

# Tutorial 7

## Service Producer

<http://localhost:8080/rest/student/view/123>

```
{ "npm": "123", "name": "Channek", "gpa": 4.0, "courses": [{ "id_course": "CSC126", "name": "MPKT", "credits": 6, "students": null }] }
```

String parse

```
{  "npm": "123",  "name": "Channek",  "gpa": 4.0,  "courses": [    {      "id_course": "CSC126",      "name": "MPKT",      "credits": 6,      "students": null    }  ] }
```

## Latihan

1. **Latihan 1:** Buatlah *service* untuk mengembalikan seluruh student yang ada di basis data. *Service* ini mirip seperti *method* `viewAll` di Web Controller. *Service* tersebut di-mapping ke `"/rest/student/viewall"`. Contoh tampilan keluarannya:

<http://localhost:8080/rest/student/viewall>

```
[ { "npm": "123", "name": "Channek", "gpa": 4.0, "courses": [ { "id_course": "CSC126", "name": "MPKT", "credits": 6, "students": null } ] }, { "npm": "124", "name": "Channek Jr.", "gpa": 3.0, "courses": [ { "id_course": "CSC123", "name": "PSP", "credits": 4, "students": null }, { "id_course": "CSC124", "name": "SDA", "credits": 3, "students": null } ] }, { "npm": "125", "name": "Channek Sr.", "gpa": 2.0, "courses": [ { "id_course": "CSC125", "name": "PSP", "credits": 4, "students": null } ] } ]
```

String parse

```
[  {    "npm": "123",    "name": "Channek",    "gpa": 4.0,    "courses": [      {        "id_course": "CSC126",        "name": "MPKT",        "credits": 6,        "students": null      }    ]  },  {    "npm": "124",    "name": "Channek Jr.",    "gpa": 3.0,    "courses": [      {        "id_course": "CSC123",        "name": "PSP",        "credits": 4,        "students": null      },      {        "id_course": "CSC124",        "name": "SDA",        "credits": 3,        "students": null      }    ]  },  {    "npm": "125",    "name": "Channek Sr.",    "gpa": 2.0,    "courses": [      {        "id_course": "CSC125",        "name": "PSP",        "credits": 4,        "students": null      }    ]  } ]
```

2. **Latihan 2:** Buatlah *service* untuk class *Course*. Buatlah *controller* baru yang terdapat *service* untuk melihat suatu course dengan masukan ID Course (view by ID) dan *service* untuk melihat semua course (view all).

a. Melihat suatu course

- Membuat service dan servicedatabase dari course untuk melakukan pemanggilan method `selectCourse`

```
1 package com.example.service;
2
3 import com.example.model.CourseModel;
4
5 public interface CourseService {
6     CourseModel selectCourse(String id_course);
7 }
~
```

```
1 package com.example.service;
2
3 import org.springframework.beans.factory.annotation.Autowired;
4 import org.springframework.stereotype.Service;
5
6 import com.example.dao.CourseMapper;
7 import com.example.model.CourseModel;
8 import lombok.extern.slf4j.Slf4j;
9
10 @Slf4j
11 @Service
12 public class CourseServiceDatabase implements CourseService {
13     @Autowired
14     private CourseMapper courseMapper;
15
16     @Override
17     public CourseModel selectCourse(String id_course) {
18         log.info("select course with id {}", id_course);
19         return courseMapper.selectCourse(id_course);
20     }
21 }
```

- Membuat mapper dari course untuk melakukan pemanggilan query select berdasarkan `id_course`

```
1 package com.example.dao;
2
3 import org.apache.ibatis.annotations.Mapper;
4 import org.apache.ibatis.annotations.Param;
5 import org.apache.ibatis.annotations.Select;
6 import com.example.model.CourseModel;
7
8 @Mapper
9 public interface CourseMapper {
10     @Select("select * from course where id_course = #{id_course}")
11     CourseModel selectCourse(@Param("id_course") String id_course);
12 }
```

- Membuat method controller untuk memanggil object dari `selectCourse`

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

- Hasil: <http://localhost:8080/rest/course/view/CSC123>

```
← → ↺ localhost:8080/rest/course/view/CSC123
{"id_course":"CSC123","name":"PSP","credits":4,"students":null}
```

String parse

```
{
  "id_course": "CSC123",
  "name": "PSP",
  "credits": 4,
  "students": null
}
```

b. Melihat semua course

- Membuat service dan servicedatabase dari semua course untuk melakukan pemanggilan method selectAllCourse

```
public interface CourseService {  
    CourseModel selectCourse(String id_course);  
    List<CourseModel> selectAllCourses();  
}  
  
@Override  
public List<CourseModel> selectAllCourses() {  
    Log.info("select all courses");  
    return courseMapper.selectAllCourses();  
}
```

- Membuat mapper dari semua course untuk melakukan pemanggilan query select

```
@Select("select * from course")  
List<CourseModel> selectAllCourses();
```

- Membuat method controller untuk memanggil semua object dari AllCourse

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

- Hasil: <http://localhost:8080/rest/course/viewall>

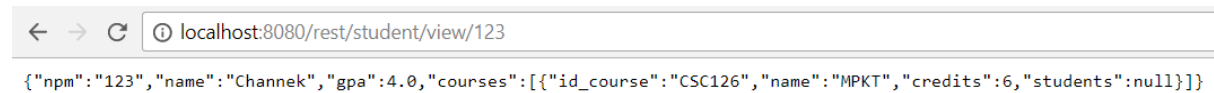
localhost:8080/rest/course/viewall  
[[{"id\_course": "CSC123", "name": "PSP", "credits": 4, "students": null}, {"id\_course": "CSC124", "name": "SDA", "credits": 3, "students": null}, {"id\_course": "CSC125", "name": "DDP 1", "credits": 4, "students": null}, {"id\_course": "CSC126", "name": "MPKT", "credits": 6, "students": null}]

String parse

```
[  
  {  
    "id_course": "CSC123",  
    "name": "PSP",  
    "credits": 4,  
    "students": null  
  },  
  {  
    "id_course": "CSC124",  
    "name": "SDA",  
    "credits": 3,  
    "students": null  
  },  
  {  
    "id_course": "CSC125",  
    "name": "DDP 1",  
    "credits": 4,  
    "students": null  
  },  
  {  
    "id_course": "CSC126",  
    "name": "MPKT",  
    "credits": 6,  
    "students": null  
  }  
]
```

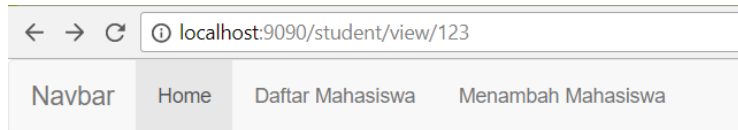
## Service Consumer

<http://localhost:8080/rest/student/view/123>



<http://localhost:9090/student/view/123>

2017-11-02 12:26:40.086 INFO 17268 --- [nio-9090-exec-1] com.example.service.StudentServiceRest : REST - select student with npm 123



NPM = 123

Name = Channek

GPA = 4.0

Kuliah yang diambil

- MPKT-6sks

### 1. Latihan 3: Implementasikan *service consumer* untuk view all Students dengan melengkapi *method* `selectAllStudents` yang ada di kelas `StudentServiceRest`.

- Membuat method `selectAllStudents` yang implementasi `StudentService` di `StudentServiceRest`

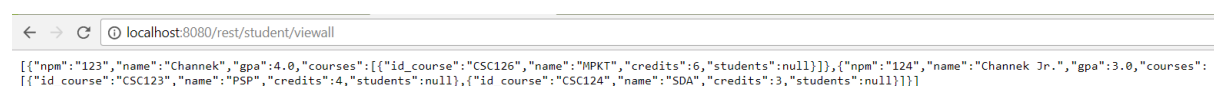
```
@Override
public List<StudentModel> selectAllStudents() {
    log.info("REST - select all students");
    return studentDAO.selectAllStudents();
}
```

- Membuat method yang menerima parameter URL dari producer web service untuk `selectAllStudents`

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

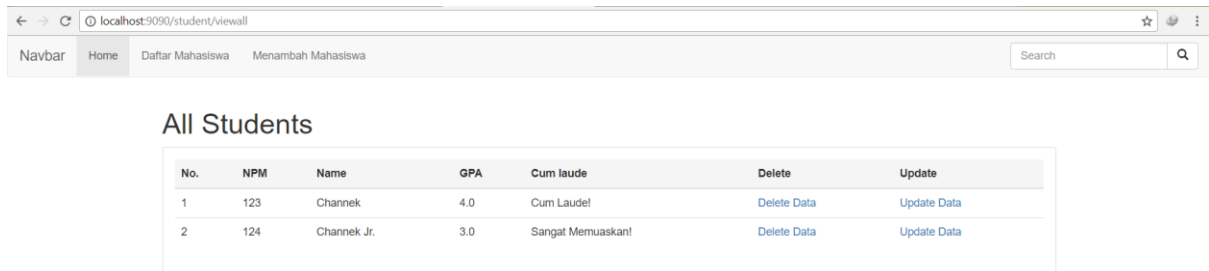
- Hasil:

<http://localhost:8080/rest/student/viewall>



<http://localhost:9090/student/viewall>

2017-11-02 14:14:47.580 INFO 13904 --- [nio-9090-exec-5] com.example.service.StudentServiceRest : REST - select all students



The screenshot shows a web browser window with the address bar displaying `localhost:9090/student/viewall`. The browser has a navigation bar with links: Home, Daftar Mahasiswa, and Menambah Mahasiswa. A search bar is also present. The main content area is titled "All Students" and contains a table with the following data:

No.	NPM	Name	GPA	Cum laude	Delete	Update
1	123	Channek	4.0	Cum Laude!	<a href="#">Delete Data</a>	<a href="#">Update Data</a>
2	124	Channek Jr.	3.0	Sangat Memuaskan!	<a href="#">Delete Data</a>	<a href="#">Update Data</a>

## 2. Latihan 4: Implementasikan *service consumer* untuk *class* CourseModel dengan membuat *class-class* DAO dan *service* baru.

### a. Select Course by id\_course

- Membuat interface CourseDAO

```
1 package com.example.dao;
2
3+ import java.util.List;
4
5
6
7 public interface CourseDAO {
8     CourseModel selectCourse(String id_course);
9     List<CourseModel> selectAllCourses();
10 }
```

- Membuat class implementasi CourseDAO dengan CourseDAOImpl yang menerima parameter URL dari producer web service untuk selectCourse

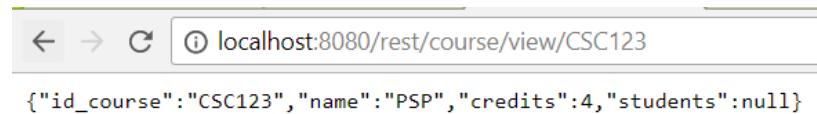
```
12 @Service
13 public class CourseDAOImpl implements CourseDAO {
14     @Bean
15     public RestTemplate restTemplate() {
16         return new RestTemplate();
17     }
18
19     @Autowired
20     private RestTemplate restTemplate;
21
22     @Override
23     public CourseModel selectCourse(String id_course) {
24         CourseModel course = restTemplate.getForObject("http://localhost:8080/rest/course/view/" + id_course,
25             CourseModel.class);
26         return course;
27     }
28 }
```

- Membuat ServiceRest dari course service

```
14 @Slf4j
15 @Service
16 @Primary
17 public class CourseServiceRest implements CourseService {
18     @Autowired
19     private CourseDAO courseDAO;
20
21     @Override
22     public CourseModel selectCourse (String id_course) {
23         log.info ("REST - select course with id_course {}", id_course);
24         return courseDAO.selectCourse (id_course);
25     }
26 }
```

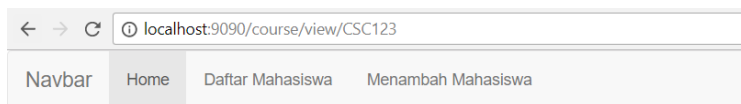
- Hasil;

<http://localhost:8080/rest/course/view/CSC123>



<http://localhost:9090/course/view/CSC123>

2017-11-02 15:15:26.963 INFO 13904 --- [nio-9090-exec-1] com.example.service.StudentServiceRest : select course with id\_course CSC123



ID = CSC123

Nama = PSP

SKS = 4

Mahasiswa yang mengambil

- 124 - Channek Jr.

#### b. Select All Course

- Membuat method selectAllCourse di interface CourseDAO

```
1 package com.example.dao;
2
3 import java.util.List;
4
5
6
7 public interface CourseDAO {
8     CourseModel selectCourse(String id_course);
9     List<CourseModel> selectAllCourses();
10 }
```

- Membuat class implementasi CourseDAO dengan CourseDAOImpl yang menerima parameter URL dari producer web service untuk selectAllCourses

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

- Membuat ServiceRest dari course service

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

- Menambahkan controller, mapper, service untuk selectAllCourses

```
@RequestMapping("/course/viewall")
public String viewAllCourse (Model model) {
    List<CourseModel> courses = studentDAO.selectAllCourses();
    model.addAttribute("courses", courses);
    return "viewallcourse";
}
```

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

>Select("select * from course")
List<CourseModel> selectAllCourses();
```

- Menambahkan view untuk selectAllCourse

```
<div class="container">
  <div class="starter-template">
    <h1>All Courses</h1>
    <div class="panel panel-default">
      <div class="panel-body">
        <table class="table">
          <thead>
            <tr class="active">
              <th>No.</th>
              <th>ID Course</th>
              <th>Nama Mata Kuliah</th>
              <th>Jumlah SKS</th>
            </tr>
          </thead>
          <tbody>
            <tr th:each="course, iterationStatus: ${courses}"
              th:class="${iterationStatus.odd}? 'odd'">
              <td th:text="${iterationStatus.count}">No. 1</td>
              <td th:text="${course.id_course}">Student NPM</td>
              <td th:text="${course.name}">Student Name</td>
              <td th:text="${course.credits}">Student GPA</td>
            </tr>
          </tbody>
        </table>
      </div>
    </div>
  </div>
</div>
```

- Hasil

<http://localhost:8080/rest/course/viewall>

```
localhost:8080/rest/course/viewall
[{"id_course":"CSC123","name":"PSP","credits":4,"students":null}, {"id_course":"CSC124","name":"SDA","credits":3,"students":null}, {"id_course":"CSC125","name":"DDP 1","credits":4,"students":null}, {"id_course":"CSC126","name":"MPKT","credits":6,"students":null}]
```

<http://localhost:9090/course/viewall>

2017-11-02 15:26:11.049 INFO 13904 --- [nio-9090-exec-1] com.example.service.StudentServiceRest : select all courses

```
localhost:9090/course/viewall
Navbar Home Daftar Mahasiswa Menambah Mahasiswa Search
```

## All Courses

No.	ID Course	Nama Mata Kuliah	Jumlah SKS
1	CSC123	PSP	4
2	CSC124	SDA	3
3	CSC125	DDP 1	4
4	CSC126	MPKT	6