ACTIVITY PERTEMUAN 5

NAMA : FX Edrianto Putra Wijaya

NPM : 50421537

KELAS : 4IA13

MATERI : Spring dan hibernate

MATA PRAKTIKUM : Rekayasa Perangkat Lunak 2

(Screenshoot langkah-langkah sesuai video pembelajaran dan jelaskan dengan ringkas)

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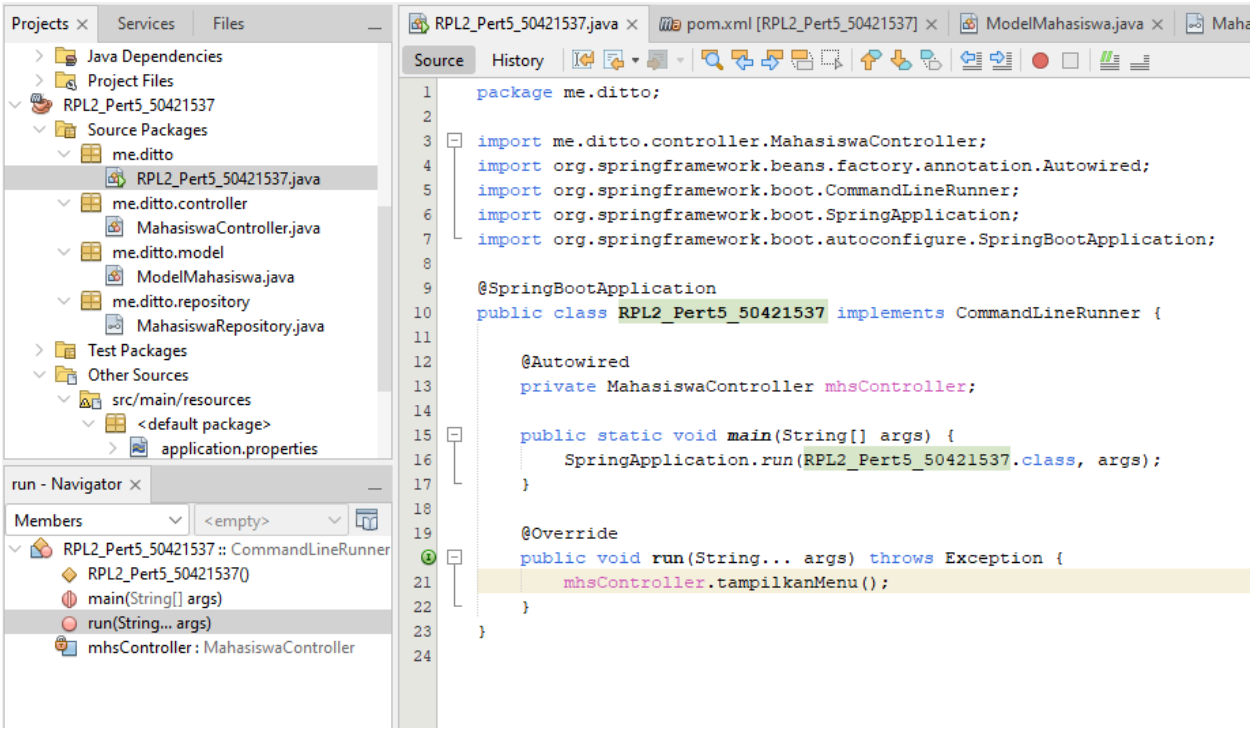
1. Berikut adalah kenapa DI sangat penting dalam pengembangan aplikasi berbasis Spring boot :
    a. **Meningkatkan Keterpisahan Kode (Loose Coupling)**: DI memungkinkan objek saling berinteraksi tanpa saling ketergantungan secara langsung, sehingga lebih mudah diubah atau diganti.
    b. **Mudah dalam Pengujian (Testing)**: DI memungkinkan objek diganti dengan mock atau objek tiruan, sehingga mempermudah pengujian unit.
    c. **Pengelolaan Objek Lebih Baik**: DI di Spring Boot membantu mengelola objek secara otomatis, sehingga tidak perlu membuat dan mengelola objek secara manual.
    d. **Mempermudah Pengembangan dan Pemeliharaan**: Dengan mengurangi ketergantungan, perubahan di satu bagian kode tidak akan terlalu berdampak pada bagian lain, membuat aplikasi lebih mudah dipelihara.

2. SS kodingan :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application.properties
run - Navigator
Members
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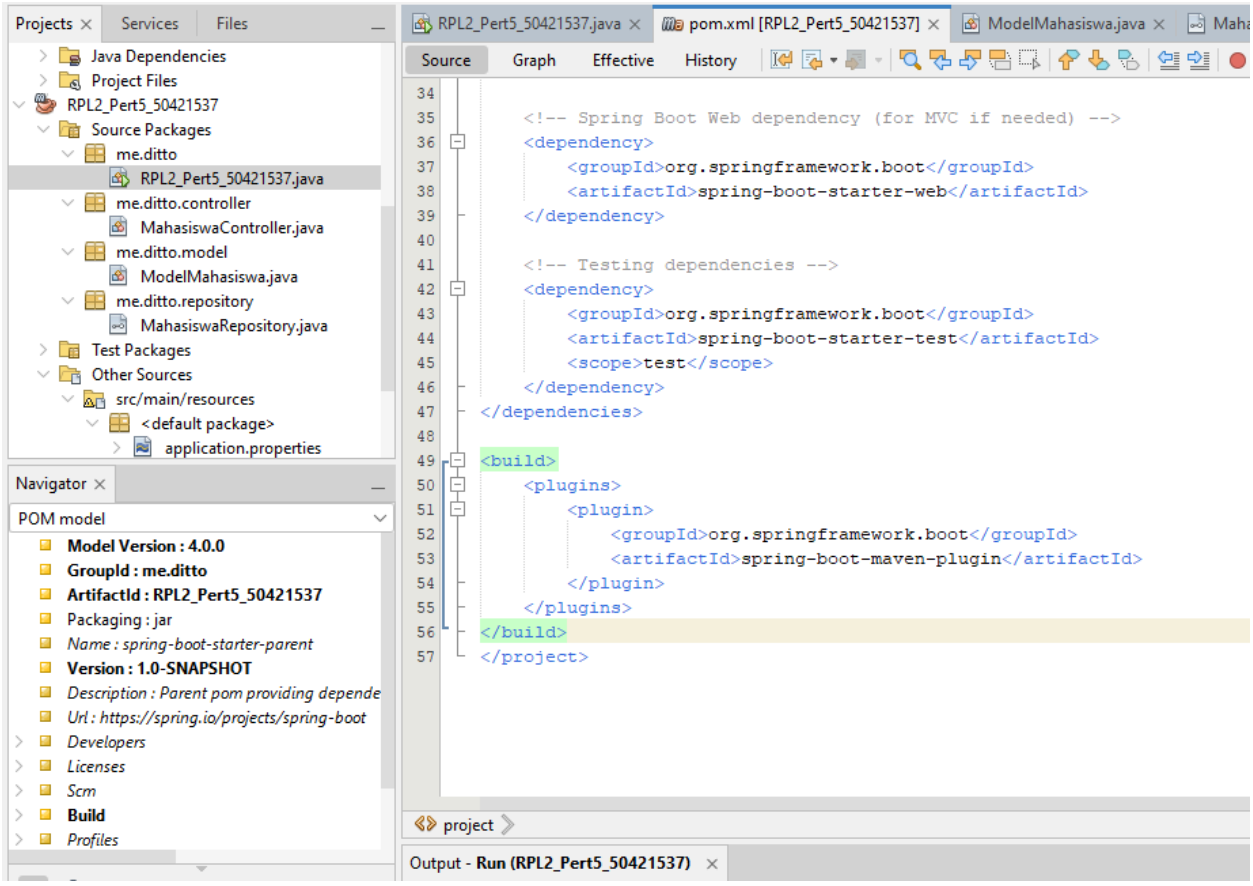
RPL2_Pert5_50421537 :: CommandLineRunner
RPL2_Pert5_50421537()
main(String[] args)
run(String... args)
mhsController : MahasiswaController
RPL2_Pert5_50421537.java
pom.xml [RPL2_Pert5_50421537]
ModelMahasiswa.java
Source
History
1 package me.ditto;
2
3 import me.ditto.controller.MahasiswaController;
4 import org.springframework.beans.factory.annotation.Autowired;
5 import org.springframework.boot.CommandLineRunner;
6 import org.springframework.boot.SpringApplication;
7 import org.springframework.boot.autoconfigure.SpringBootApplication;
8
9 @SpringBootApplication
10 public class RPL2_Pert5_50421537 implements CommandLineRunner {
11
12 @Autowired
13 private MahasiswaController mhsController;
14
15 public static void main(String[] args) {
16 SpringApplication.run(RPL2_Pert5_50421537.class, args);
17 }
18
19 @Override
20 public void run(String... args) throws Exception {
21 mhsController.tampilkanMenu();
22 }
23 }
24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POM model
Model Version : 4.0.0
GroupId : me.ditto
ArtifactId : RPL2_Pert5_50421537
Packaging : jar
Name : spring-boot-starter-parent
Version : 1.0-SNAPSHOT
Description : Parent pom providing depende
Url : https://spring.io/projects/spring-boot
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Licenses
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pom.xml [RPL2_Pert5_50421537]
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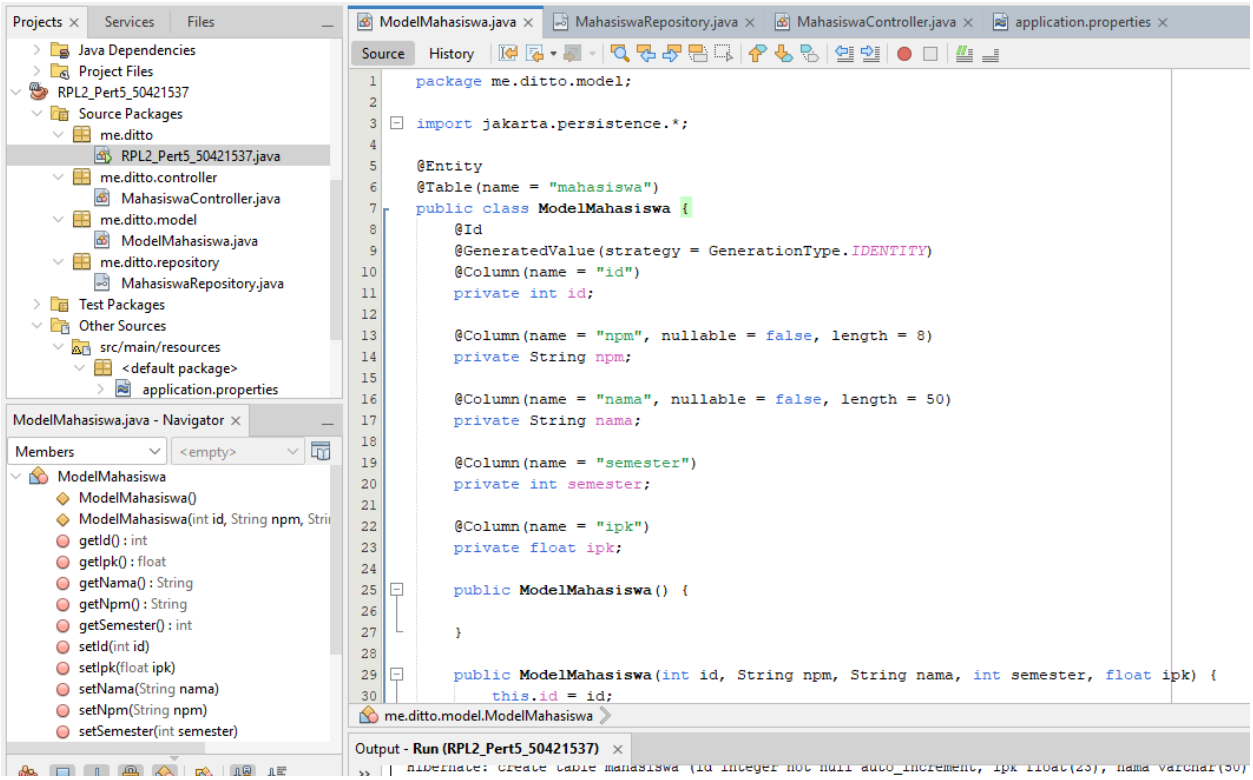
34
35 <!-- Spring Boot Web dependency (for MVC if needed) -->
36 <dependency>
37 <groupId>org.springframework.boot</groupId>
38 <artifactId>spring-boot-starter-web</artifactId>
39 </dependency>
40
41 <!-- Testing dependencies -->
42 <dependency>
43 <groupId>org.springframework.boot</groupId>
44 <artifactId>spring-boot-starter-test</artifactId>
45 <scope>test</scope>
46 </dependency>
47 </dependencies>
48
49 <build>
50 <plugins>
51 <plugin>
52 <groupId>org.springframework.boot</groupId>
53 <artifactId>spring-boot-maven-plugin</artifactId>
54 </plugin>
55 </plugins>
56 </build>
57 </project>
project
Output - Run (RPL2_Pert5_50421537)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ModelMahasiswa.java - Navigator
Members
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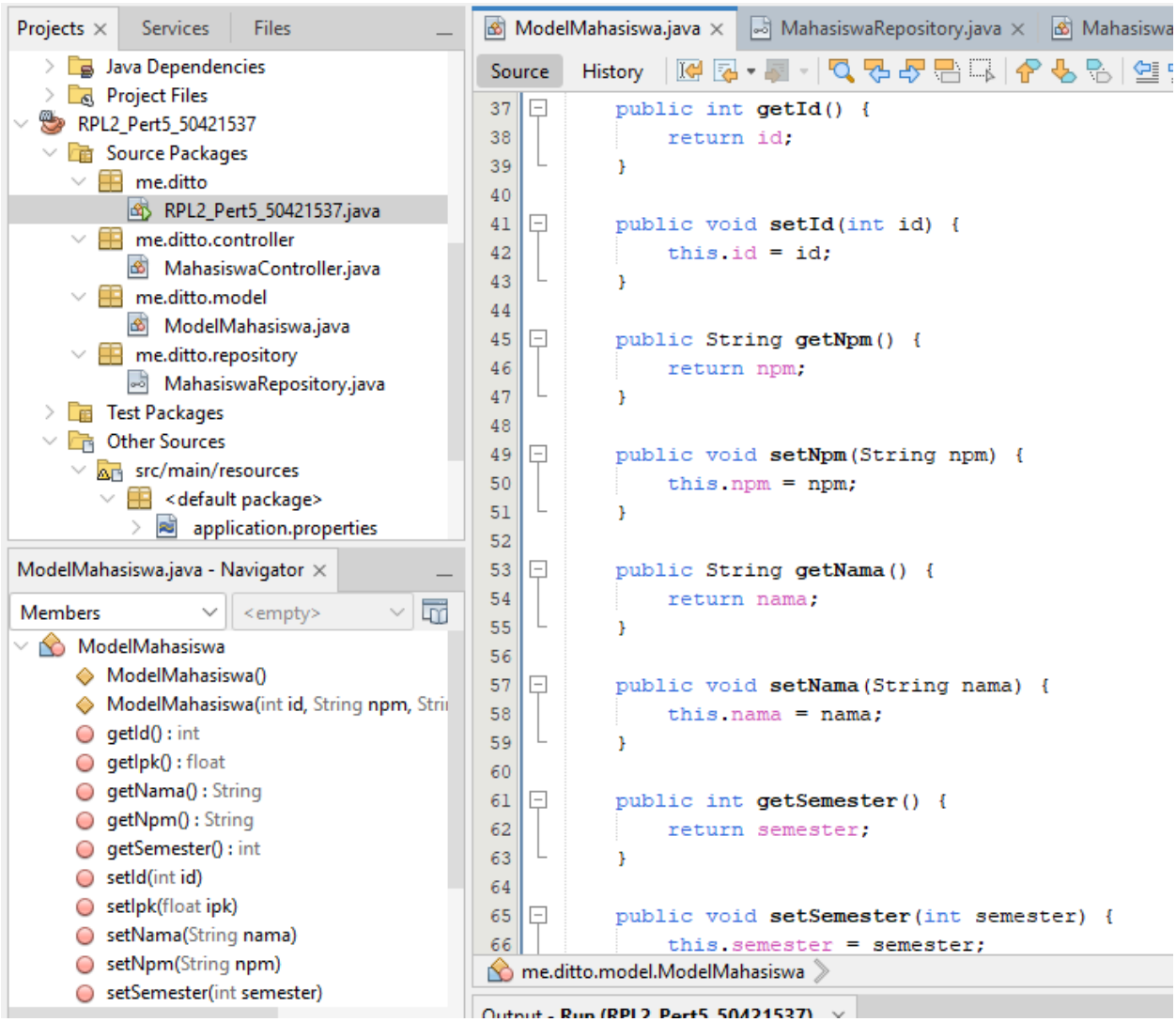
ModelMahasiswa
ModelMahasiswa()
ModelMahasiswa(int id, String npm, Stri
getId() : int
getIpk() : float
getNama() : String
getNpm() : String
getSemester() : int
setId(int id)
setIpk(float ipk)
setNama(String nama)
setNpm(String npm)
setSemester(int semester)
ModelMahasiswa.java
MahasiswaRepository.java
MahasiswaController.java
application.properties
Source
History
1 package me.ditto.model;
2
3 import jakarta.persistence.*;
4
5 @Entity
6 @Table(name = "mahasiswa")
7 public class ModelMahasiswa {
8 @Id
9 @GeneratedValue(strategy = GenerationType.IDENTITY)
10 @Column(name = "id")
11 private int id;
12
13 @Column(name = "npm", nullable = false, length = 8)
14 private String npm;
15
16 @Column(name = "nama", nullable = false, length = 50)
17 private String nama;
18
19 @Column(name = "semester")
20 private int semester;
21
22 @Column(name = "ipk")
23 private float ipk;
24
25 public ModelMahasiswa() {
26
27 }
28
29 public ModelMahasiswa(int id, String npm, String nama, int semester, float ipk) {
30 this.id = id;
me.ditto.model.ModelMahasiswa
Output - Run (RPL2_Pert5_50421537)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ModelMahasiswa()
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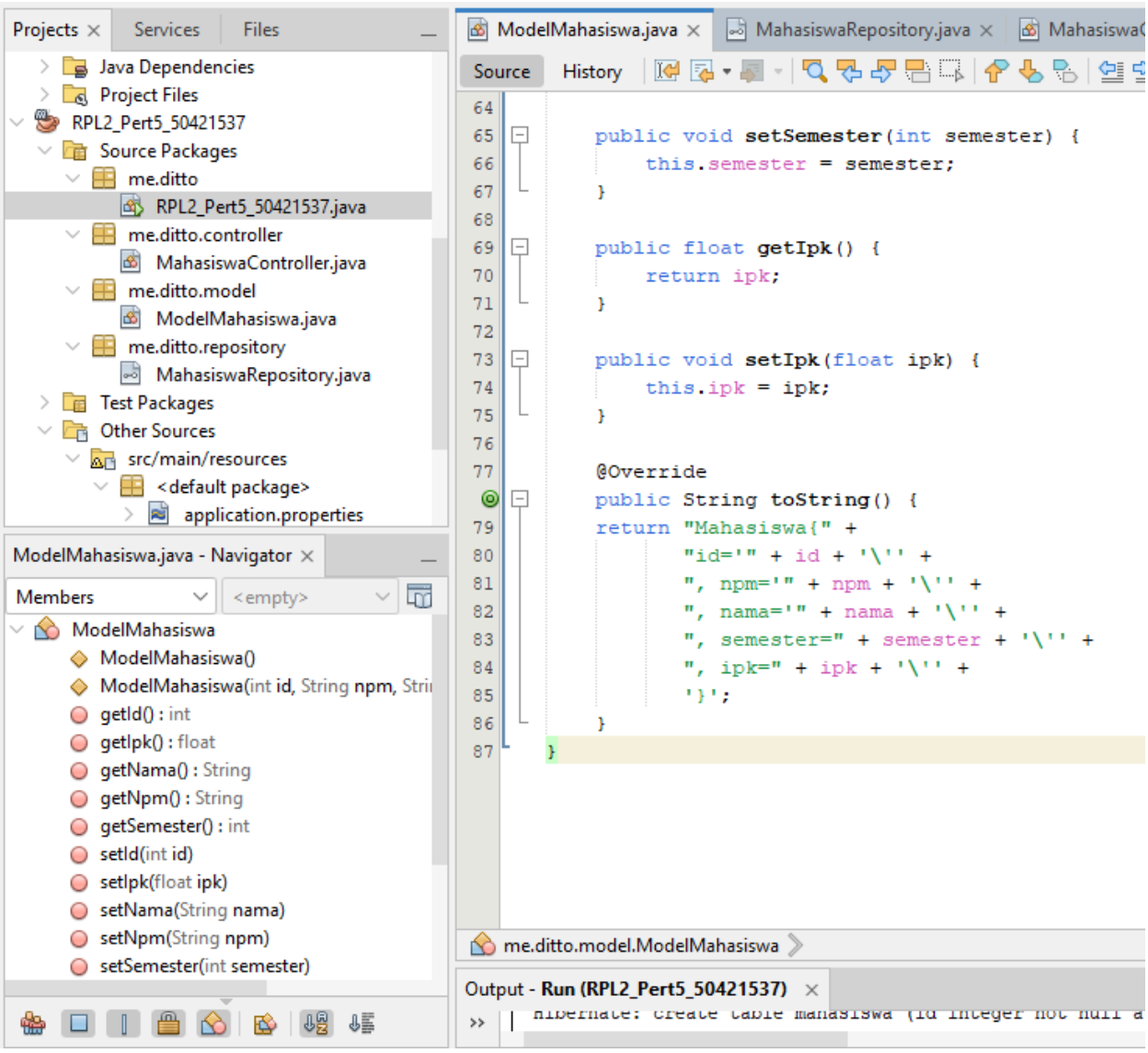
getId() : int
getIpk() : float
getNama() : String
getNpm() : String
getSemester() : int
setId(int id)
setIpk(float ipk)
setNama(String nama)
setNpm(String npm)
setSemester(int semester)
ModelMahasiswa.java
MahasiswaRepository.java
Source
History
37 public int getId() {
38 return id;
39 }
40
41 public void setId(int id) {
42 this.id = id;
43 }
44
45 public String getNpm() {
46 return npm;
47 }
48
49 public void setNpm(String npm) {
50 this.npm = npm;
51 }
52
53 public String getNama() {
54 return nama;
55 }
56
57 public void setNama(String nama) {
58 this.nama = nama;
59 }
60
61 public int getSemester() {
62 return semester;
63 }
64
65 public void setSemester(int semester) {
66 this.semester = semester;
me.ditto.model.ModelMahasiswa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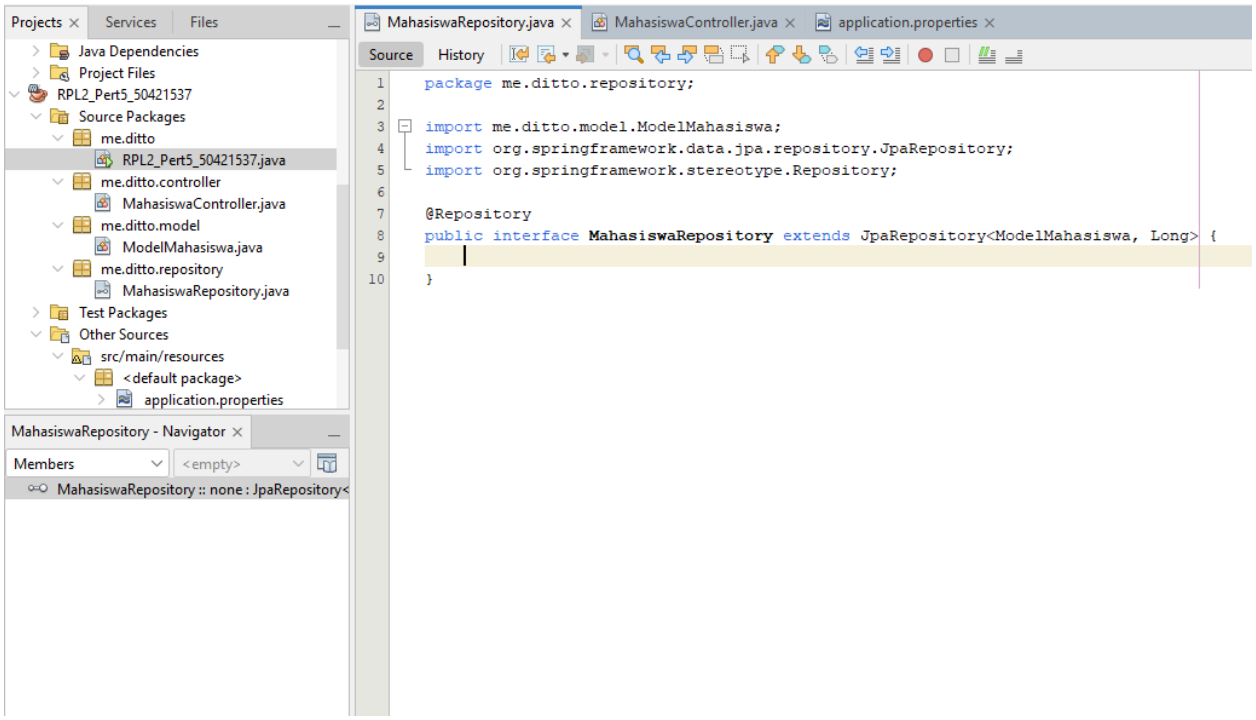
getIpk() : float
getNama() : String
getNpm() : String
getSemester() : int
setId(int id)
setIpk(float ipk)
setNama(String nama)
setNpm(String npm)
setSemester(int semester)
ModelMahasiswa.java
MahasiswaRepository.java
Source
History
64
65 public void setSemester(int semester) {
66 this.semester = semester;
67 }
68
69 public float getIpk() {
70 return ipk;
71 }
72
73 public void setIpk(float ipk) {
74 this.ipk = ipk;
75 }
76
77 @Override
79 public String toString() {
80 return "Mahasiswa{" +
81 "id='" + id + '\'' +
82 ", npm='" + npm + '\'' +
83 ", nama='" + nama + '\'' +
84 ", semester=" + semester + '\'' +
85 ", ipk=" + ipk + '\'' +
86 '}';
87 }
}
me.ditto.model.ModelMahasiswa
Output - Run (RPL2_Pert5_50421537)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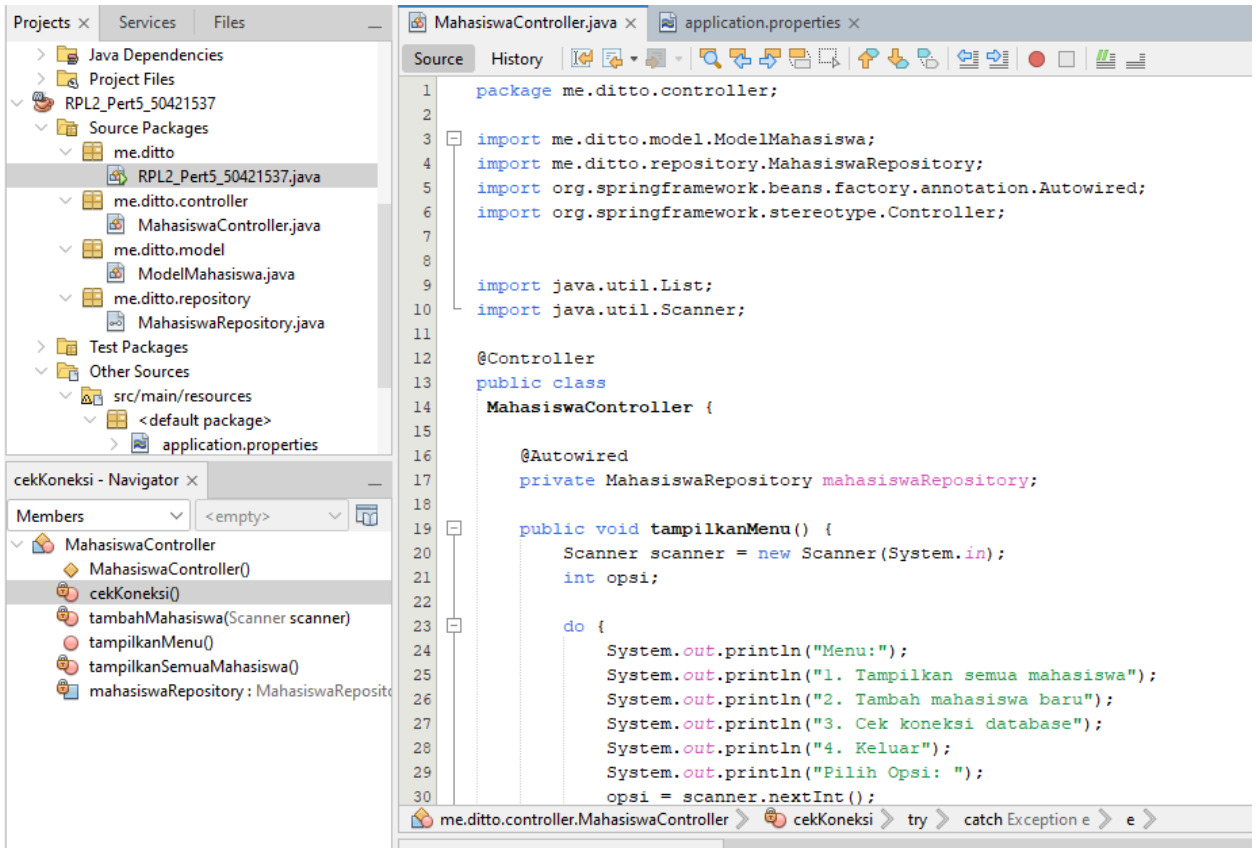
MahasiswaRepository - Navigator
Members
<empty>
MahasiswaRepository :: none : JpaRepository<
MahasiswaRepository.java
MahasiswaController.java
application.properties
Source
History
1 package me.ditto.repository;
2
3 import me.ditto.model.ModelMahasiswa;
4 import org.springframework.data.jpa.repository.JpaRepository;
5 import org.springframework.stereotype.Repository;
6
7 @Repository
8 public interface MahasiswaRepository extends JpaRepository<ModelMahasiswa, Long> {
9
10 }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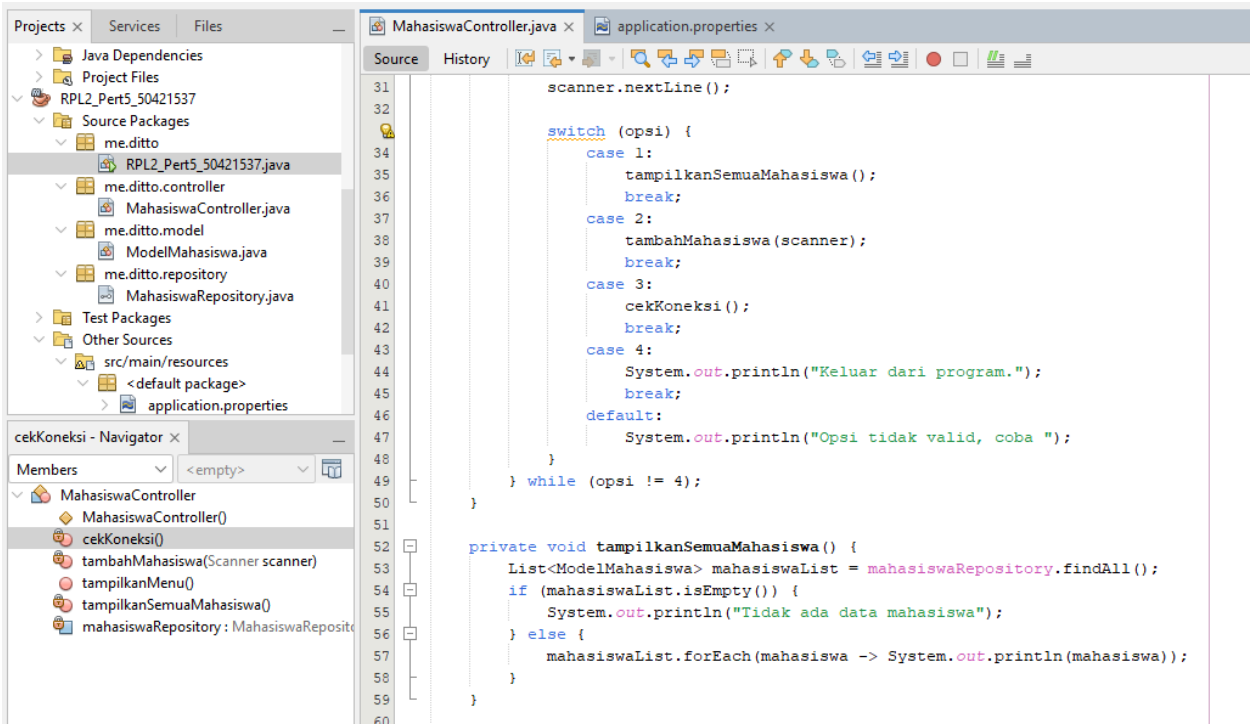
tampilkanMenu()
tampilkanSemuaMahasiswa()
mahasiswaRepository : MahasiswaReposit
MahasiswaController.java
application.properties
Source
History
1 package me.ditto.controller;
2
3 import me.ditto.model.ModelMahasiswa;
4 import me.ditto.repository.MahasiswaRepository;
5 import org.springframework.beans.factory.annotation.Autowired;
6 import org.springframework.stereotype.Controller;
7
8
9 import java.util.List;
10 import java.util.Scanner;
11
12 @Controller
13 public class
14 MahasiswaController {
15
16 @Autowired
17 private MahasiswaRepository mahasiswaRepository;
18
19 public void tampilkanMenu() {
20 Scanner scanner = new Scanner(System.in);
21 int opsi;
22
23 do {
24 System.out.println("Menu:");
25 System.out.println("1. Tampilkan semua mahasiswa");
26 System.out.println("2. Tambah mahasiswa baru");
27 System.out.println("3. Cek koneksi database");
28 System.out.println("4. Keluar");
29 System.out.println("Pilih Opsi: ");
30 opsi = scanner.nextInt();
me.ditto.controller.MahasiswaController
cekKoneksi
try
catch Exception e
e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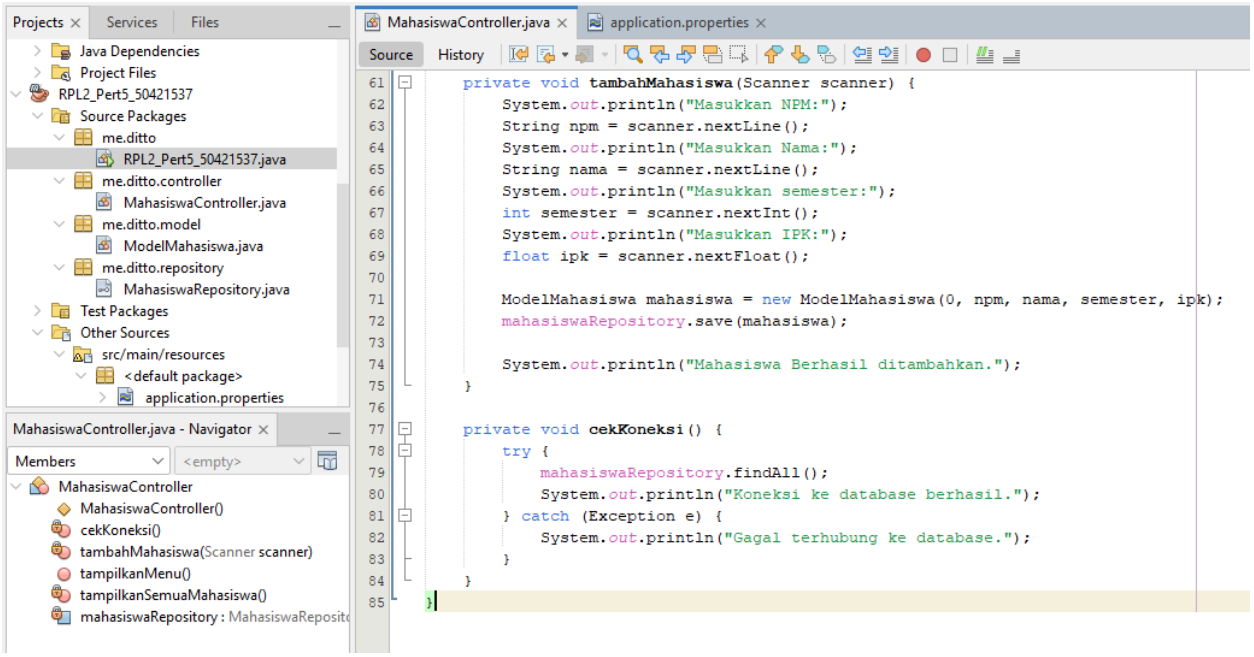
tampilkanSemuaMahasiswa()
mahasiswaRepository : MahasiswaReposit
MahasiswaController.java
application.properties
Source
History
scanner.nextLine();
switch (opsi) {
case 1:
tampilkanSemuaMahasiswa();
break;
case 2:
tambahMahasiswa(scanner);
break;
case 3:
cekKoneksi();
break;
case 4:
System.out.println("Keluar dari program.");
break;
default:
System.out.println("Opsi tidak valid, coba ");
}
} while (opsi != 4);
}
private void tampilkanSemuaMahasiswa() {
List<ModelMahasiswa> mahasiswaList = mahasiswaRepository.findAll();
if (mahasiswaList.isEmpty()) {
System.out.println("Tidak ada data mahasiswa");
} else {
mahasiswaList.forEach(mahasiswa -> System.out.println(mahasiswa));
}
}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tampilkanMenu()
tampilkanSemuaMahasiswa()
mahasiswaRepository : MahasiswaReposit
MahasiswaController.java
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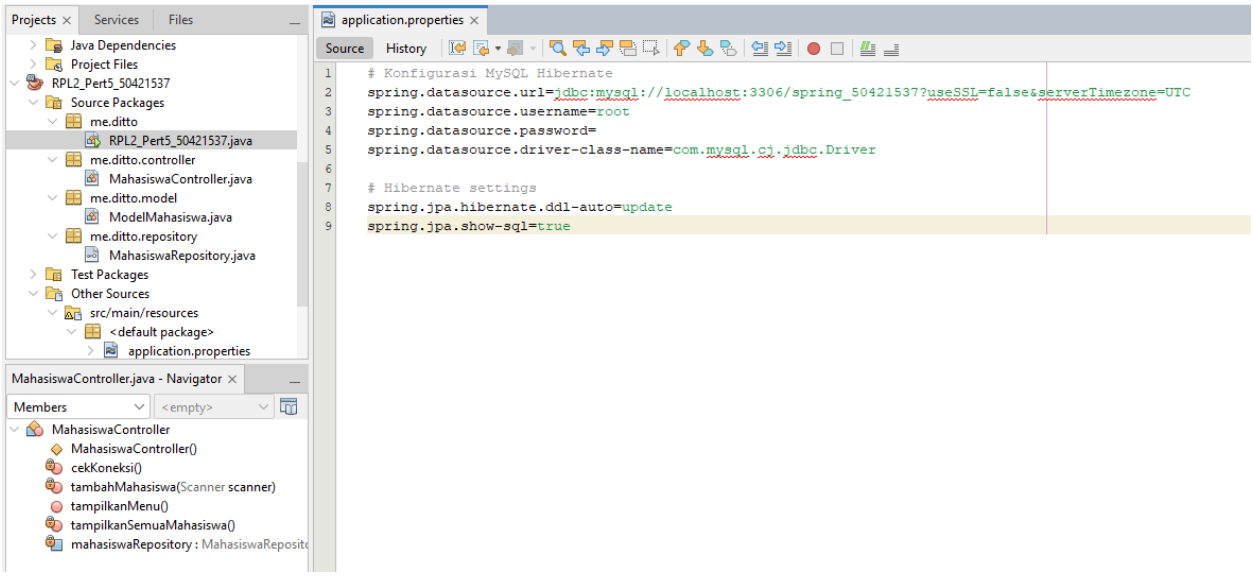
Source
History
private void tambahMahasiswa(Scanner scanner) {
System.out.println("Masukkan NPM:");
String npm = scanner.nextLine();
System.out.println("Masukkan Nama:");
String nama = scanner.nextLine();
System.out.println("Masukkan semester:");
int semester = scanner.nextInt();
System.out.println("Masukkan IPK:");
float ipk = scanner.nextFloat();
ModelMahasiswa mahasiswa = new ModelMahasiswa(0, npm, nama, semester, ipk);
mahasiswaRepository.save(mahasiswa);
System.out.println("Mahasiswa Berhasil ditambahkan.");
}
private void cekKoneksi() {
try {
mahasiswaRepository.findAll();
System.out.println("Koneksi ke database berhasil.");
} catch (Exception e) {
System.out.println("Gagal terhubung ke database.");
}
}
}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tampilkanMenu()
tampilkanSemuaMahasiswa()
mahasiswaRepository : MahasiswaReposit
application.properties
Source
History
1 # Konfigurasi MySQL Hibernate
2 spring.datasource.url=jdbc:mysql://localhost:3306/spring_50421537?useSSL=false&serverTimezone=UTC
3 spring.datasource.username=root
4 spring.datasource.password=
5 spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
6
7 # Hibernate settings
8 spring.jpa.hibernate.ddl-auto=update
9 spring.jpa.show-sql=true