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Maven

standard chartered

Build Tool

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- Building a software project typically includes one or more of these activities:
  - Generating source code (if auto-generated code is used in the project).
  - Generating documentation from the source code.
  - Compiling source code.
  - Packaging compiled code into JAR files or ZIP files.
  - Installing the packaged code on a server, in a repository or somewhere else.
- A build tool is a tool that automates everything related to building the software project.
- The advantage of automating the build process is that you minimize the risk of humans making errors while building the software manually.
- The result is a tool that can now be used for building and managing any Java-based project. That’s where we have Maven which makes the day-to-day work of Java developers easier.

Maven

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- *Maven* is a powerful build tool for Java software projects. Actually, you can build software projects using other languages too, but Maven is developed in Java, an is thus historically used more for Java projects.
- Maven's primary goal is to allow a developer to comprehend the complete state o a development effort in the shortest period of time.
- In order to attain this goal, there are several areas of concern that Maven attempts to deal with:
  - Making the build process easy
  - Providing a uniform build system
  - Providing quality project information
- To summarize, Maven simplifies and standardizes the project build process. It handles compilation, distribution, documentation, team collaboration and other tasks seamlessly. Maven increases reusability and takes care of most of the build related tasks.
- First version was released on July 2004 and the current version is 3.6.1 released on April 2019.
- Official website is http://maven.apache.org/

Installation

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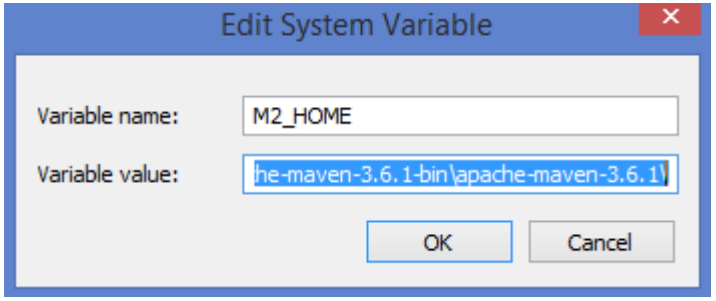
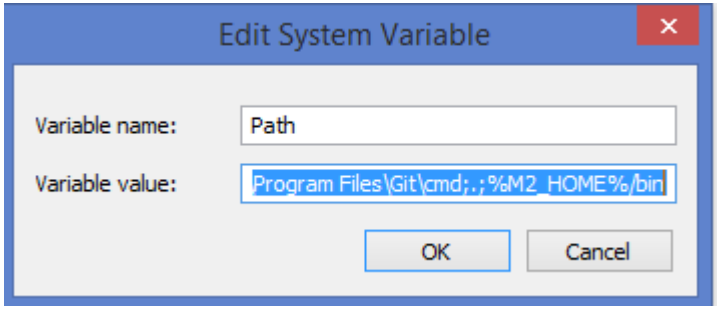
- Download the Maven binary archive from https://maven.apache.org/download.cgi
- Set the maven environment variables.





- Open command prompt and type mvn –v. If you get this, mvn is successfully configured in system.

```
C:\Users\Kavita>mvn -v
Apache Maven 3.6.1 (d66c9c0b3152b2e69ee9bac180bb8fcc8e6af555; 2
Maven home: C:\Program Files\apache-maven-3.6.1-bin\apache-mave
Java version: 1.8.0_191, vendor: Oracle Corporation, runtime: C
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 8.1", version: "6.3", arch: "amd64", family:
```

First Maven project

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- Open command prompt and run:

  mvn archetype:generate

- It will list you several available archetype templates to choose from. Like: org.apache.maven.archetypes:maven-archetype-j2ee-simple (An archetype which contains a simplifed sample J2EE application)
- Please enter the number, groupId and artifacId.
- groupId : Refers to project packaging and identifies your project uniquely across all projects.
- artifactId : Name of jar of your project without version.
- The combination of groupId:artifactId is known as an archetype.
- It will generate the directory structure for project.

```
2417: remote -> top.marchand.archetype:sie-xf-prio-dep-import-generic ([ELS] Module de projet d'import Fla
2418: remote -> tr.com.lucidcode:kite-archetype (A Maven Archetype that allows users to create a Fresh Kit
2419: remote -> tr.com.obss.sdlc.archetype:obss-archetype-java (This archetype provides a common skelton f
2420: remote -> tr.com.obss.sdlc.archetype:obss-archetype-webapp (This archetype provides a skelton for th
2421: remote -> ua.co.gravy.archetype:single-project-with-junit-and-slf4j (Create a single project with jU
2422: remote -> uk.ac.ebi.gxa:atlas-archetype (Archetype for generating a custom Atlas webapp)
2423: remote -> uk.ac.gate:gate-plugin-archetype (Maven archetype to create a new GATE plugin project.)
2424: remote -> uk.ac.gate:gate-pr-archetype (Maven archetype to create a new GATE plugin project includin
2425: remote -> uk.ac.nactem.argo:argo-analysis-engine-archetype (An archetype which contains a sample Arg
2426: remote -> uk.ac.nactem.argo:argo-reader-archetype (An archetype which contains a sample Argo (UIMA)
2427: remote -> uk.ac.rdg.resc:edal-ncwms-based-webapp (-)
2428: remote -> uk.co.nemstix:basic-javaee7-archetype (A basic Java EE7 Maven archetype)
2429: remote -> uk.co.solong:angular-spring-archetype (So Long archetype for RESTful spring services with
2430: remote -> us.fatehi:schemacrawler-archetype-maven-project (-)
2431: remote -> us.fatehi:schemacrawler-archetype-plugin-command (-)
2432: remote -> us.fatehi:schemacrawler-archetype-plugin-dbconnector (-)
2433: remote -> us.fatehi:schemacrawler-archetype-plugin-lint (-)
2434: remote -> ws.osiris:osiris-archetype (Maven Archetype for Osiris)
2435: remote -> xyz.luan.generator:xyz-gae-generator (-)
2436: remote -> xyz.luan.generator:xyz-generator (-)
Choose a number or apply filter (format: [groupId:]artifactId, case sensitive contains): 1379: 190
Choose com.eclipsesource.tabris:tabris-application version:
1: 1.1
2: 1.2
3: 1.2.1
4: 1.3
5: 1.4
6: 1.4.1
7: 1.4.2
8: 1.4.3
9: 1.4.4
10: 1.4.5
Choose a number: 10:
Define value for property 'groupId': com.test
Define value for property 'artifactId': MavenProject
```

Directory Structure in depth

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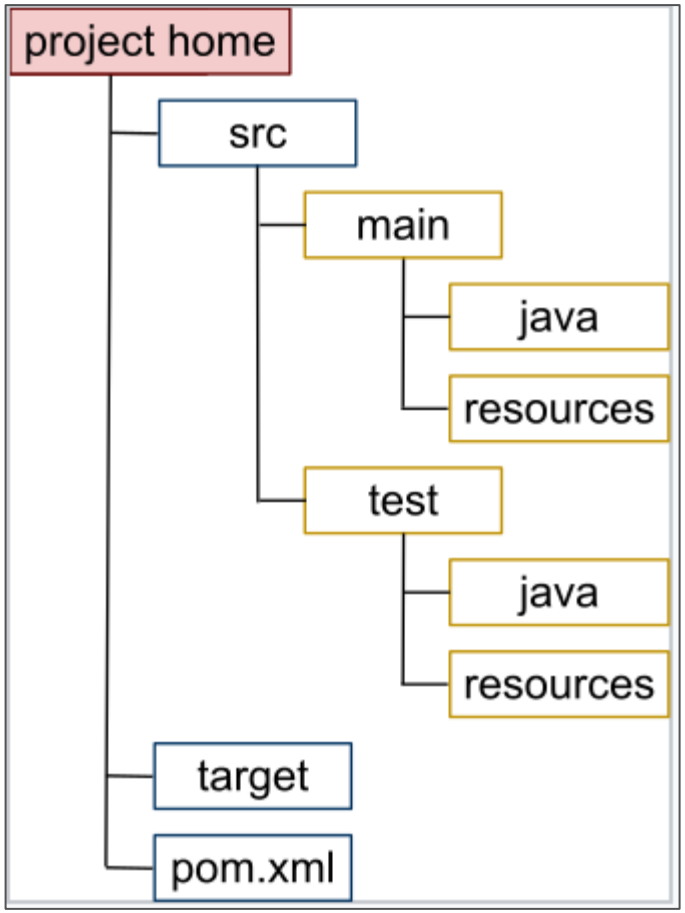
Directory name	Purpose
project home	Contains the pom.xml and all subdirectories.
src/main/java	Contains the deliverable Java source code for the project.
src/main/resources	Contains the deliverable resources for the project, such as property files.
src/test/java	Contains the testing Java sourcecode (JUnit or TestNG test cases, for example) for the project.
src/test/resources	Contains resources necessary for testing.



Packaging

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- Run command: mvn package
- This will compile all the Java files, run any tests, and package the deliverable code and resources into target/my-app-1.0.jar .
- Your jar file is ready.

```
F:\standard chartered\maven project\my-app>mvn package
[INFO] Scanning for projects...
[INFO]
[INFO] ----------------------< com.mycompany.app:my-app >----------------------
[INFO] Building my-app 1.0-SNAPSHOT
[INFO] --------------------------------[ jar ]---------------------------------
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ my-app ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources,
[INFO] skip non existing resourceDirectory F:\standard chartered\maven project\my
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ my-app ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding Cp1252, i.e. bu
[INFO] Compiling 1 source file to F:\standard chartered\maven project\my-app\targ
Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ my-app ---
[INFO] Building jar: F:\standard chartered\maven project\my-app\target\my-app-1.0-SNAPSHOT.jar
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  12.055 s
[INFO] Finished at: 2019-06-15T13:12:24+05:30
[INFO] ------------------------------------------------------------------------
```

Maven Repository

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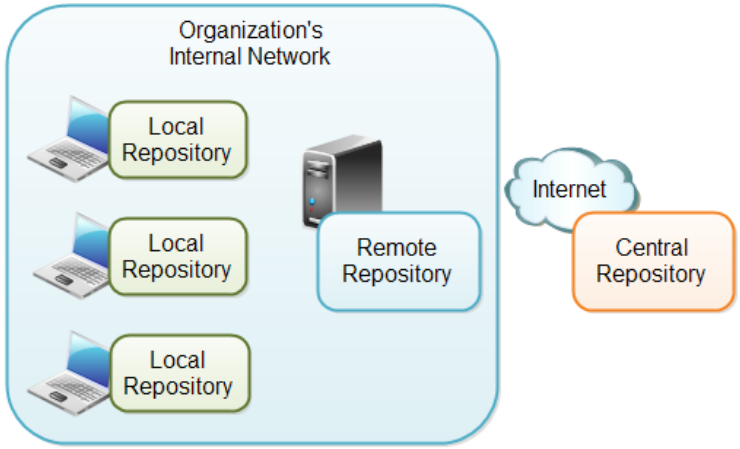
- Maven has three types of repository:

1. Local repository: A local repository is a directory on the developer's computer. This repository will contain all the dependencies Maven downloads. Path : C:\Users\{username}\.m2\repository
2. Central repository : The central Maven repository is a repository provided by the Maven community. By default Maven looks in this central repository for any dependencies needed if not found in your local repository. Maven then downloads these dependencies into your local repository.
3. Remote Repository:

- Maven searches these repositories for dependencies in the above sequence. First in the local repository, then in the central repository, and third in remote repositories if specified in the POM.



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Thank You