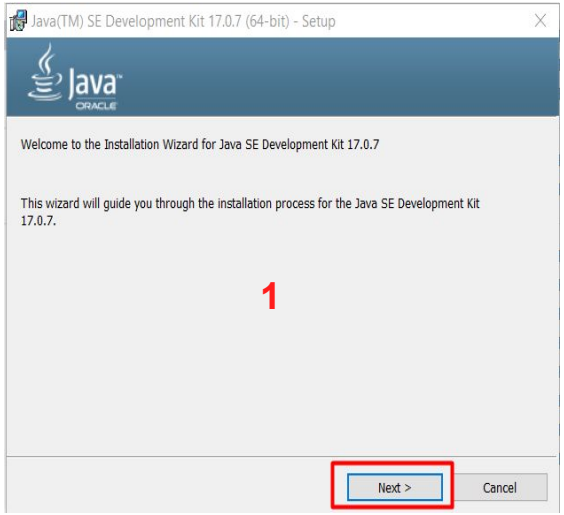
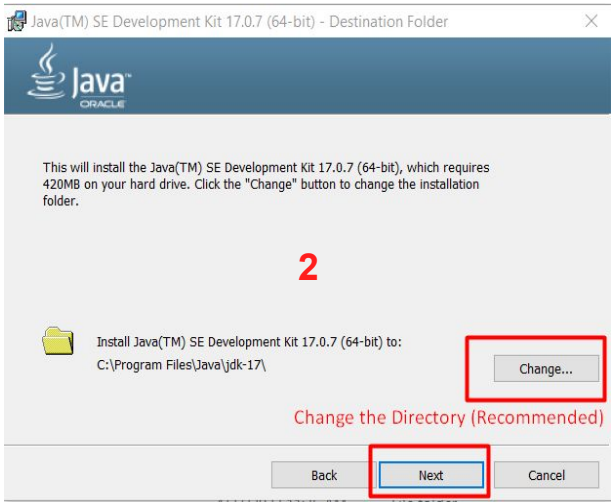
JAVA Spring Boot
Configuration & Running Procedure

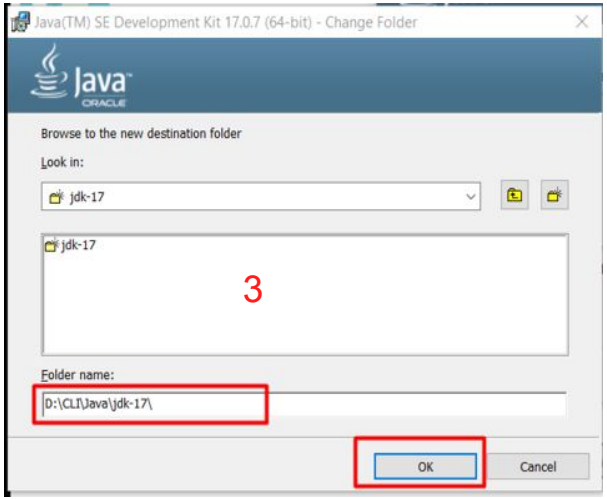
Prepared By
Zawadul Kawum
Senior Software Engineer
Adventure Dhaka Ltd.

Install and Configure JDK

- **Step 01**: Download JDK from this link https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe
- **Step 02:** Install JDK

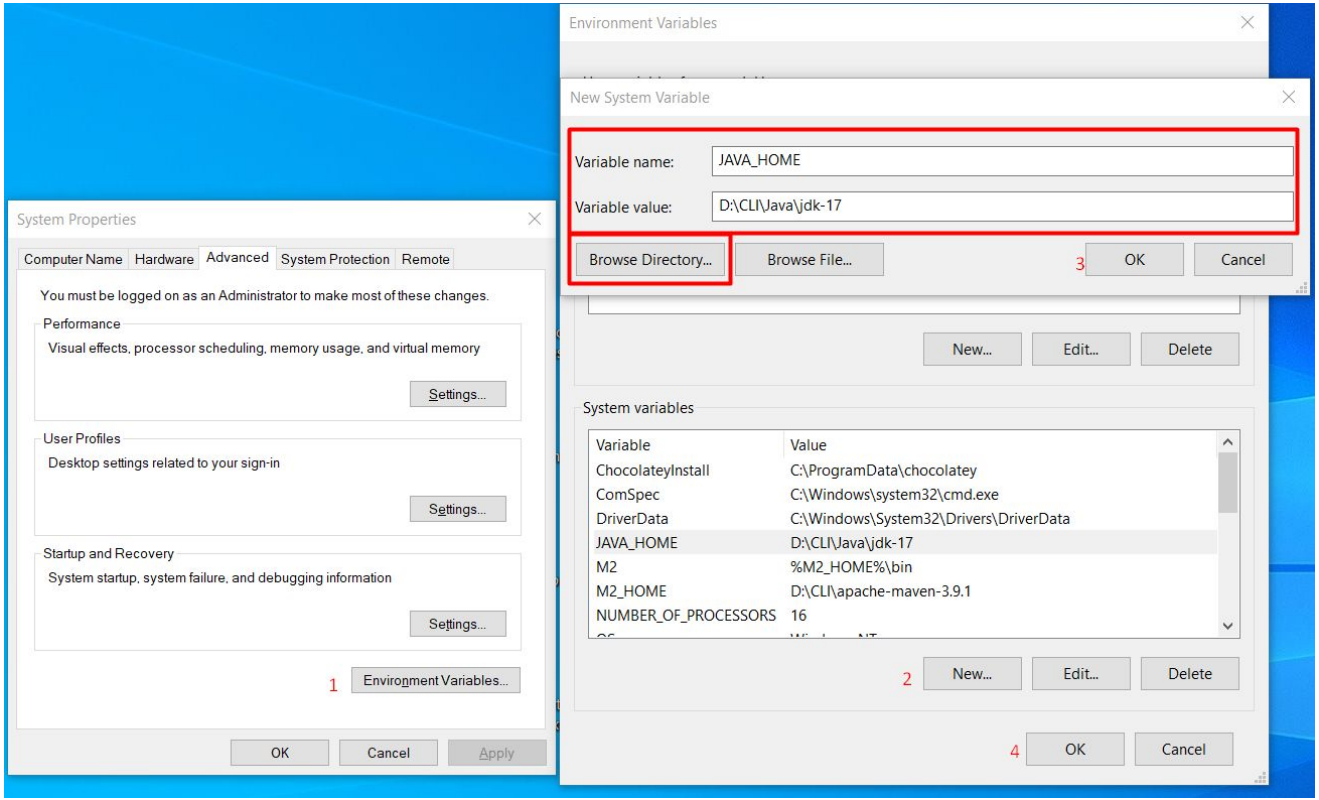






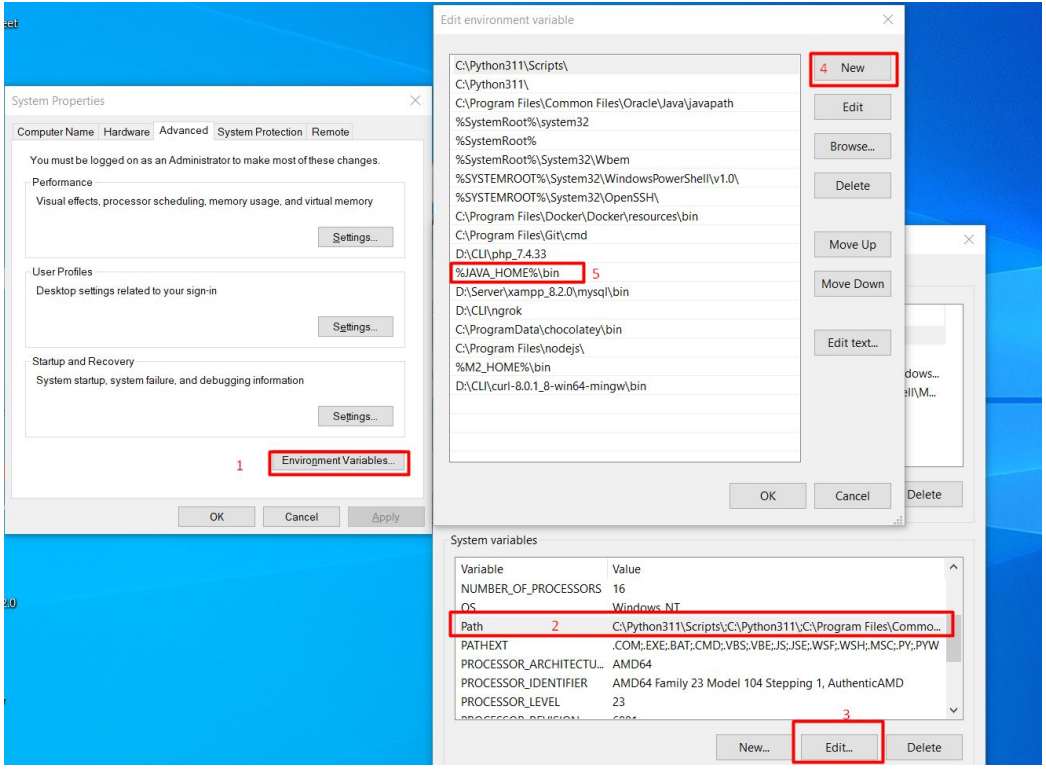
Install and Configure JAVA

- **Step 03**: Set **JAVA_HOME** in Environmental Variable for Java (Eg: Variable Name: **JAVA_HOME**, Value: **D:\CLI\Java\jdk-17**)



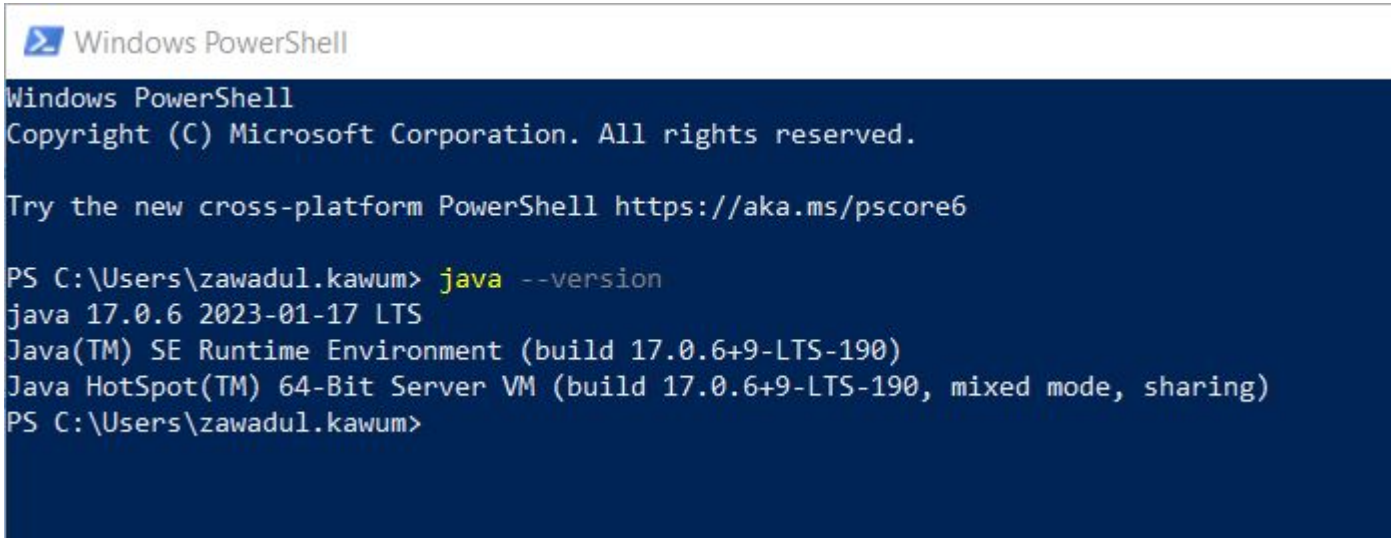
Install and Configure JAVA

- **Step 04**: Configure Environmental Variable for Java (eg: **%JAVA_HOME%\bin**)



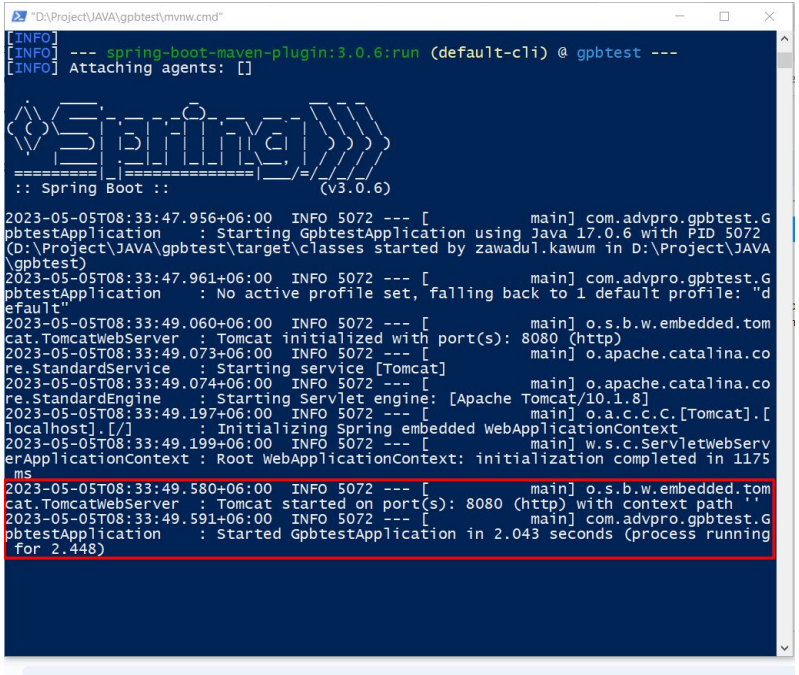
Install and Configure JAVA

- **Step 05**: Now go to Powershell / CMD and write **java --version** command. If you got response like below screenshot then your JAVA installation have been done successfully.



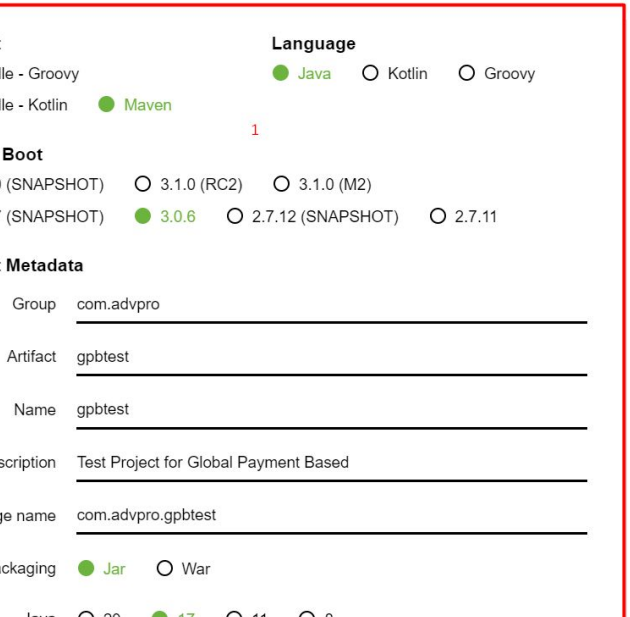
Run Spring Boot Application

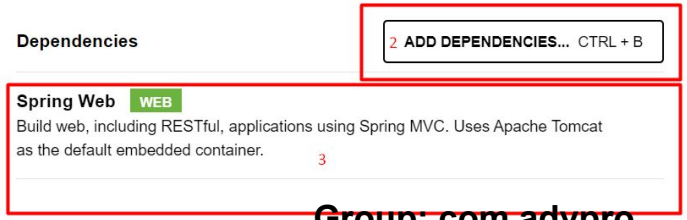
- Now unzip the spring boot application, go to project folder and open **PowerShell**. (You can run it by vscode terminal). Run following command **./mvnw spring-boot:run.** If your **PowerShell** or **VSCode** Terminal is showing like below screenshot then your spring boot application have been started successfully.



Install and Configure JAVA Spring Boot

- Go to https://start.spring.io/ and put necessary information by below screenshot configuration and click **GENERATE** button for download spring boot file. Make sure you add **Dependencies**





Group: com.advpro
Artifact: gpbtest
Name: gpbtest
Description: Test Project for Global Payment Based
Package Name: com.advpro.gpbtest
Packaging: Jar
Java: 17

If you forget to add Dependencies

If you forget to add dependencies and something like below screenshot

```
2023-05-05T11:47:56.200+06:00  INFO 4212 --- [           main] com.advpro.gbptest.GbptestApplication    : Starting GbptestApplication using Java 17.0.7 with PID 4212 (D:\Work-Project\gbptest\target\classes started by hasibul.hasan in D:\Work-Project\gbptest)
2023-05-05T11:47:56.204+06:00  INFO 4212 --- [           main] com.advpro.gbptest.GbptestApplication    : No active profile set, falling back to 1 default profile: "default"
2023-05-05T11:47:56.609+06:00  INFO 4212 --- [           main] com.advpro.gbptest.GbptestApplication    : Started GbptestApplication in 0.702 seconds (process running for 1.003)
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  2.481 s
[INFO] Finished at: 2023-05-05T11:47:56+06:00
[INFO] ------------------------------------------------------------------------
```

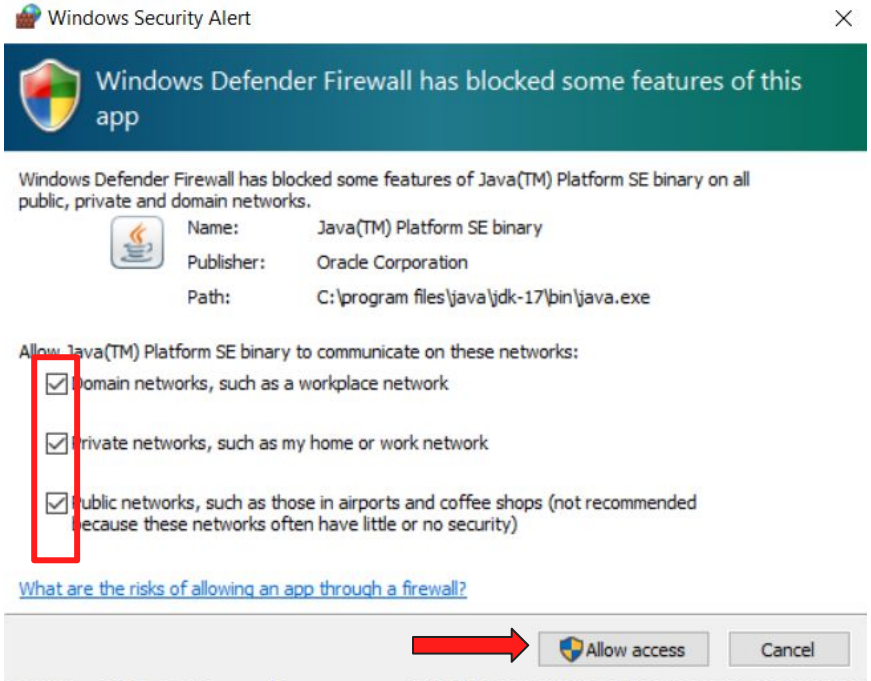
1. Open pom.xml
2. Change `spring-boot-starter` to `spring-boot-starter-web`
3. Then run **\.mvnw spring-boot:run** again

```
<dependencies>
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-web</artifactId>
    </dependency>

    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-test</artifactId>
        <scope>test</scope>
    </dependency>
</dependencies>
```

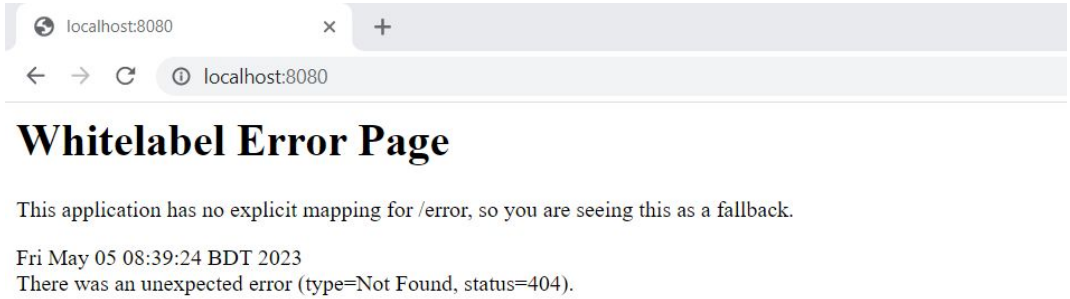
Run Spring Boot Application

- You may get **Windows Security Alert** dialogue for first time when you run spring boot command. Make sure to check all network and Click Allow Access

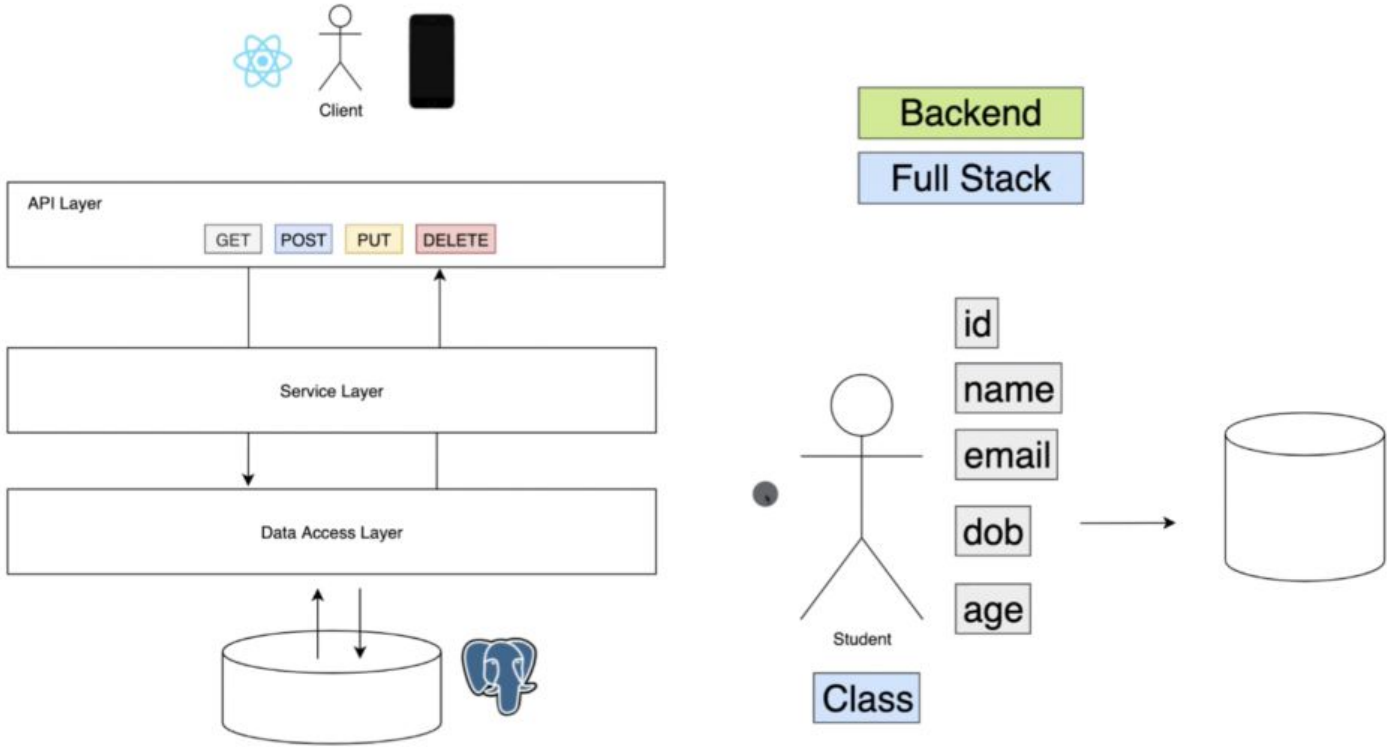


Check Spring Boot Running Application

- Now Go to browser and type http://localhost:8080/. If you see your browser response like below screenshot then your Spring Boot Application is running successfully.



Spring Boot Architecture

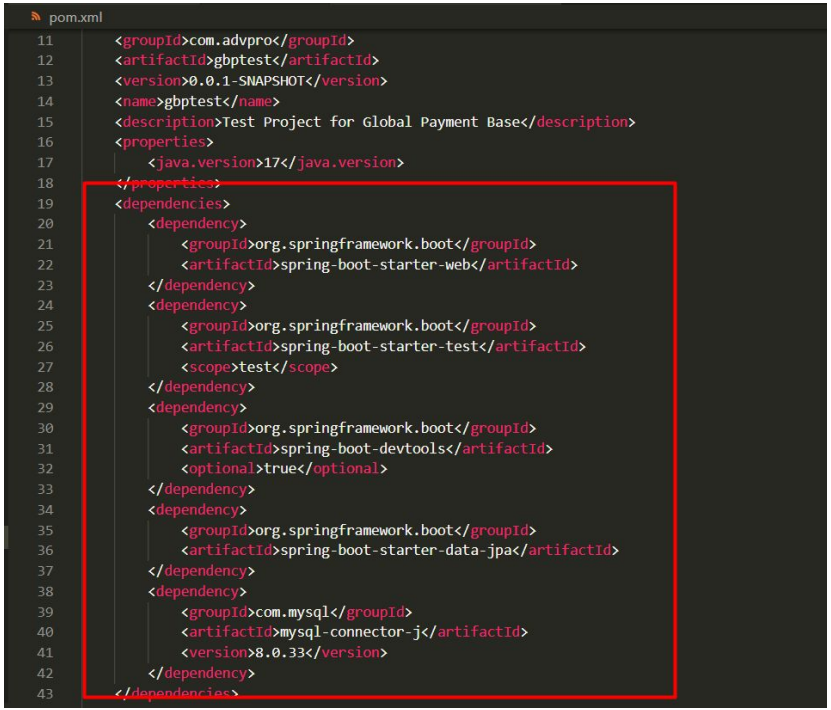


Database Creation & VS Code Configuration

- Install and start XAMPP serve
- Changing the port number for apache is optional
- Go to phpmyadmin and create database named**gpb**
- Download necessary extension pack for Java in VS Code
  - Extension Pack for Java (vscjava.vscode-java-pack)
    https://marketplace.visualstudio.com/items?itemName=vscjava.vscode-java-pack
  - Spring Boot Extension Pack (vmware.vscode-boot-dev-pack)
    https://marketplace.visualstudio.com/items?itemName=vmware.vscode-boot-dev-pack
  - Maven for Java (vscjava.vscode-maven)
    https://marketplace.visualstudio.com/items?itemName=vscjava.vscode-maven

Add Maven Dependency

- Open Project in vscode and edit pom.xml file. Go to <dependencies> section. Add the dependencies by following.



Change Web service to Build Service

- Inside pom.xml file. Go to <dependencies> section. change the spring-boot-starter-web artifactid

```
<artifactId>spring-boot-starter-web</artifactId>
```

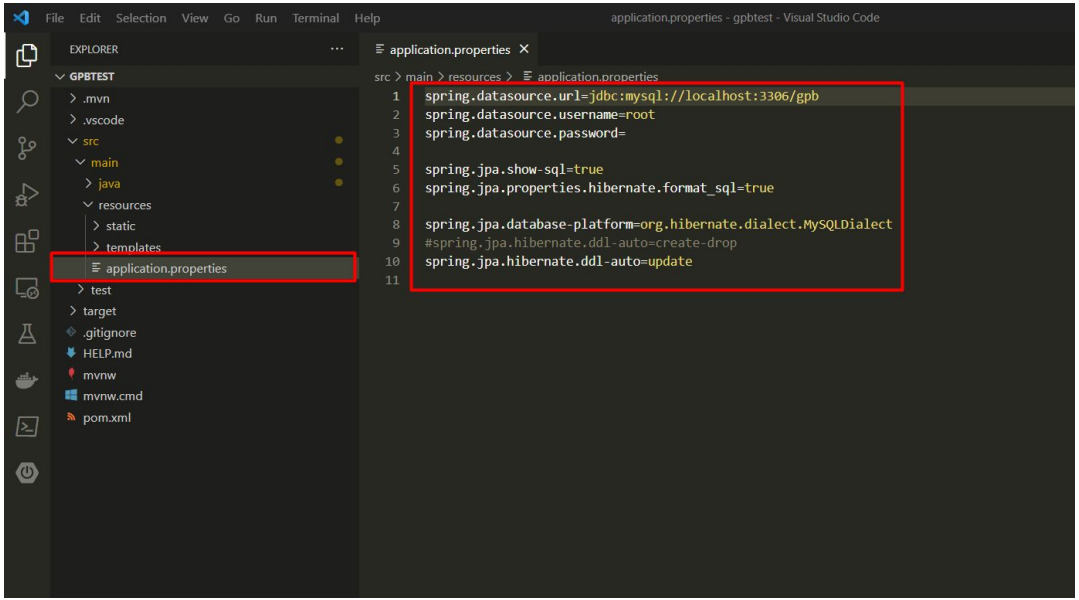
to

```
<artifactId>spring-boot-starter</artifactId>
```

- This changes will only build the application. Not running it. We will change is later

Configure Database

- Open application.properties and configure like below screenshot



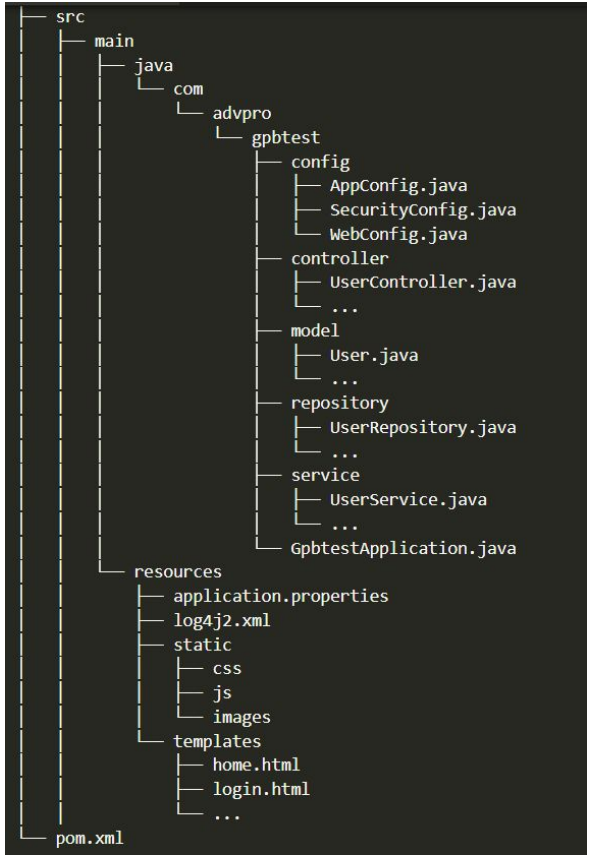

```
spring.datasource.url=jdbc:mysql://localhost:3306/gpb
spring.datasource.username=root
spring.datasource.password=

spring.jpa.show-sql=true
spring.jpa.properties.hibernate.format_sql=true

spring.jpa.database-platform=org.hibernate.dialect.MySQLDialect
#spring.jpa.hibernate.ddl-auto=create-drop
spring.jpa.hibernate.ddl-auto=update
```

- Run **./mvnw spring-boot:run** again to build the project for download the dependencies.

Create Codebase



1. Create File and Folder on **src\main\java\com\advpro\gpbtest**
   - **config**
     - **Appconfig.java**
     - **SecurityConfig.java**
     - **WebConfig.java**
   - **controller**
     - **UserController.java**
   - **model**
     - **User.java**
   - **repository**
     - **UserRepository.java**
   - **service**
     - **UserService.java**

Configure User Model

- Open src → main → java → com → advpro → gpbtest → model →**User.java**
- Set **@Entity**, **@Table(name="users")** annotation in **User** model
  - The **@Entity** annotation specifies that the class is an entity and is mapped to a database table.
  - The **@Table** annotation specifies the name of the database table to be used for mapping
- Declare Private Object for Id, Name, DOB etc
- Set **@transient** annotation for Age Calculation
  - @Transient annotation is used to indicate that a field is not to be persisted in the database, i.e. their semantics are different.
- Create 3 constructor
  - without param
  - all params
  - all params except id

Configure User Model (Cont.)

- Generate getter, setter for User Model
- Edit age getter function in **return Period.between(this.dob, LocalDate.now()).getYears();**
- Generate toString function
- Now build the Project and check table creation
- Insert Data into users table in phpmyadmin. We will insert it later by API

Configure UserRepository

- Open src → main → java → com → advpro → gpbtest → repository→ **UserRepository.java**
- Define **UserRepository** as Interface
- Include **@Repository** annotation
  - **@Repository** annotation is used to indicate that the class provides the mechanism for storage, retrieval, search, update and delete operation on objects
- Import Student model

Configure UserService

- Open src → main → java → com → advpro → gpbtest → service→**UserService.java**
- Include **@Service** annotation
  - **@Service** annotation is it can be applied only to classes. It is used to mark the class as a service provider
- Declare private **UserRepository** in **UserService** Class
- Define constructor with **userRepository** parameter
- Create getUsers() function to fetch data
- Create **BaseController** in controller folder (we will use it for future purpose)

Configure UserController

- Open src → main → java → com → advpro → gpbtest → controller→**UserController.java**
- Declare private UserService
- Create constructor class with **UserService** parameter
- Include annotation of **@RestController**, **@RequestMapping** **@Override**
- Create getUsers function and call **userservice.getUser()**

Change Web service to Build Service

- Inside pom.xml file. Go to <dependencies> section. change the spring-boot-starter artifactid

```
<artifactId>spring-boot-starter</artifactId>
```

to

```
<artifactId>spring-boot-starter-web</artifactId>
```

- Run **./mvnw spring-boot:run** again browse http://localhost:8080/api/users/list to see the result.
- Download the project from github https://github.com/zawadul-00032/gpbtest . You need permission to download this project. DM me your email id and I'll provide you the access.