Spring Data JPA - Insert Data in MySQL Table

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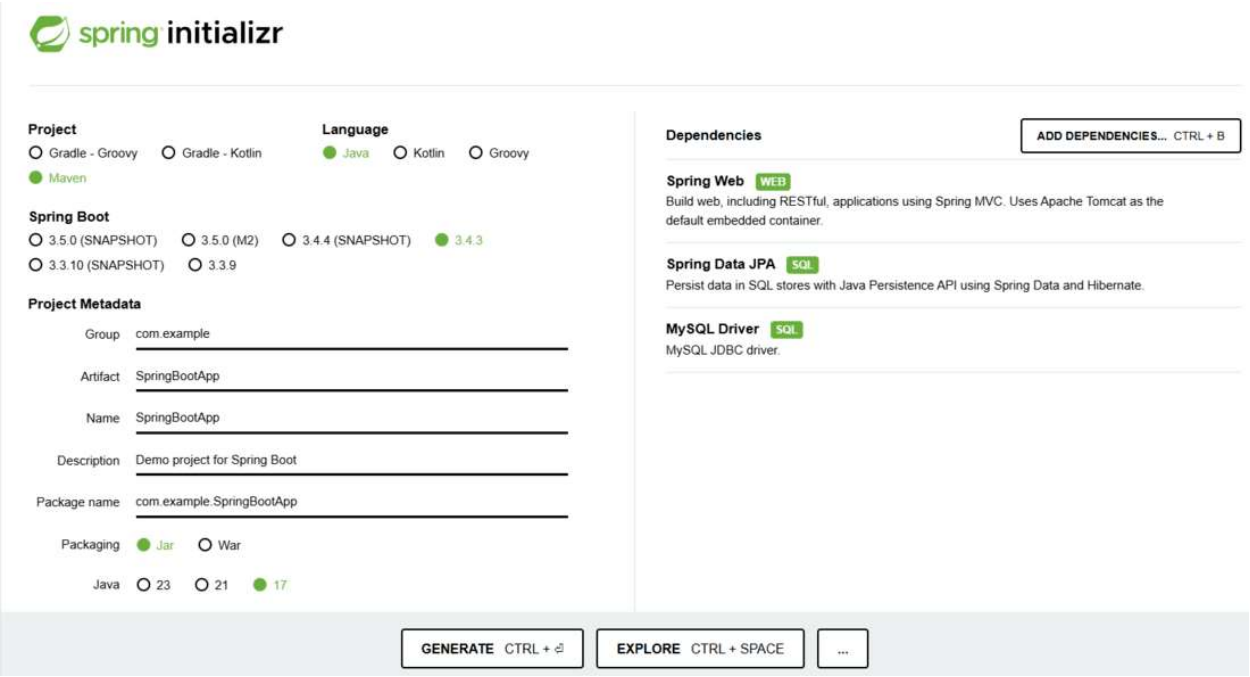
Spring Data JPA makes it easy to work with databases in Spring Boot by reducing the need for boilerplate code. It provides built-in methods to perform operations like inserting, updating, and deleting records in a MySQL table. In this article, we will see how to insert data into a MySQL database using Spring Boot, Spring Data JPA, and Hibernate with the **save()** method of **JpaRepository**.

> *JPARepositery<>.save() method is used for inserting the values in the MySQL table.*

Step By Step Implementation

Step 1: Create a Spring Boot Project

- Go to Spring Initializr.
- Select Spring Boot Version 3.x.
- Add the following dependencies:
  - Spring Web
  - Spring Data JPA
  - MySQL Driver



Click Generate, download the project, and extract it.

Step 2: Configure pom.xml

Ensure your pom.xml includes the latest Spring Boot version and Java 17+.

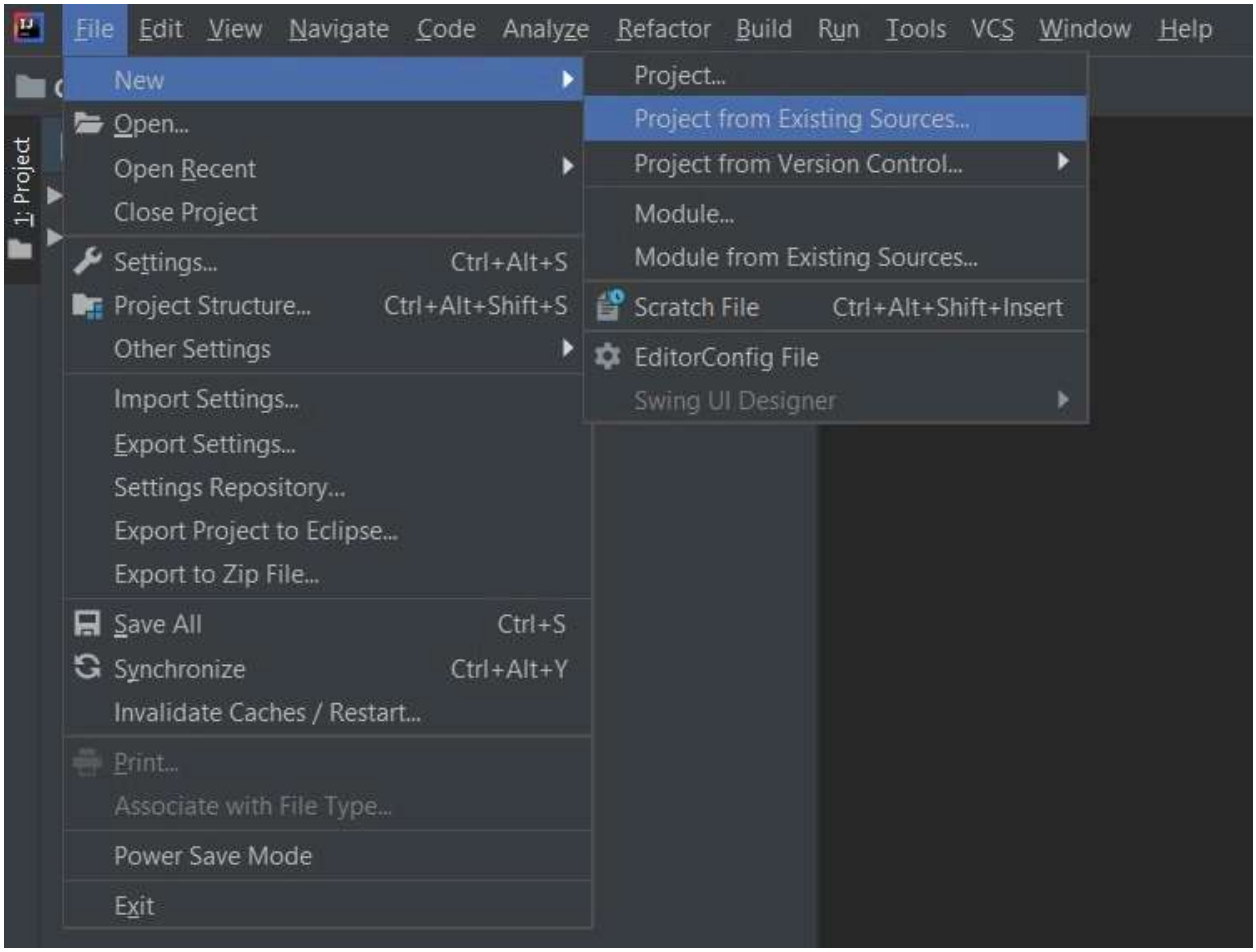
```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="https://maven.apache.org/POM/4.0.0"
xmlns:xsi="https://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="https://maven.apache.org/POM/4.0.0
https://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <parent>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-parent</artifactId>
        <version>3.2.0</version> <!-- Latest Spring Boot version -->
    <relativePath/>
    </parent>
     <properties>
        <java.version>17</java.version>
     </properties>
    <dependencies>
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-data-jpa</artifactId>
    </dependency>
    <dependency>
        <groupId>org.springframework.boot</groupId>
        <artifactId>spring-boot-starter-web</artifactId>
    </dependency>
    <dependency>
```

```
        <groupId>mysql</groupId>
        <artifactId>mysql-connector-j"va</artifactId>
        <scope>runtime</scope>
    </dependency>
    </dependencies>
        <dependency>
            <groupId>org.springframework.boot</groupId>
            <artifactId>spring-boot-starter-test</artifactId>
            <scope>test</scope>
        </dependency>
    </dependencies>

    <build>
        <plugins>
            <plugin>
                <groupId>org.springframework.boot</groupId>
                <artifactId>spring-boot-maven-plugin</artifactId>
            </plugin>
        </plugins>
    </build>

</project>
```

Extract the zip file. Now open a suitable IDE and then go to File->New->Project from Existing Sources and select pom.xml. Click on import changes on prompt and wait for the project to sync



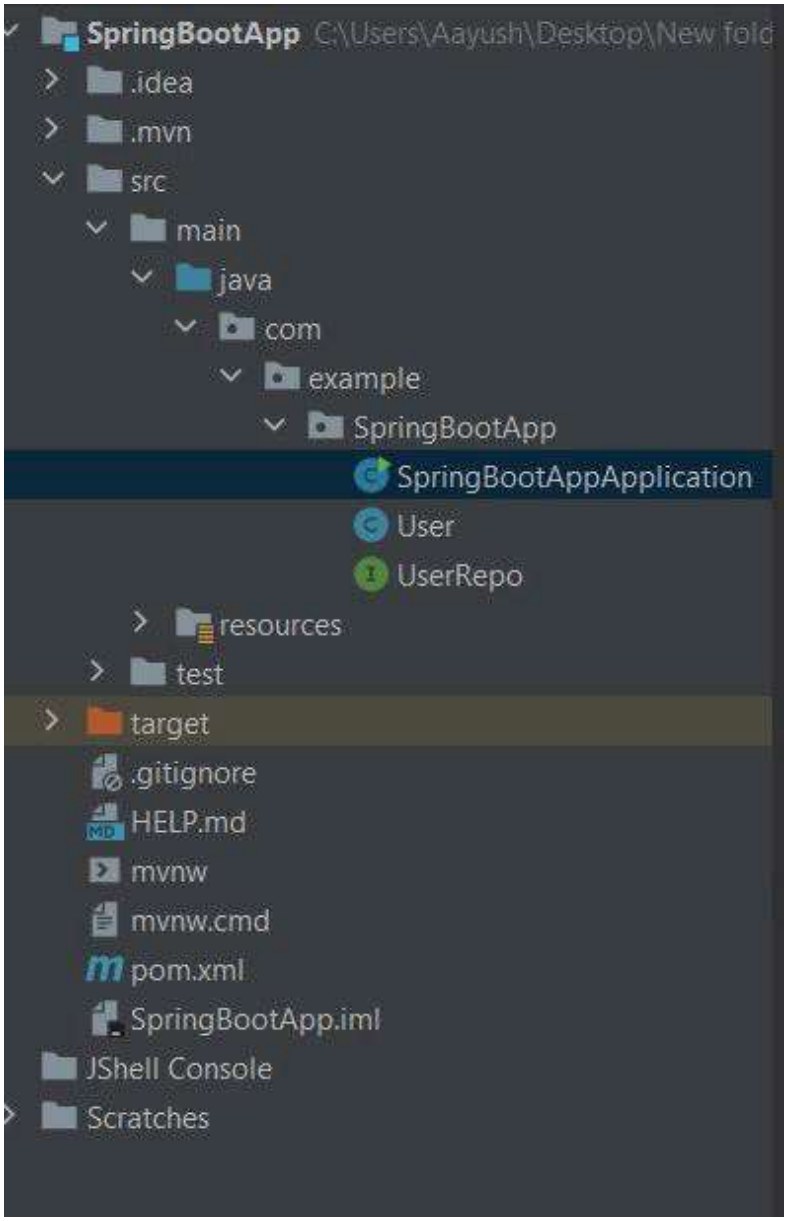
> ***Note**: In the Import Project for Maven window, make sure you choose the same version of JDK which you selected while creating the project.*

Step 3: Configure `application.properties for Database Configuration`

application.properties file:

```
spring.datasource.url=jdbc:mysql://localhost:3306/user_db
spring.datasource.username=${DB_USERNAME}
spring.datasource.password=${DB_PASSWORD}
spring.jpa.hibernate.ddl-auto=update
spring.jpa.show-sql=true
```

Project Structure:



Define the Entity and Repository

Step 4: Create User Entity

Use Lombok for cleaner code and JPA annotations for table mapping.

```
import jakarta.persistence.*;
import lombok.*;

@Entity
@Table(name = "users")
@Getter
@Setter
```

```
@NoArgsConstructor
@AllArgsConstructor
public class User {
    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private int id;

    @Column(nullable = false)
    private String name;
}
```

Step 5: Create UserRepository

```
import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.stereotype.Repository;

@Repository
public interface UserRepository extends JpaRepository<User, Integer> {
}
```

Insert Data into MySQL

Step 6: Create Spring Boot Main Class

```
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.CommandLineRunner;
import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication
public class SpringBootAppApplication implements CommandLineRunner {

    @Autowired
    private UserRepository userRepository;

    public static void main(String[] args) {
        SpringApplication.run(SpringBootAppApplication.class, args);
    }

    @Override
    public void run(String... args) throws Exception {
        User firstUser = new User();
```

```
        firstUser.setName("Aayush");

        userRepository.save(firstUser);
    }
}
```

Running the Application

The application will start, and data will be inserted into MySQL.

Output:

```
: Starting SpringBootAppApplication using Java 16.0.2 on LAPTOP-0P6DDSCR w
: No active profile set, falling back to default profiles: default
: Bootstrapping Spring Data JPA repositories in DEFAULT mode.
: Finished Spring Data repository scanning in 71 ms. Found 1 JPA repositor
: Tomcat initialized with port(s): 8080 (http)
: Starting service [Tomcat]
: Starting Servlet engine: [Apache Tomcat/9.0.55]
: Initializing Spring embedded WebApplicationContext
: Root WebApplicationContext: initialization completed in 2579 ms
: HHH000204: Processing PersistenceUnitInfo [name: default]
: HHH000412: Hibernate ORM core version 5.6.1.Final
: HCANN000001: Hibernate Commons Annotations {5.1.2.Final}
: HikariPool-1 - Starting...
: HikariPool-1 - Start completed.
: HHH000400: Using dialect: org.hibernate.dialect.MySQL8Dialect
: HHH000490: Using JtaPlatform implementation: [org.hibernate.engine.trans
: Initialized JPA EntityManagerFactory for persistence unit 'default'
: spring.jpa.open-in-view is enabled by default. Therefore, database queri
: Tomcat started on port(s): 8080 (http) with context path ''
: Started SpringBootAppApplication in 7.005 seconds (JVM running for 7.627
```

Database Output:

Verify the inserted data by running the SQL query:

*SELECT * FROM users;*

```
mysql> show tables;
+----------------------+
| Tables_in_insertdata |
+----------------------+
| hibernate_sequence   |
| user                 |
+----------------------+
2 rows in set (0.01 sec)

mysql> select * from user;
+----+--------+
| id | name   |
+----+--------+
|  1 | Aayush |
+----+--------+
1 row in set (0.00 sec)
```