**Maven**

• It is product of apache. Maven is a project management and comprehension tool that provides

developers a complete build lifecycle framework. It is used for java projects.

• For Example: Google Chrome is Based on java technology. When ever we download chrome system

will download the exe file not the java code.

**Maven - Artifact**

• An artifact is an element that a project can either use or produce. In Maven terminology, an artifact is an output generated after a Maven project build. It can be, for example, a jar, war, or any other executable file.

• Also, Maven artifacts include five key elements, group Id, artifact Id, version, packaging, and classifier.

• Artifact Tools Depends on the Technology Technology Artifact Tool

|  |  |
| --- | --- |
| Java | Maven |
| Dotnet | MS Build |
| Python | PyBuilder |

**Maven - API**

• API stands for Application Programming Interface. APIs are very commonly used, and because they enable access to sensitive software functions and data. All Development team is using API.

**Maven - Vulnerability**

• Vulnerability means Risk. Vulnerability Assessment is a process of evaluating security risks in software systems to reduce the probability of threats. The purpose of vulnerability testing is to reduce intruders or hackers' possibility of getting unauthorized access to systems.

• The API is provided by the third-party company. It may be having some virus so it can harm our complete application. We can’t ask the development team to not to use API. It is impossible to satisfied the client requirement without an API.

• So, Maven is providing us millions of Secure API: [Maven Central (sonatype.com)](https://central.sonatype.com/?smo=true)

• In the search box developer can search the API as per client requirement.

• After getting the correct API developer should download the code from maven global server to maven local repository.

Maven - Install

• To install maven the prerequisite is JDK 1.8 or above. [Java Downloads | Oracle](https://www.oracle.com/java/technologies/downloads/#jdk21-windows)

• Download & install.

• Go to the Location where system has Install Java

• Location: C:\Program Files\Java\jdk-18.0.1.1

**Maven - Environment variable**

• Search environment variable

• Click on environment variables

• Click on New

• Enter variable name as JAVA\_HOME

• Enter the variable value as path of java install files

• Click on ok

• Click on Path variable

• Click on New

• Enter the java bin folder path

• Click on ok

• Download maven: [Maven – Download Apache Maven](https://maven.apache.org/download.cgi)

• Download Binary zip archive link

• Unzip the file

• Create new environment variable

• Enter the name of the variable as M2\_HOME

• Enter the path of maven files

• Click on ok

• Click on ok

• Click on path variable

• Enter the maven bin folder path

• Click on ok

• Click on ok

• Open command prompt

• Check Maven version

mvn –version

Generate Artifact

• Command to create maven project

mvn archetype:generate

• Enter the default number for maven project

• Group ID is used to follow a project structure

•For Example:

• For commercial application -- Ex: com.<project\_name>

• For government application -- Ex: gov.<project\_name>

• For organization application -- Ex: org.<project\_name>

Generate Artifact

• Enter the group id

• Enter the artifact id

• Press enter

• Type as Y

• Now check the folder with name of your artifact in

your user

• C:\Users\<User-name>\webapps

Generate Artifact

• Open src folder

• Note: Code created by the developer will be in main folder & code created by the developer for unit testing will be in test folder.

• POM stands for project object model

• Note: In POM file it is storing all the external API information

Open git bash

• git init

• Check git status

git status

• Move files from untracked section to tracked section

git add .

• Git Commit

git commit -m "firstcommit"

• Now add API in pom.xml file

• Go to Maven repository [Maven Central (sonatype.com)](https://central.sonatype.com/?smo=true)

• Search MYSQL

• Click on any of the API

• Note down the API

• Open pom.xml file

• Under dependencies add the MYSQL API or as per client requirement

• Move to the artifact folder using command prompt

• Compile the code

mvn compile

• Now check the artifact folder

• System created new folder called target

• Now commit the folder

• Check folder status

• git status

• Move the files to stage area

git add .

• Commit

git commit -m "second commit"

Generate Artifact

• Compile the project

mvn compile

• Test the project

mvn test

• Now check the target folder

• System created more folder

• Observation:

In folder target, test-classes will be created, which contains

.class files

• Create Artifact

mvn package

Now check the target folder