# Challenge 3 – API Development and CRUD Operations

**1. Setup Your Development Environment**

**Install JDK:**

* Ensure you have the Java Development Kit (JDK) installed. You'll need JDK 8 or higher.
* Verify installation by running java -version and javac -version in your terminal. This should return the installed versions.

**Choose an Integrated Development Environment (IDE) such as IntelliJ IDEA, or Visual Studio Code (with Java support and copilot enabled)**

**Set Up Maven or Gradle:**

* Maven and Gradle are build automation tools that help manage project dependencies.
* Install Maven or Gradle if they aren't already installed.
* Set up your project as a Maven or Gradle project in your IDE. This will create the necessary project structure.

**2. Create a New Java Project**

**3. Add required dependencies**

Dependencies are external libraries that your project needs to function. They are managed through pom.xml for Maven or build.gradle for Gradle.

**Spring Boot:**

* Add Spring Boot, a framework for building RESTful APIs in Java.
* For Maven, add the spring-boot-starter-web dependency to your pom.xml.
* Spring Boot simplifies application development by providing pre-configured templates

**4. Create the Model Class for the following JSON**

[

    {

        "id": "1",

        "name": "Laptop",

        "description": "A high-performance laptop suitable for gaming and work.",

        "price": 1200.00

    },

    {

        "id": "2",

        "name": "Smartphone",

        "description": "A latest-generation smartphone with a large display and powerful camera.",

        "price": 800.00

    },

    {

        "id": "3",

        "name": "Wireless Headphones",

        "description": "Noise-cancelling wireless headphones with long battery life.",

        "price": 200.00

    },

    {

        "id": "4",

        "name": "Smartwatch",

        "description": "A smartwatch with fitness tracking and customizable watch faces.",

        "price": 150.00

    },

    {

        "id": "5",

        "name": "Tablet",

        "description": "A lightweight tablet with a sharp display, ideal for reading and browsing.",

        "price": 300.00

    }

]

**5. Read and Write to the JSON file**

**6. Perform CRUD operations using REST Controller**

**GET, PUT, POST, DELETE using the annotations**

* GET /api/items: Retrieve all items.
* GET /api/items/{id}: Retrieve an item by its ID.
* POST /api/items: Create a new item.
* PUT /api/items/{id}: Update an existing item.
* DELETE /api/items/{id}: Delete an item.

**7. Add Exception handling**

# Challenge 4 – Improve UI

1. Display the data In the table format on UI
2. Perform CRUD operations

# Challenge 5 – Add Test Cases

1. Write the test cases for the GET, POST, PUT and DELETE operations
2. Include edge cases and null conditions
3. Run the test cases