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.

```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>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

Citrix Virtual Machine

You have been assigned a Citrix VM that runs on our most powerful Dell PowerEdge server with two Intel Xeon Gold processors with 48 cores, 1TB of RAM and 10TB of SSD storage. ***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 MySQL Database Server installed on your VM. But really, any relational database can be used for this course.

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 Azure DevOps to share code (lab skeletons, examples, etc.) with you.

My Azure DevOps NEW site for this course is: https://dev.azure.com/comprodev/_git/CS544

This is a read-only Git repo.

Exercise 01.1 – Environment Setup

Option 1 – Express Route!

1. Connect to your VM (using Citrix – compro.cloud.com) 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
2) Import the project as an "Existing Maven Project"
3) Open project named "hibernate-00-helloworld"
4) Run Apllication.java

Hint: If you look inside HibernateUtils.java class, you will notice that this example is assuming a MySQL DB running at localhost, but you can point this config to your DB of choice.