

## Section 1: Environment Setup

### Maven:

All of the projects for this class will be based on maven (<http://maven.apache.org/>). Maven is a utility to organize, manage dependencies and build a project (similar to what IDE's do, but without the GUI part).

Maven uses an XML file called pom.xml (Project Object Model), which keeps track of where your source code is, where your class files should go, what jar files (libraries) your project depends on, and even where to download these libraries from.

Most IDE's come with Maven integration. You do not need to download Maven.

```
<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>edu.mum.cs544</groupId>
  <artifactId>exercise02_1</artifactId>
  <version>1.0-SNAPSHOT</version>
  <packaging>jar</packaging>

  <name>exercise02_1</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>
    <dependency>
      <groupId>org.hibernate</groupId>
      <artifactId>hibernate-core</artifactId>
      <version>4.3.4.Final</version>
    </dependency>
    <dependency>
      <groupId>mysql</groupId>
      <artifactId>mysql-connector-java</artifactId>
      <version>5.1.29</version>
    </dependency>
    <dependency>
      <groupId>log4j</groupId>
      <artifactId>log4j</artifactId>
      <version>1.2.17</version>
    </dependency>
  </dependencies>
</project>
```

Basic project naming, no need to specify directories, uses defaults

Jar files that we need for this project

## Virtual Machine

Your VM comes with a fully setup development environment for the course. But if you wish to setup your own environment on your own laptop, here are a few hints:

## Provided Software

You can download and install the following from our [SharePoint Site](#)

## Integrated Development Environment:

I would like to recommend that we all use STS (Spring/Pivotal/VMWare version of Eclipse).

## MySQL Database:

Many of the exercises in this course (especially in the first week) require a database. You can use the provided MS SQL Server (cs544.cs.miu.edu) or use MySQL since it is free and relatively widely used in the industry.

## Web Server / Apache Tomcat:

Most of the examples in the course are using Spring Boot which uses an embedded Apache Tomcat. There is no deployment. You just run the Java main and it will run Tomcat.

## Source Control Management – Git (GitHub and Azure DevOps):

I will use GitHub and Azure DevOps to share code (lab skeletons, examples, etc.) with you. My public GitHub is located at:

<https://github.com/psalek/cs544> (this site has old examples)

My Azure DevOps **NEW** site for this course is: [https://dev.azure.com/comprodev/\\_git/CS544](https://dev.azure.com/comprodev/_git/CS544)

Remember that you can get an educational GitHub account at: <https://education.github.com/>

## Exercise 01.1 – Environment Setup

### *Option 1 – Express Route!*

1. Connect to your VM (using RDP) and start STS

### *Option 2 – Install your own environment on your own machine*

**Hint:** most of the software products below can also be downloaded from [SharePoint Site](#) (assuming that you have a Windows 64bit)

- 1) Download and install the **JDK 8** from <https://www.oracle.com/java/technologies/javase/javase-jdk8-downloads.html>
- 2) Download and Install Visual Studio 2019 ***Community*** version (MySQL requires it) from: <https://visualstudio.microsoft.com/downloads/>  
Note: Make sure to include .NET and Python support. This is needed for MySQL.
- 3) Download and install MySQL ***Community*** version from: <https://dev.mysql.com/downloads/mysql/>
- 4) Download and install Spring Tool Suit or **STS** from: <https://spring.io/tools>
- 5) Download and install Notepad++ from: <https://notepad-plus-plus.org/downloads/>
- 6) Download and install Git from: <https://git-scm.com/downloads>

### *Run Sample App*

- 1) Clone the following Git site: [https://dev.azure.com/comprodev/\\_git/CS544](https://dev.azure.com/comprodev/_git/CS544)
- 2) Import the project as an “Existing Maven Project”
- 3) Open project named “hibernate-00-helloworld”
- 4) Run Application.java

**Hint:** If you look inside HibernateUtils.java class, you will notice that this example is assuming a MS SQL DB running at 10.10.10.15 which is only accessible on-campus. If you are off campus, you will have to install your own local (or cloud) DB and point this config to your DB.