

Source Code Analysis



MTU

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Setup

Java will be the target language for this module, therefore, a compatible syntax analyzer (i.e., Parser) for Java needs to be employed.

Since Java is an Object Oriented language, therefore, the focus would be mostly on Object Oriented behaviors.

An intermediate Java programming knowledge would be required for this module.

Get Started with Eclipse

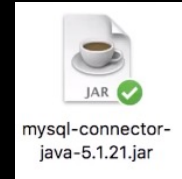
An IDE that is widely used for Java programs.

For the weekly exercises we use Eclipse.

Maven Projects

- ❖ Maven is a build automation tool used primarily for Java projects hosted by the Apache Software Foundation.
- ❖ Maven addresses two aspects of building software: how software is built, and its dependencies.
- ❖ Maven is essentially a project management and comprehension tool and as such provides a way to help with managing:
 - ✓ Builds
 - ✓ Documentation
 - ✓ Reporting
 - ✓ Dependencies
 - ✓ Releases

Maven Projects and Dependencies



- ❖ Usually Java projects depend on some external libraries e.g., SQL, Neo4j.
- ❖ Traditionally, Java projects that need any of these libraries, need to download the **.jar** file and include it in the build-path.
- ❖ Every time a new version of the library is released, the new **.jar** file needs to be downloaded and updated in the build-path.
- ❖ Maven is a solution to the aforementioned steps as an automated building tool.
- ❖ Maven has a repository at: <https://mvnrepository.com> that contains all the well-known and widely used Java libraries with all different versions.
- ❖ There is XML snippet that is associated with each library with a particular version.
- ❖ The snippet is added into the POM file in the project.
- ❖ The first time the project runs, the libraries are automatically downloaded from the online repository (Maven) to your local repository (Maven project).

Maven Projects

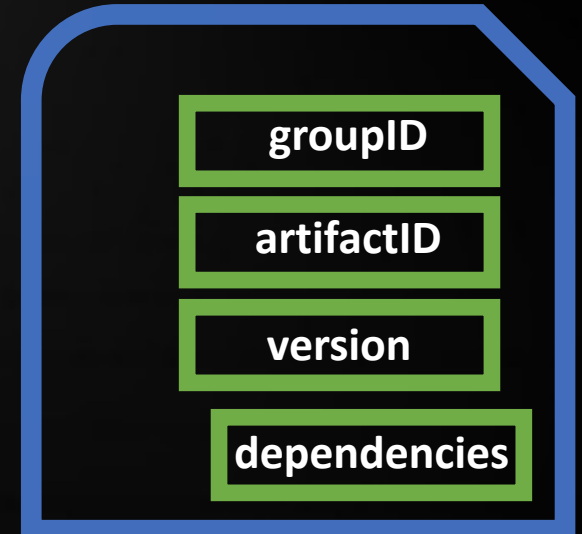
❖ Maven Project

- ❖ **Pom.xml**: **P**roject **O**bject **M**odel or **POM** is the fundamental unit of work in Maven. It is an xml file and it has information about the project.
- ❖ **Group ID**: It is an identifier of the organization or the team that is making this application or project or artifact. It has to be unique across all projects. The groupID follows the package name rules, something like ie.mtu.sca: reversed domain name.
<https://maven.apache.org/guides/mini/guide-naming-conventions.html>
- ❖ **Artifact ID**: It is going to be the final name of the artifact to be created. It is simply the name of the jar file without version.
- ❖ **Version**: It is the version of the artifact. Usually started with 0.0.1
- ❖ **Modelversion and name** are the version of Maven and the name of the project respectively.
- ❖ **Dependencies**: This section contains a list of external libraries and jar files needed for the project.

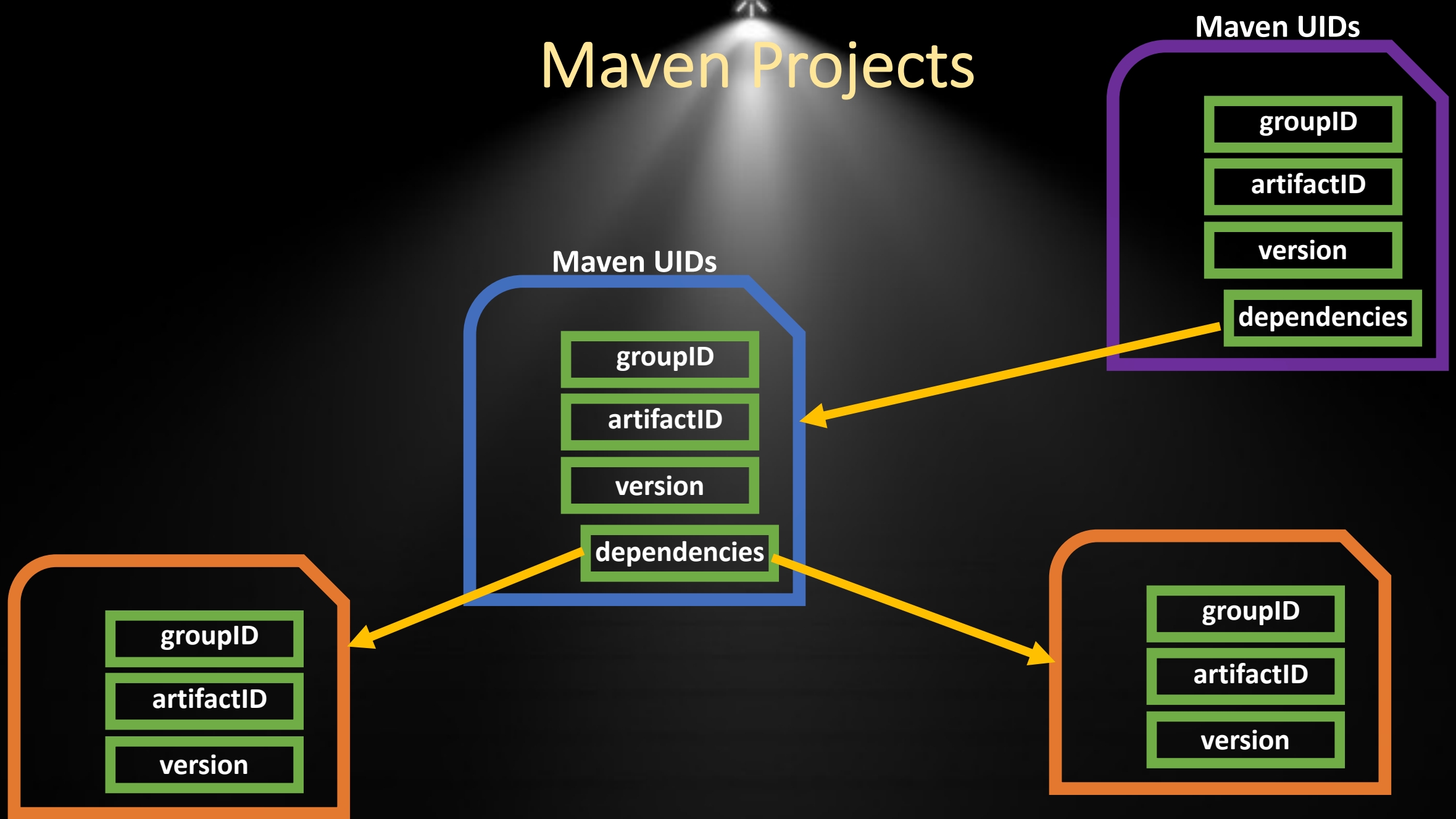
Look at this link
for better
understanding on
naming
conventions



Maven UUIDs



Maven Projects



POM.XML

```
<dependencies>
  <dependency>
    ....
  </dependency>
  <dependency>
    ....
  </dependency>
  <dependency>
    ....
  </dependency>
</dependencies>
```

```
1 ⊖ <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema"
2   <modelVersion>4.0.0</modelVersion>
3   <groupId>ie.mtu.sca</groupId>
4   <artifactId>sca2023</artifactId>
5   <version>0.0.1-SNAPSHOT</version>
6
7 ⊖   <dependencies>
8     <!-- https://mvnrepository.com/artifact/org.jfree/jfreechart -->
9
10
11
12 ⊖ <dependency>
13   <groupId>org.jfree</groupId>
14   <artifactId>jfreechart</artifactId>
15   <version>1.5.3</version>
16 </dependency>
17
18
19
20
21   </dependencies>
22
23 </project>
```




The End