**MAVEN**

Maven is a powerful project management tool that is based on POM (project object model). It is used for projects build, dependency and documentation.

It simplifies the build process like ANT. But it is too much advanced than ANT.

Current version of Maven is 3.

**Understanding the problem without Maven**

There are many problems that we face during the project development. They are discussed below:

1) Adding set of Jars in each project: In case of struts, spring, hibernate frameworks, we need to add set of jar files in each project. It must include all the dependencies of jars also.

2) Creating the right project structure: We must create the right project structure in servlet, struts etc, otherwise it will not be executed.

3) Building and Deploying the project: We must have to build and deploy the project so that it may work.

**Maven Repository**

A maven repository is a directory of packaged JAR file with pom.xml file. Maven searches for dependencies in the repositories. There are 3 types of maven repository:

Local Repository

Central Repository

Remote Repository

Maven searches for the dependencies in the following order:

Local repository then Central repository then Remote repository.

maven repositories

If dependency is not found in these repositories, maven stops processing and throws an error.

1) Maven Local Repository

Maven local repository is located in your local system. It is created by the maven when you run any maven command.

By default, maven local repository is %USER\_HOME%/.m2 directory. For example: C:\Users\SSS IT\.m2.

maven local repository

Update location of Local Repository

We can change the location of maven local repository by changing the settings.xml file. It is located in MAVEN\_HOME/conf/settings.xml, for example: E:\apache-maven-3.1.1\conf\settings.xml.

**Maven pom.xml file**

POM is an acronym for Project Object Model. The pom.xml file contains information of project and configuration information for the maven to build the project such as dependencies, build directory, source directory, test source directory, plugin, goals etc.

Maven reads the pom.xml file, then executes the goal.

Before maven 2, it was named as project.xml file. But, since maven 2 (also in maven 3), it is renamed as pom.xml.

Elements of maven pom.xml file

For creating the simple pom.xml file, you need to have following elements:

Element Description

project It is the root element of pom.xml file.

modelVersion -- It is the sub element of project. It specifies the modelVersion. It should be set to 4.0.0.

groupId It-- is the sub element of project. It specifies the id for the project group.

ArtifactId --It is the sub element of project. It specifies the id for the artifact (project). An artifact is something that is either produced or used by a project. Examples of artifacts produced by Maven for a project include: JARs, source and binary distributions, and WARs.

version It is the sub element of project. It specifies the version of the artifact under given group.

File: pom.xml

<project xmlns="http://maven.apache.org/POM/4.0.0"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://maven.apache.org/POM/4.0.0

http://maven.apache.org/xsd/maven-4.0.0.xsd">

<modelVersion>4.0.0</modelVersion>

<groupId>com.javatpoint.application1</groupId>

<artifactId>my-app</artifactId>

<version>1</version>

</project>

**INSTALLATION :-**

How to install Maven on windows

You can download and install maven on windows, linux and MAC OS platforms. Here, we are going to learn how to install maven on windows OS.

To install maven on windows, you need to perform following steps:

Download maven and extract it

Add JAVA\_HOME and MAVEN\_HOME in environment variable

Add maven path in environment variable

Verify Maven

1) Download Maven

To install maven on windows, you need to download apache maven first.

Download Maven latest Maven software from Download latest version of Maven

For example: apache-maven-3.1.1-bin.zip

Extract it. Now it will look like this:

maven structure

2) Add MAVEN\_HOME in environment variable

Right click on MyComputer -> properties -> Advanced System Settings -> Environment variables -> click new button

Now add MAVEN\_HOME in variable name and path of maven in variable value. It must be the home directory of maven i.e. outer directory of bin. For example: E:\apache-maven-3.1.1 .It is displayed below:

maven home directory

Now click on OK button.

3) Add Maven Path in environment variable

Click on new tab if path is not set, then set the path of maven. If it is set, edit the path and append the path of maven.

Here, we have installed JDK and its path is set by default, so we are going to append the path of maven.

The path of maven should be %maven home%/bin. For example, E:\apache-maven-3.1.1\bin .

maven path

4)Verify maven

To verify whether maven is installed or not, open the command prompt and write:

mvn −version

Now it will display the version of maven and jdk including the maven home and java home.