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21. Explain the difference between Git and other version control systems.
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24. How do you stage changes in Git?
25. What is the difference between git commit and git commit -m?
26. How do you create a new branch in Git?
27. What is the difference between git merge and git rebase?
28. How do you resolve merge conflicts in Git?
29. What is the purpose of git stash?
30. Explain the use of git pull and git fetch.

ANSWERS

1. What is maven and why it is used?

* Maven is a build automation tool
* Maven is used for its building , documentation and for dependency.
* Maven is developed by the company Apache .
* Maven is an latest version from the Apache company.
* Before existing of maven there is an tool like Apache ANT which is also developed by Apache company.
* Basically maven uses pom.xml files.
* Maven is mostly designed for building for java projects.
* Maven is used because of its dependencies, where this will automatically download the plugins and libraries for the project so it is an advantage of it.
* Maven is a project management tool.

1. Explain pom file in maven?

* POM stands for project object model files.
* Maven uses the files in the extensions of pom.xml files.
* Maven due to its configurations and dependencies it uses the files in the form of pom.xml
* There are pom.xm1 and pom.xm2 files .
* Both the pom files are same but there differ in the version .
* The pom.xm2 is the oldest version where as pom.xml is the latest version.
* This pom file is present in the main 🡪src

7. what are maven goals and how do they differ from phases?

* Maven goals are validate🡪compile🡪test🡪test-compile🡪verify🡪package🡪install.
* The above defined steps are the maven goals.
* Here it will go on step by step process
* Here as we now we should create a small java shell project .
* Maven architype: generate will display the all needs for the project.
* Then we start using the maven goals.
* Validate is used for after knowing the build success or failure.
* Here for every goals staring we use the maven as a syntax
* Maven validate.
* Next the goal is compile in this before doing this we change our directory to the project folder .
* It will tell about the files present in it.
* Syntax: maven compile
* The test is used for testing the source code
* Syntax: maven test
* The test compile is used to test the code in that test process
* Syntax: maven test compile
* Verify is used to know about the main file and if we install the tree the flow of the project is represented in the form of tree and verify to check the integration testing using junit which means java unit.
* Syntax: maven verify
* Package is used for developing the jar files which is java application files and we do also get the target directory where the code is in the form of java files or.class files.
* Syntax: maven package
* Clean is used to remove the target target directory.
* Syntax: maven clean
* Install is used to remove all the present directories and libraries and start as a new.
* Syntax : maven clean install
* According to phases we just define the functionalities of maven rather than we are using goals and developing the project and compiling , packaging and validating.

8. how do you create a maven project?

* As we know maven is used for the java projects we should use some java shell project.
* In this maven architype: generate by using this it will generate all the dependencies and libraries needed for the basic project.
* Then it will ask us for the fields like architype id and package id and project name by filling those fileds we are done with the project creation and by changing our directory we can use maven goals.

9.what is maven plugin and how do we use it?

* Maven uses dependencies which are nothing but external files which are extracting from outside nothing but plug-ins.
* There are two types of plugins.
* Inbuilt plugins
* Added plugins

Inbuilt plugins:

* In built plugins are pre installed which are with dependencies and plugins and libraries .
* In maven if there no information about the project present in the local repository it will extract it from the central repository which maven central.
* That is the main advantage of it.

Added plugins:

* Added plugins are nothing but we are externally added the required fields.

12. when we generate jar/war/ear file in target?

* Basically jar files stands for java applications which is used for standalone projects.
* War file stands for web applications which is used for packaging the web applications.
* Ear stands for enterprise applications uses for packaging the applications.
* These files are while packaging the target directory.

14. where will be the build files stored?

* Build files are stored in the local repositories.

15. what is build tool?

* Build is automation tool which is used for project management tool for its compilation, packaging and dependency.

13.what is home directory in maven?

* In maven the files are stored in the remote repository where the root of the maven is .m2 repository by using this it will store in our repositories.

16. explain the process of building in maven?

* Maven building is done by the maven goals.
* Validate -> compile-> test - > verify->clean-> install.

17. does the maven supports the all projects?

Yes,maven is developed based on the java so it will uses for mostly for generating java projects.

1. .what is the difference between compile & validate?

* In validate it will check the build success or not and in complie it will check the source code.

1. can you create only one jar file or can we create multiple,explain?

* I think so for every project is an only one jar file which is also developed at the time of target directory .

1. What is Git and why is it used?

* Git stands for global information tracker .
* Git is an distributed version control system.
* Git knowing for its maintain and tracking involvement it is also known as version control system.
* Git is used because it stores the all the applications history irrespective of versions.
* So that if we loss any code about the project git is the remote repository which stores the files so we can easily use it.
* Even we can shifts with versions if any crashes occurs in the latets versions.

21.Explain the difference between Git and other version control systems.

* Git is an remote repository wehere we can stores all the files and it is security puropose like until unless we give the permission any one cannot use our folder , and if any crashes occurs for system we donot need to worry because it is having a datsbase stoing all the fils in the server.
* Where as other version control systems does not even maintain the histories of applications and security purposes.

22. How do you initialize a Git repository?

* For initalising the git we use
* Syntax: git init

23. What is the purpose of the .gitignore file?

* It shows the which files are un neccesary and should be removed from the files.

24. How do you stage changes in Git?

* By using the command git commit

25. What is the difference between git commit and git commit -m?

* Git commit is used for saving the files by opening an new editor for multiple lines and git commit -m is saving the file using the message in a single line without opening the editor.

26. How do you create a new branch in Git?

* Git branch [branch name]

27. What is the difference between git merge and git rebase?

Git merge is used to merge the different branches where as git rebase is used for moving the files from particularly from the branch.

28. How do you resolve merge conflicts in Git?

* by using the git reset.

29. What is the purpose of git stash?

* Git stash is used for seeing the temporarily stored files which are uncommitted .

30.Explain the use of git pull and git fetch.

Git pull is used to merge and fetch the data from remote repository from local repository

Git fetch is used to fetch from local repository from local repository

4.how do you manage dependencies in maven?

In maven dependencies are automatically generated by using architype: generate we will manage by using maven goals.

6. Explain the concept of Maven lifecycle phases.

The life cycle of maven consists of three types build, clean , site.

Maven follows a **build lifecycle** that defines the sequence of steps required to build, test, and deploy a project. The lifecycle consists of **phases**, and each phase has a specific purpose.

1. **Default**

* It fetches the code from developers and perform few functions.
* It handles the entire project build process.

1. **Compile:** It compiles the entire source code.
2. **Validate:** It validates the complied code.
3. **Test:** It test the source code.
4. **Package:** It will generate the package for our source code.
5. **Install :** install all the packages and compiled into jar or war files.
6. **Verify:** It will verify the generated package.
7. **Clean**

* It Removes old build files before starting a new build.
* It is performed before compilation.

1. **Pre-clean:** It checks for jar/war/ear files.
2. **Clean:** deletes the older ear/jar/war files.
3. **Post-clean:** the new generated war/ear/jar files will be saved automatically.
4. **Site**

* It is like a folder where we will deploy our applications.
* Generates project documentation and reports**.**

1. **Pre-site:** It will receives the post clean files.
2. **Site:** It will receive the pre-site files.
3. **Post-site:** It receives the file from site.
4. **Site: Deploy:** It will deploy to where address of server we need to copy the files.

9. What is a Maven plugin and how is it used?

🡪 Build plugins are used to perform a specific goal. you can add a plugin to the POM file. Maven has some standard plugins you can use, and you can also implement your own in Java.

3.What are Maven coordinates and what do they represent? just theory

Maven coordinates are a set of unique identifiers used in **Apache Maven** to define and locate artifacts (libraries, dependencies, or projects) within a repository. They ensure that the correct version of a dependency is fetched and managed efficiently.

**Group ID**  – Represents the organization or project that owns the artifact.

**Artifact ID**  – The name of the specific project or library.

**Version**  – Specifies the version of the artifact.

**Packaging***(Optional, default is jar)* – Defines the type of the artifact (e.g., JAR, WAR, POM).

5. What is a Maven repository and what are its types?

A **Maven repository** is a storage location where project dependencies, plugins, and artifacts (such as JAR files) are stored and retrieved for use in Maven-based projects. It allows Maven to automatically download the required dependencies and manage project builds efficiently.

**Local Repository**

* Stored on the developer’s machine (~/.m2/repository by default).
* Used to cache dependencies that have been downloaded from remote repositories to avoid redundant downloads.

**Remote Repository**

* Hosted on the internet or within an organization.
* Used when dependencies are not available in the local repository.
* Examples: **Maven Central Repository** (https://repo.maven.apache.org/maven2/), **JFrog Artifactory**, **Sonatype Nexus**.

**Central Repository**

* The default remote repository provided by Maven (https://repo.maven.apache.org/maven2/).
* Contains a vast collection of open-source libraries and dependencies

How do you handle versioning in Maven projects?

* By using tag

11. Explain the PEM file in maven?

**PEM File in Maven**

A **PEM (Privacy Enhanced Mail) file** is a format commonly used to store cryptographic keys, certificates, and other security-related data in **Base64-encoded ASCII format**. In **Maven**, PEM files are often used when dealing with **SSL/TLS certificates** to authenticate connections to secure repositories or servers

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