

Tutorial 7 Writeup

A. Rangkuman

Pada tutorial minggu ini, saya mempelajari implementasi web service. Web service merupakan aplikasi yang diakses oleh program lain. Penggunaan web service ini dilakukan melalui interaksi service producer dan service consumer. User akan melakukan interaksi dengan service consumer, kemudian data yang diminta akan disediakan oleh service producer melalui web service. Service producer memiliki REST controller yang mengembalikan object JSON, bukan String seperti controller pada umumnya.

B. Latihan

1) Method viewall

```
@RequestMapping("/student/viewall")
public List<StudentModel> viewall(){
    List<StudentModel> students = studentService.selectAllStudents();
    return students;
}
```

Method viewall pada rest controller akan membuat object students berupa List of StudentModel yang diisi oleh kumpulan student pada database. Kemudian rest controller akan mengembalikan objek students berupa JSON ke web browser.



2) Membuat service dan controller baru untuk kelas Course

```
@RequestMapping("/course/view/{id}")
public CourseModel view(@PathVariable(value="id") String id) {
    CourseModel course = courseService.selectCourse(id);
    return course;
}

@RequestMapping("/course/viewall")
public List<CourseModel> viewall(){
    List<CourseModel> courses = courseService.selectAllCourses();
    return courses;
}
```

Mirip seperti pada latihan 1, pertama-tama saya membuat kelas dan interface baru untuk CourseMapper, CourseService dan CourseServiceDatabase. Setelah itu, saya melengkapi RequestMapping untuk method view course by ID dan viewall pada RestCourseController.

View course by ID:



```
{
  "idCourse": "CSC123",
  "name": "PSP",
  "credits": 4,
  "students": [
    {
      "npm": "22222",
      "name": "budi",
      "gpa": 0.0,
      "courses": null
    },
    {
      "npm": "33333",
      "name": "c",
      "gpa": 0.0,
      "courses": null
    }
  ]
}
```

View all courses:



```
[{"idCourse": "CSC123", "name": "PSP", "credits": 4, "students": [{"npm": "22222", "name": "budi", "gpa": 0.0, "courses": null}, {"npm": "33333", "name": "c", "gpa": 0.0, "courses": null}], {"idCourse": "CSC124", "name": "SDA", "credits": 3, "students": [{"npm": "33333", "name": "c", "gpa": 0.0, "courses": null}], {"idCourse": "CSC125", "name": "DDP1", "credits": 4, "students": [{"npm": "22222", "name": "budi", "gpa": 0.0, "courses": null}], {"idCourse": "CSC126", "name": "MPKT", "credits": 6, "students": [{"npm": "22222", "name": "budi", "gpa": 0.0, "courses": null}]}]
```

```
[{"idCourse": "CSC123", "name": "PSP", "credits": 4, "students": [{"npm": "22222", "name": "budi", "gpa": 0.0, "courses": null}, {"npm": "33333", "name": "c", "gpa": 0.0, "courses": null}], {"idCourse": "CSC124", "name": "SDA", "credits": 3, "students": [{"npm": "33333", "name": "c", "gpa": 0.0, "courses": null}], {"idCourse": "CSC125", "name": "DDP1", "credits": 4, "students": [{"npm": "22222", "name": "budi", "gpa": 0.0, "courses": null}], {"idCourse": "CSC126", "name": "MPKT", "credits": 6, "students": [{"npm": "22222", "name": "budi", "gpa": 0.0, "courses": null}]}
```

3) Implementasi service consumer untuk view all Students

```
@Override
public List<StudentModel> selectAllStudents() {
    List<StudentModel> students = restTemplate.getForObject("http://localhost:8080/rest/student/viewall", List.class);
    return students;
}

@Override
public List<StudentModel> selectAllStudents() {
    log.info("REST - select all students");
    return studentDAO.selectAllStudents();
}
```

Untuk mengimplementasikan method viewall Students, saya membuat method pada service StudentDAOImpl untuk consume object REST web service. Method getForObject digunakan dengan menerima URL producer web service <http://localhost:8080/rest/student/viewall> dan tipe class List. Kemudian saya melengkapi implementasi selectAllStudents() pada kelas StudentServiceRest.

Simahasiswa

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All Students

Show 10 entries Search:

No	NPM	Name	GPA	Status	Update	Delete
1	22222	budi	4.0	Cum Laude!	Update Data	Delete Data
2	33333	c	3.33	Sangat memuaskan!	Update Data	Delete Data

Showing 1 to 2 of 2 entries Previous 1 Next

4) Implementasi service consumer untuk kelas CourseModel

Pertama-tama, saya membuat interface CourseDAO

```
public interface CourseDAO {
    CourseModel selectCourse (String idCourse);
    List<CourseModel> selectAllCourses ();
}
```

Setelah itu, saya mengimplementasikan interface tersebut pada kelas CourseDAOImpl dan membuat method yang sesuai

```
@Override
public CourseModel selectCourse(String idCourse) {
    CourseModel course = restTemplate.getForObject("http://localhost:8080/rest/course/view/" + idCourse,
        CourseModel.class);
    return course;
}

@Override
public List<CourseModel> selectAllCourses() {
    List<CourseModel> courses = restTemplate.getForObject("http://localhost:8080/rest/course/viewall", List.class);
    return courses;
}
```

Setelah itu, saya membuat interface CourseService

```
public interface CourseService {
    CourseModel selectCourse(String idCourse);
    List<CourseModel> selectAllCourses();
}
```

Untuk mengambil data dari web service, maka perlu dibuat kelas CourseServiceRest yang mengimplementasi CourseService.

```
@Slf4j
@Service
@Primary
public class CourseServiceRest implements CourseService{
    @Autowired
    private CourseDAO courseDAO;

    @Override
    public CourseModel selectCourse(String idCourse) {
        log.info("REST - select course with id {}", idCourse);
        return courseDAO.selectCourse(idCourse);
    }

    @Override
    public List<CourseModel> selectAllCourses(){
        log.info("REST - select all courses");
        return courseDAO.selectAllCourses();
    }
}
```

Terakhir, saya membuat CourseController untuk mengatur RequestMapping path yang sesuai

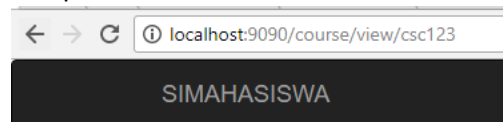
```
@RequestMapping(value="/course/view/{idCourse}")
public String view(Model model, @PathVariable(value="idCourse") String idCourse) {
    CourseModel course = courseDAO.selectCourse(idCourse);
    model.addAttribute("course", course);
    model.addAttribute("page_title", "View Course Detail");

    return "course";
}

@RequestMapping("/course/viewall")
public String viewAll(Model model) {
    List<CourseModel> courses = courseDAO.selectAllCourses();
    model.addAttribute("courses", courses);
    model.addAttribute("page_title", "View All Courses");

    return "viewall-courses";
}
```

Tampilan view course



ID = CSC123

Nama = PSP

SKS = 4

Mahasiswa yang mengambil

- 22222 - budi
- 33333 - c

Tampilan view all courses

← → ↻

localhost:9090/course/viewall

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SIMAHASISWA

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All Courses

Show 10 ▾ entries

Search:

No	Course ID	Name	Credits
1	CSC123	PSP	4
2	CSC124	SDA	3
3	CSC125	DDP1	4
4	CSC126	MPKT	6

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