Maven - Training

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- Agenda

- ✓ Introduction
- ✓ Installation
- ✓ Content – pom.xml
- ✓ Examples

Apache maven - Introduction

Type	Java Based Build Tool
Vendor	Apache
Is Open Source?	Yes
Version	3.5.2
Operating system	Cross Platform
Software Download URL	https://maven.apache.org/download.cgi
Is executable software?	No, download as zip, extract and use it.
Reference Websites	1) https://www.petrikainulainen.net/programming/gradle/getting-started-with-gradle-dependency-management/

Apache maven - Introduction

Apache Maven is a software project management and comprehension tool. Based on the concept of a project object model (POM), Maven can manage a project's build, reporting and documentation.

The most powerful feature is able to download the project dependency libraries automatically from maven central repo, maven remote repo or local repo.

Apache maven - Contents in pom.xml

```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.bt</groupId>
 <artifactId>maven-java-project</artifactId>
 <version>0.0.1-SNAPSHOT</version>
 <packaging>jar</packaging>

 <name>maven-java-project</name>
 <url>http://maven.apache.org</url>

 <properties>
   <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
 </properties>

 <dependencies>

  <dependency>
    <groupId>junit</groupId>
    <artifactId>junit</artifactId>
    <version>3.8.1</version>
    <scope>test</scope>
  </dependency>

 </dependencies>

</project>
```

Apache maven - Contents in pom.xml

All POM files require the **project** element and three mandatory fields: **groupId, artifactId,version.**
Root element of POM.xml is **project** and it has three major sub-nodes .

groupId   **:** This is an Id of project's group. This is generally unique amongst an organization or a project. For example, a banking group com.company.bank has all bank related projects.

artifactId : This is an Id of the project.This is generally name of the project. For example, consumer-banking. Along with the groupId, the artifactId defines the artifact's location within the repository.

version: This is the version of the project.Along with the groupId, It is used within an artifact's repository to separate versions from each other. For example: com.company.bank:consumer-banking:1.0com.company.bank:consumer-banking:1.1.

- Maven Repositories

A Maven repository can be one of the following types:
➢ Local Repository
➢ Central Repository
➢ Remote Repository

- Maven Repositories

Local Repository

The maven local repository is a local folder that is used to store all your project's dependencies (plugin jars and other files which are downloaded by Maven). In simple, when you build a Maven project, all dependency files will be stored in your Maven local repository.

By default, Maven local repository is default to .m2 folder:
1) Unix/Mac OS X – ~/.m2 (/Users/BhaskarReddy/.m2/repository)
2) Windows – C:\Users\{your-username}\.m2

- Maven Repositories

Update Maven Local Repository

Normally, We will change the default local repository folder from default .m2 to another more meaningful name as follows.
Find {M2_HOME}\conf\settings.xml, update localRepository to something else.

```
<!-- localRepository
   | The path to the local repository maven will use to store artifacts.
   |
   | Default: ${user.home}/.m2/repository
  <localRepository>/path/to/local/repo</localRepository>
  -->
<localRepository>D:/maven_repo</localRepository>
```

Maven Central Repository

The central repository is the repository provided by the Maven community. It contains a large repository of commonly used libraries. This repository comes into play when Maven does not find libraries in the local repository.

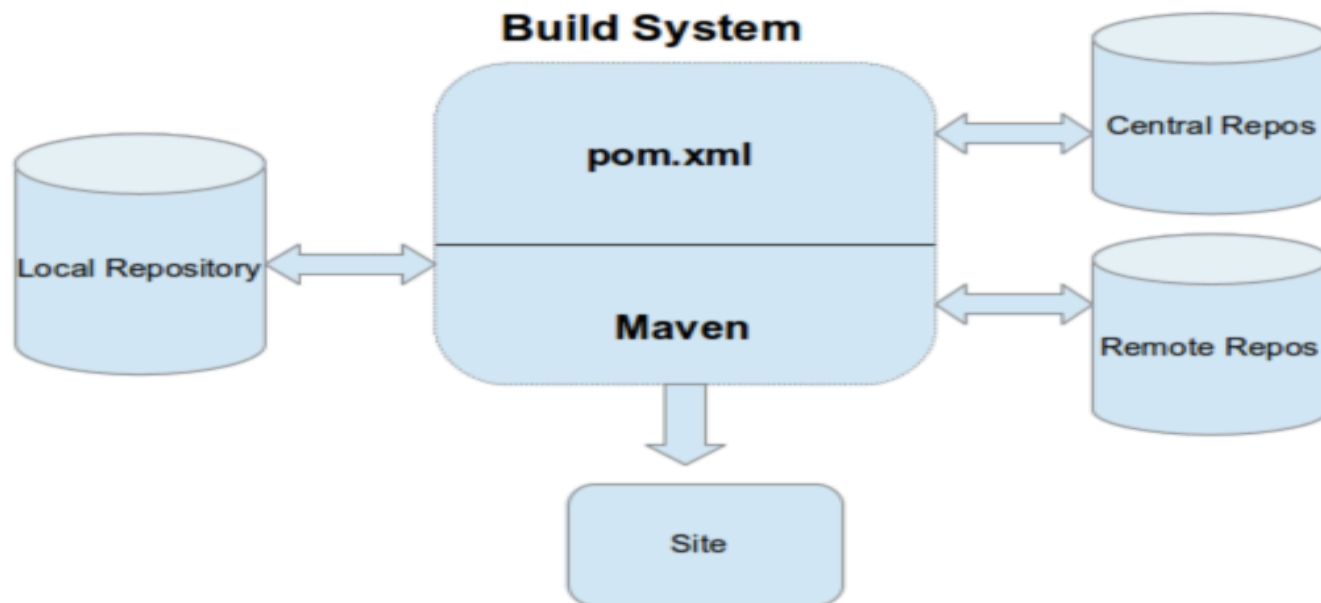The central repository can be found at: http://search.maven.org/#browse.

- Maven Repositories

Remote Repository

Enterprises usually maintain their own repositories for the libraries that are being used for the project. These differ from the local repository; a repository is maintained on a separate server, different from the developer's machine and is accessible within the organization.

Apache maven - Maven Architecture

 - Maven Goals

To invoke a maven build you set a life cycle goal.
mvn install : Invokes generate*, compile, test, package, integration-test, install.
mvn clean: Invokes just clean.
mvn clean compile : Clean old builds and execute generate*, compile.
mvn compile install : Invokes generate*, compile, test, integration-test, package, install.
mvn test clean : Invokes generate*, compile, test then clean.

- Maven Environment Setup

M2_HOME
JAVA_HOME

mvn archetype:generate

Questions ?

Thank you