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PW 02 : Setting Up the Spring Boot Development Environment in Vs-Code

Objective:

1. Set up the Spring Boot environment in VS-Code
2. Create a basic Spring Boot project,
3. Run it to ensure everything is working.

Requirements:

1. Install Java Development Kit (JDK).
2. Install Maven.
3. Set up Visual Studio Code (VS Code) for Spring Boot development.
4. Create a Spring Boot project using Spring Initializr.
5. Run the project in VS Code.

Step 1: Install Java Development Kit (JDK)

Ensure you have Java installed

Download and Install JDK:

- Visit *Oracle's JDK download page* or use *AdoptOpenJDK* for an open-source version.
- Install it by following the instructions. In preference install JDK17.

Verify the installation:

- Open a terminal and run:

```
java -version
```

  You should see the version of Java installed.

Step 2: Install Maven

Maven is required to manage dependencies and build the project.

- **Download and Install Maven:**
  - Download from the *Maven website* and install.

  - Set the `MAVEN_HOME` environment variable, and add Maven's `bin` folder to the `PATH`.
- **Verify Maven installation:**
  - Open the terminal and run:

    ```
    mvn -v
    ```

    It should display the Maven version.

Step 3: Set Up VS Code for Spring Boot

You'll need to install extensions in VS Code to support Java and Spring Boot.

- **Install VS Code:**
  - Download VS Code .
- **Install the Java Extension Pack:**
  1. Open VS Code.
  2. Go to the **Extensions** view by clicking on the square icon in the sidebar or press `Ctrl + Shift + X`.
  3. Search for "**Java Extension Pack**" and install it. This will install support for Java, Maven, and debugging.
- **Install Spring Boot Extension Pack:**

0. Search for "**Spring Boot Extension Pack**" in the Extensions view.
1. Install it to get support for Spring Boot development and boot dashboard.

Step 4: Create a Basic Spring Boot Project Using Spring Initializr

Spring Initializr helps you quickly set up a Spring Boot project.

- **Using the Spring Initializr Extension in VS Code:**
  1. Open VS Code.
  2. Open the **Command Palette** (`Ctrl + Shift + P`).
  3. Search for **Spring Initializr: Generate a Maven Project** and select it.
  4. Choose the following options:
     - **Group Id**: `com.example`
     - **Artifact Id**: `demo`
     - **Name**: `spring-boot-demo`
     - **Dependencies**: Select **Spring Web**.
  5. After generating the project, VS Code will prompt you to open it in the editor.

Step 5: Run the Spring Boot Application in VS Code

- **Open the Project:**
  - If the project isn’t already open, navigate to the generated folder and open it in VS Code.
- **Run the Application:**
  1. Open the **Command Palette** (`Ctrl + Shift + P`).
  2. Search for **Maven: Execute Commands**.
  3. Select **spring-boot**

     from the available options.

Alternative way:

- You can also use the built-in terminal in VS Code to run:

  ```
  mvn spring-boot:run
  ```

Step 6: Verify the Application

- Open your browser and go to `http://localhost:8080`.
- You should see a simple Spring Boot welcome page or a 404 error (if no controller is defined).

2. Create a basic Spring Boot project:

We are going to create a basic Spring Boot project "Hello, World" when accessed and run it to ensure everything is working.

Step 1: Set Up Your Spring Boot Project

- Follow the steps in **Practical Work 2** to create a Spring Boot project using Spring Initializr.
- Select the **Spring Web** dependency during project setup.

Step 2: Create a Controller for "Hello, World"

1. In the **src/main/java/com/example/demo** directory, create a new Java class called `HelloController.java`.
2. Add the following code to `HelloController.java`:

   ```
   package com.example.demo;

   import org.springframework.web.bind.annotation.GetMapping;
   import org.springframework.web.bind.annotation.RestController;

   @RestController
   public class HelloController {

       @GetMapping("/hello")
   ```

```
    public String hello() {
        return "Hello, World!";
    }
}
```

Explanation:

- `@RestController`: Marks this class as a Spring MVC controller where each method returns a JSON or String response.
- `@GetMapping("/hello")`: Maps the `/hello` URL to the `hello()` method.
- `hello()`: Returns the string `"Hello, World!"` when the `/hello` endpoint is accessed.

3. Run it to ensure everything is working.

Step 3: Run the Application

- **Using Maven in VS Code:**
  1. Open the **Command Palette** (`Ctrl + Shift + P`).
  2. Search for **Maven: Execute Commands**.
  3. Select **spring-boot**

     from the options.
- **Alternatively:** Open the terminal in VS Code and run:

```
mvn spring-boot:run
```

Step 4: Test the Application

- Open your browser and navigate to: `http://localhost:8080/hello`.
- You should see the message:

```
Hello, World!
```