scripted and declarative pipelines?

- **Answer:**
  - **Scripted: More flexible, written in Groovy.**
  - **Declarative: Easier to use, structured syntax.**

47. How do you integrate Jenkins with AWS?

- **Answer:**
  - **Use the AWS CLI and plugins like S3 Publisher.**

48. How do you install Jenkins as a Windows service?

- **Command:**

```
java -jar jenkins.war
```

49. What are Jenkins plugins?

- **Answer:**
    - **Add additional features like Git integration, Slack notifications, etc.**

50. How do you configure email notifications in Jenkins?

- **Command:**

```
emailext to: 'team@example.com', subject: 'Build Status',
body: 'Build details here...'
```