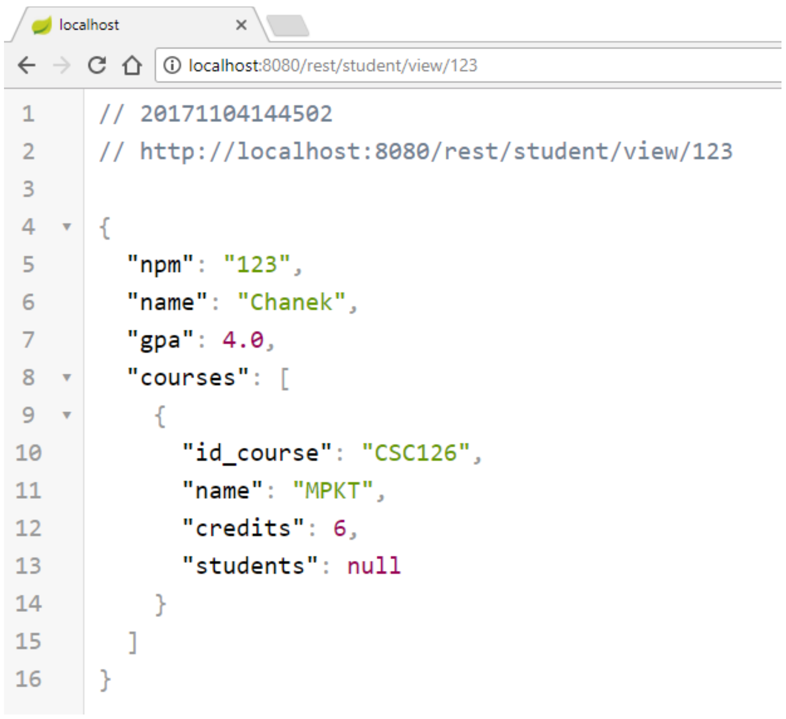
Luthfi Abdurrahim | 1406557535 | APAP - A

Write up tutorial 7

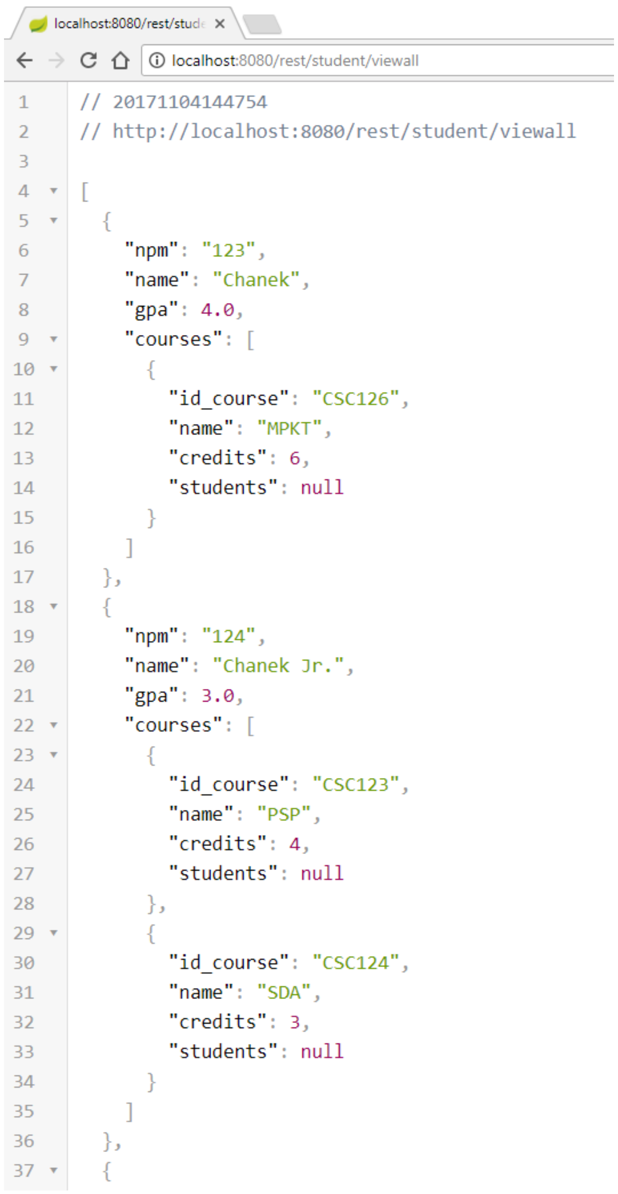


localhost

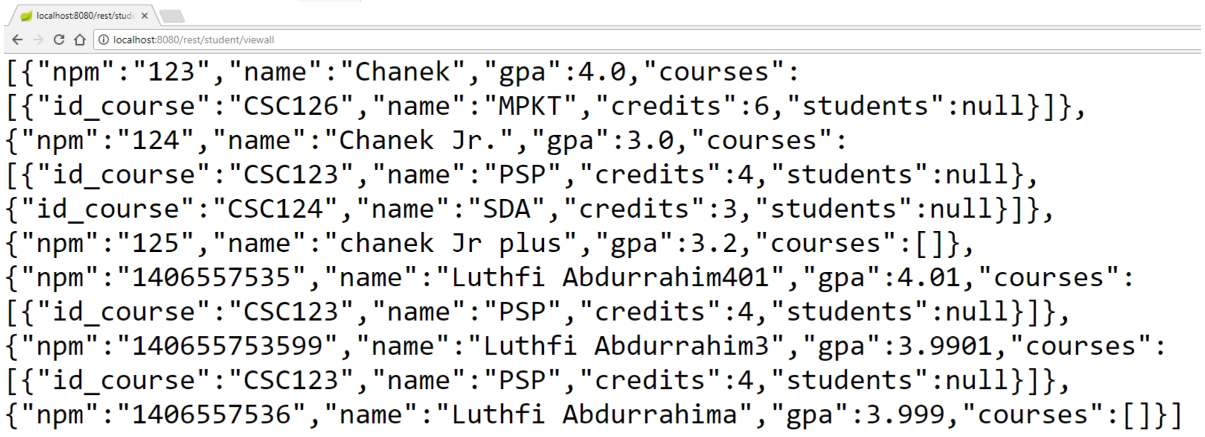
localhost:8080/rest/student/view/123

```
// 20171104144502
// http://localhost:8080/rest/student/view/123

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

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”.

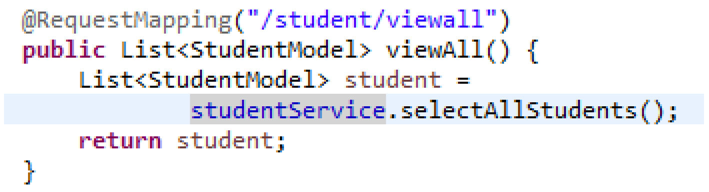


```
// 20171104144754
// http://localhost:8080/rest/student/viewall

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



```
[{"npm":"123","name":"Chanek","gpa":4.0,"courses":
[{"id_course":"CSC126","name":"MPKT","credits":6,"students":null}]},
{"npm":"124","name":"Chanek 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":"chanek Jr plus","gpa":3.2,"courses":[]},
{"npm":"1406557535","name":"Luthfi Abdurrahim401","gpa":4.01,"courses":
[{"id_course":"CSC123","name":"PSP","credits":4,"students":null}]},
{"npm":"140655753599","name":"Luthfi Abdurrahim3","gpa":3.9901,"courses":
[{"id_course":"CSC123","name":"PSP","credits":4,"students":null}]},
{"npm":"1406557536","name":"Luthfi Abdurrahima","gpa":3.999,"courses":[]}]
```

Pada viewall student, hanya menambahkan method pada StudentRestController.java dengan code seperti ini:



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

Dengan memanggil code seperti pada tutorial 5 view all, lalu mengubah return menjadi object, sehingga menghasilkan web service yang diinginkan.

Hanya menerapkan query yang ada pada mapper, lalu pada controller ini memanggilnya dengan studentservice selectAllstudents yang di assign kepada variable bertipe List studentModel dengan nama object: student.

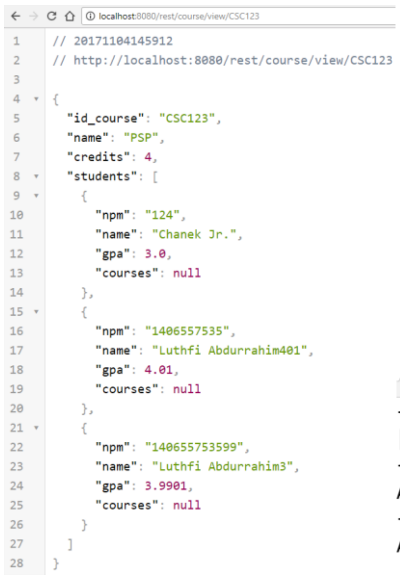
Latihan 2: Buatlah service untuk class Course. Buatlah controller baru yang terdapat service untuk melihat suatu course dengan masukan ID Course (view by ID) dan service untuk melihat semua course (view all).

```java
//latihan 2
@RequestMapping("/course/view/{id_course}")
public CourseModel view(
        @PathVariable(value = "id_course")
        String id_course) {
    CourseModel course =
            studentService.selectCourse(id_course);
    return course;
}

//latihan 2
@RequestMapping("/course/viewall")
public List<CourseModel> viewAll() {
    List<CourseModel> course =
            studentService.selectAllCourses();
    return course;
}
```

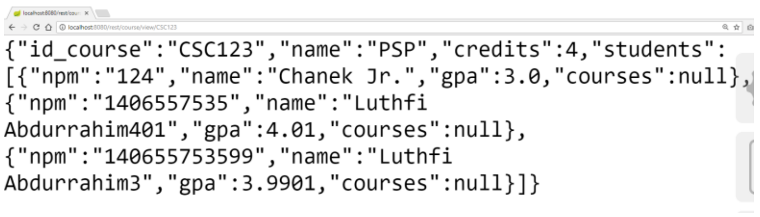
Pada latihan 2 ini, penulis membuat controller baru yang bernama CourseRestController.java untuk menerapkan 2 method di atas. Method pertama bernama view() yaitu memanggil course berdasarkan id. Di dalam method tersebut, menerapkan pemanggilan courseModel dan melakukan selectCourse berdasarkan id yang ada pada studentservice dan mapper nya. Dengan mengembalikan / return object course, maka didapat json / web service yang diinginkan.

Method kedua yaitu viewAll, di dalamnya menerapkan pemanggilan coursemodel dengan list, lalu pemanggilan selectAllCourses pada studentservice yang akan menampilkan seluruh isi course yang adaa pada basis data. Dengan return object course, maka akan didapatkan hasil json / web service yang diinginkan, yaitu menampilkan semua isi course yang ada pada basis data.

Berikut ini outputnya view course by id:

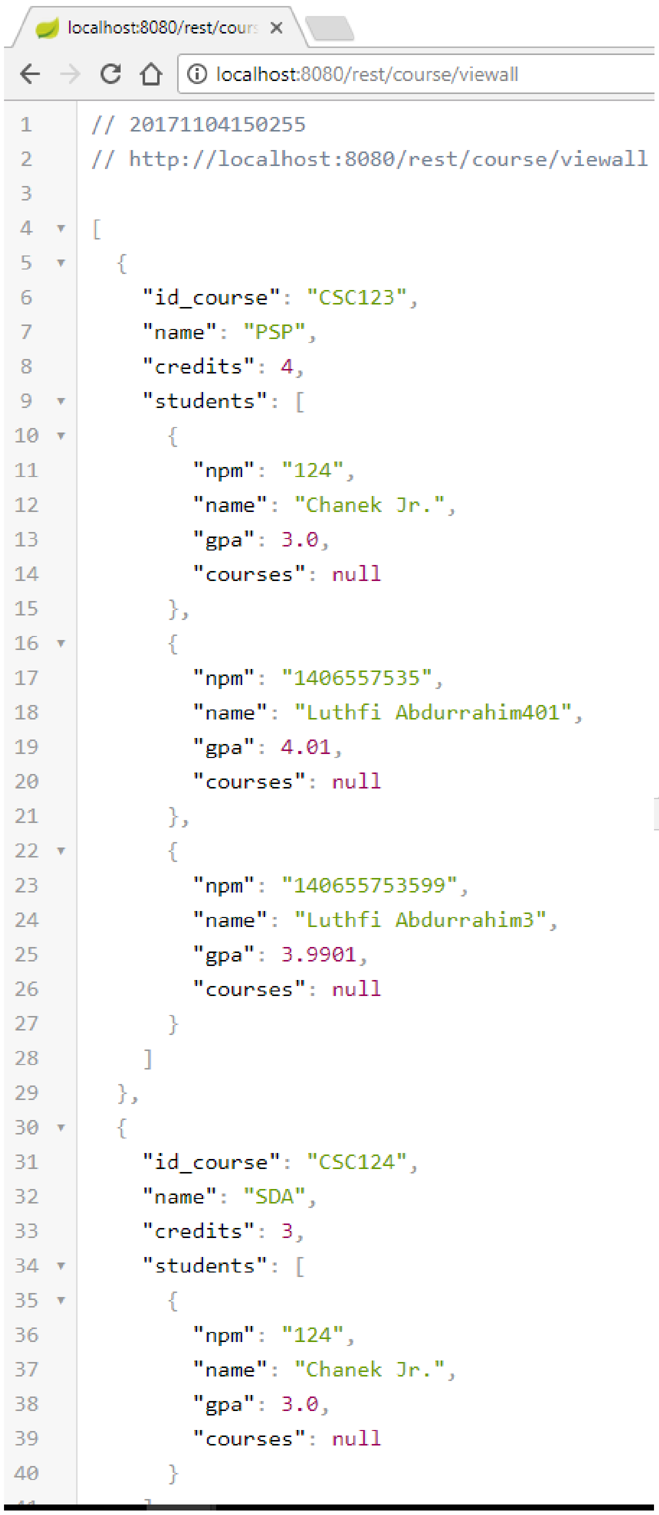


```
// 20171104145912
// http://localhost:8080/rest/course/view/CSC123

{
  "id_course": "CSC123",
  "name": "PSP",
  "credits": 4,
  "students": [
    {
      "npm": "124",
      "name": "Chanek Jr.",
      "gpa": 3.0,
      "courses": null
    },
    {
      "npm": "1406557535",
      "name": "Luthfi Abdurrahim401",
      "gpa": 4.01,
      "courses": null
    },
    {
      "npm": "140655753599",
      "name": "Luthfi Abdurrahim3",
      "gpa": 3.9901,
      "courses": null
    }
  ]
}
```

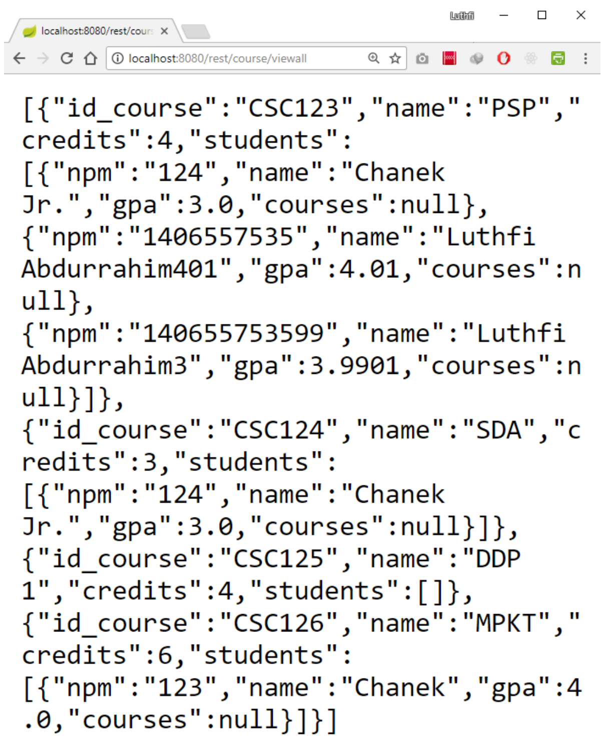


```
{"id_course":"CSC123","name":"PSP","credits":4,"students":
[{"npm":"124","name":"Chanek Jr.","gpa":3.0,"courses":null},
{"npm":"1406557535","name":"Luthfi
Abdurrahim401","gpa":4.01,"courses":null},
{"npm":"140655753599","name":"Luthfi
Abdurrahim3","gpa":3.9901,"courses":null}]}
```

Berikut ini output dari viewall course:

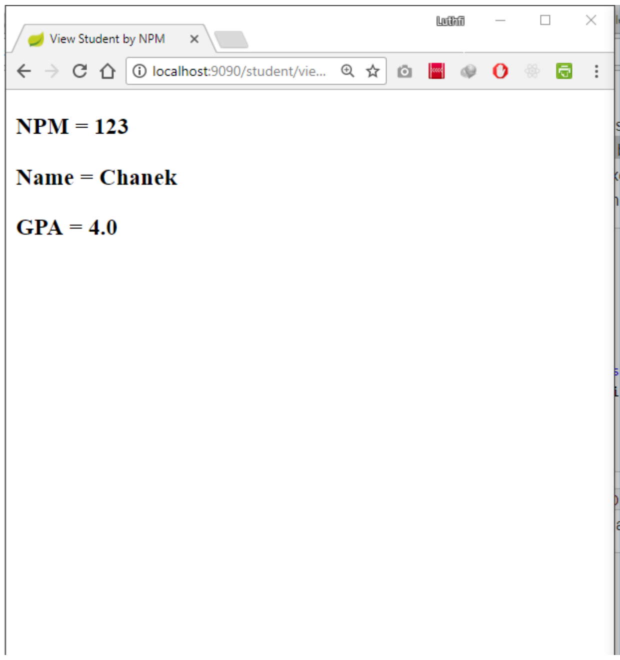

localhost:8080/rest/course/viewall

```
// 20171104150255
// http://localhost:8080/rest/course/viewall

[
  {
    "id_course": "CSC123",
    "name": "PSP",
    "credits": 4,
    "students": [
      {
        "npm": "124",
        "name": "Chanek Jr.",
        "gpa": 3.0,
        "courses": null
      },
      {
        "npm": "1406557535",
        "name": "Luthfi Abdurrahim401",
        "gpa": 4.01,
        "courses": null
      },
      {
        "npm": "140655753599",
        "name": "Luthfi Abdurrahim3",
        "gpa": 3.9901,
        "courses": null
      }
    ]
  },
  {
    "id_course": "CSC124",
    "name": "SDA",
    "credits": 3,
    "students": [
      {
        "npm": "124",
        "name": "Chanek Jr.",
        "gpa": 3.0,
        "courses": null
      }
```


localhost:8080/rest/course/viewall

```
[{"id_course":"CSC123","name":"PSP","credits":4,"students":[{"npm":"124","name":"Chanek Jr.","gpa":3.0,"courses":null},{"npm":"1406557535","name":"Luthfi Abdurrahim401","gpa":4.01,"courses":null},{"npm":"140655753599","name":"Luthfi Abdurrahim3","gpa":3.9901,"courses":null}]},{"id_course":"CSC124","name":"SDA","credits":3,"students":[{"npm":"124","name":"Chanek Jr.","gpa":3.0,"courses":null}]},{"id_course":"CSC125","name":"DDP 1","credits":4,"students":[]},{"id_course":"CSC126","name":"MPKT","credits":6,"students":[{"npm":"123","name":"Chanek","gpa":4.0,"courses":null}]}]
```

Tutorial07Consumer.java berhasil berjalan:



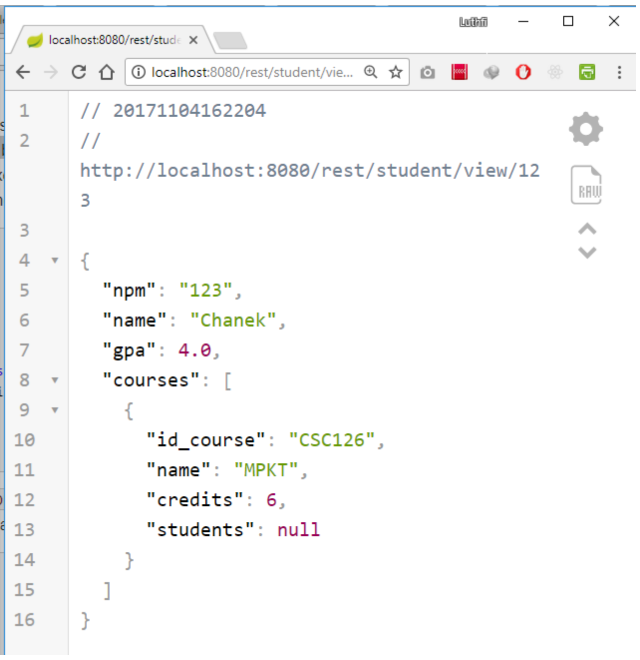
View Student by NPM

localhost:9090/student/vie...

NPM = 123

Name = Chanek

GPA = 4.0



localhost:8080/rest/stud

localhost:8080/rest/student/vie...

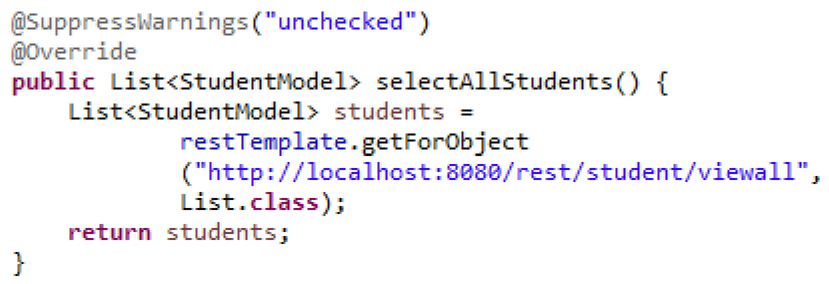
```
// 20171104162204
// http://localhost:8080/rest/student/view/123

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

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

Penjelasan:

Pertama, pada model dan method viewall studentController.java tidak ada perubahan, code tetap sesuai dengan tutorial6.

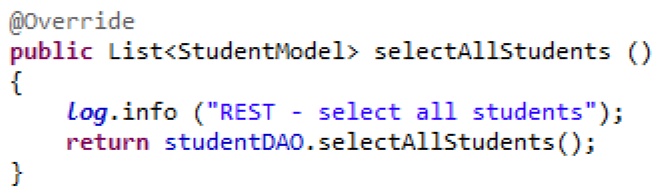
Lalu, pada class StudentDAOImpl.java yang ada pada package service, ditambahkan method ini:



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

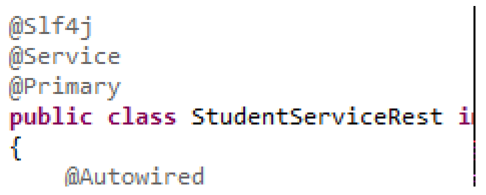
Method tersebut akan mengembalikan object student berupa tipe list studentmodel yang didapatkan dari web service /rest/student/viewall (tipe json)

Lalu, pada class StudentServiceRest.java menerapkan method berikut:



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

Dengan begitu akan mengembalikan selectAllStudents berdasarkan sumber dari rest api yang sudah dibuat.



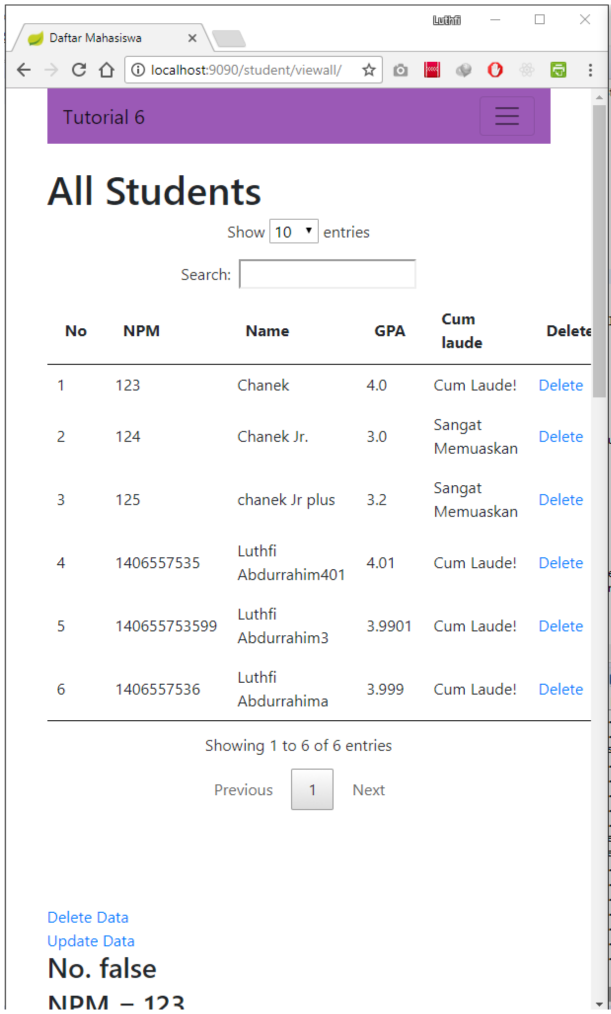
```
@Slf4j
@Service
@Primary
public class StudentServiceRest i
{
    @Autowired
```

Dengan menambahkan anotasi @primary pad akelas studentservicerest, meskipun ada studentmapper dan studentservicedatabase.java maka, yang digunakan akan studentservicerest.java

Screenshot Output:

Kiri: http://localhost:9090/student/viewall/

Kanan: http://localhost:8080/rest/student/viewall



All Students

Show 10 entries

Search:

No	NPM	Name	GPA	Cum laude	Delete
1	123	Chanek	4.0	Cum Laude!	Delete
2	124	Chanek Jr.	3.0	Sangat Memuaskan	Delete
3	125	chanek Jr plus	3.2	Sangat Memuaskan	Delete
4	1406557535	Luthfi Abdurrahim401	4.01	Cum Laude!	Delete
5	140655753599	Luthfi Abdurrahim3	3.9901	Cum Laude!	Delete
6	1406557536	Luthfi Abdurrahima	3.999	Cum Laude!	Delete

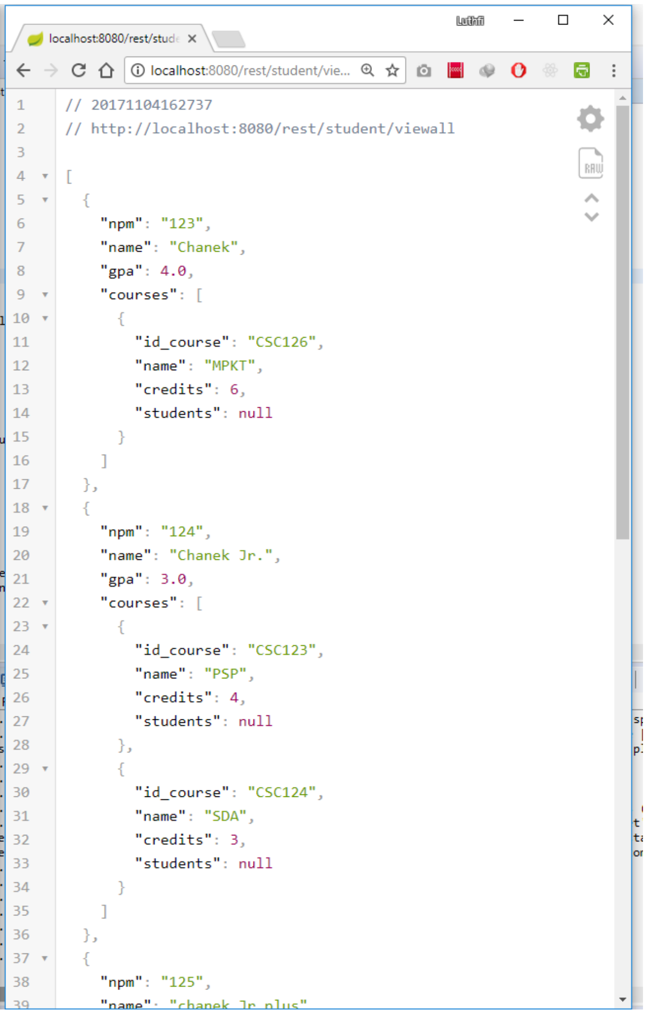
Showing 1 to 6 of 6 entries

Previous 1 Next

Delete Data
Update Data

No. false

NPM – 123



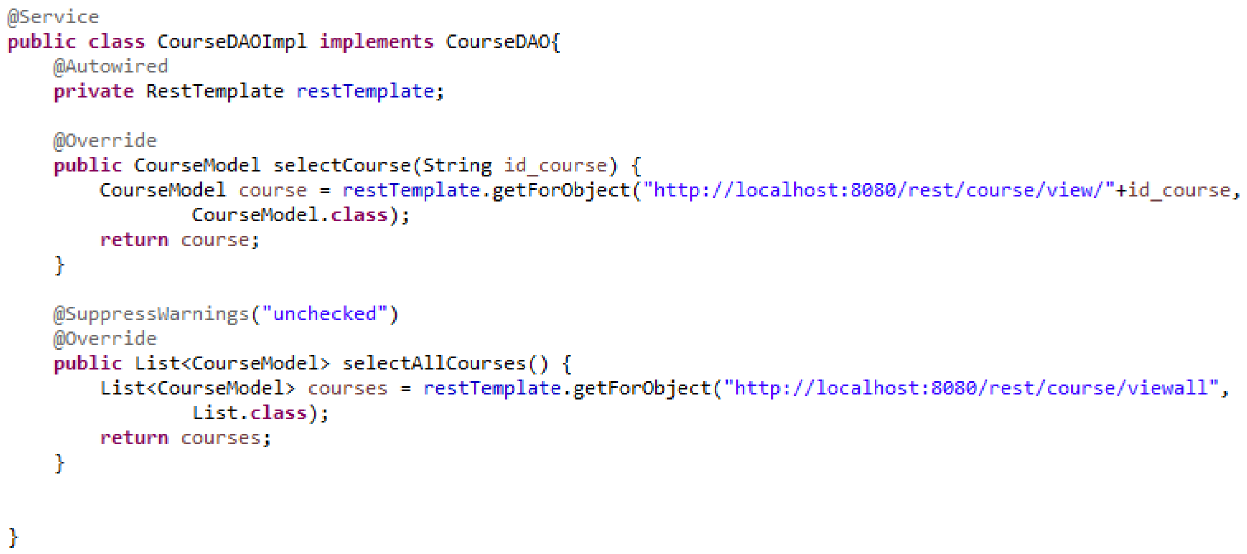
```
// 20171104162737
// http://localhost:8080/rest/student/viewall

[
  {
    "npm": "123",
    "name": "Chanek",
    "gpa": 4.0,
    "courses": [
      {
        "id_course": "CSC126",
        "name": "MPKT",
        "credits": 6,
        "students": null
      }
    ]
  },
  {
    "npm": "124",
    "name": "Chanek 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": "chanek Jr plus"
```

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

Penjelasan:

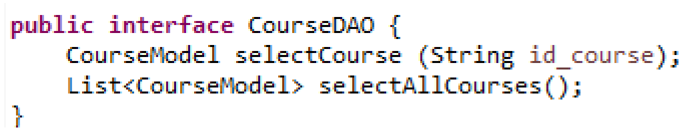
Penulis hanya perlu menambahkan CourseDAOImpl.java pada package service dan interface CourseDAO pada package dao. Dengan menerapkan kedua hal tersebut, dapat diakses data-nya melalui controller dan view layer.

Berikut ini source code dari CourseDAOImpl.java



```java
@Service
public class CourseDAOImpl implements CourseDAO{
    @Autowired
    private RestTemplate restTemplate;

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

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


}
```

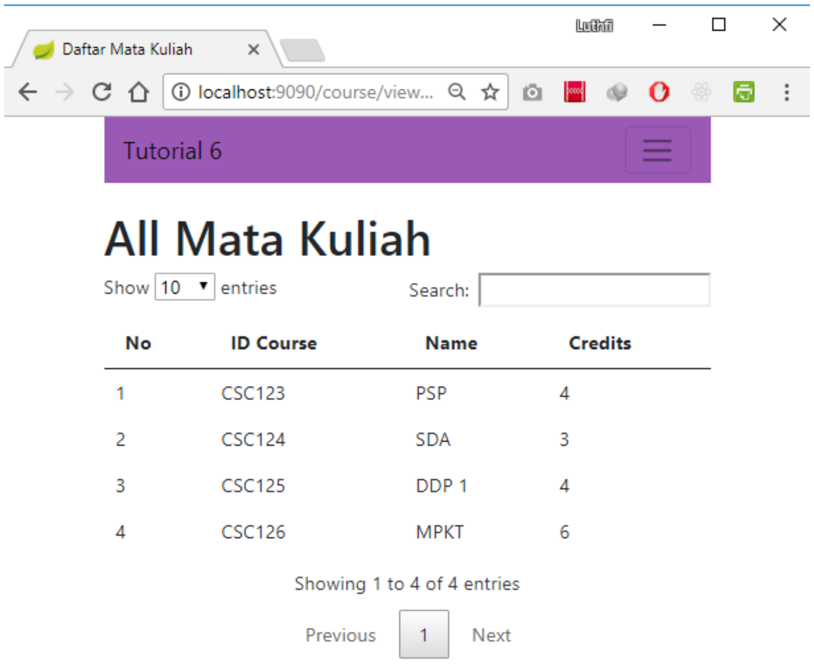
Dan Berikut ini source code dari CourseDAO.java



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

Screenshot output:

1. selectAllCourse
   Atas: http://localhost:9090/course/viewall/
   Bawah : http://localhost:8080/rest/course/viewall



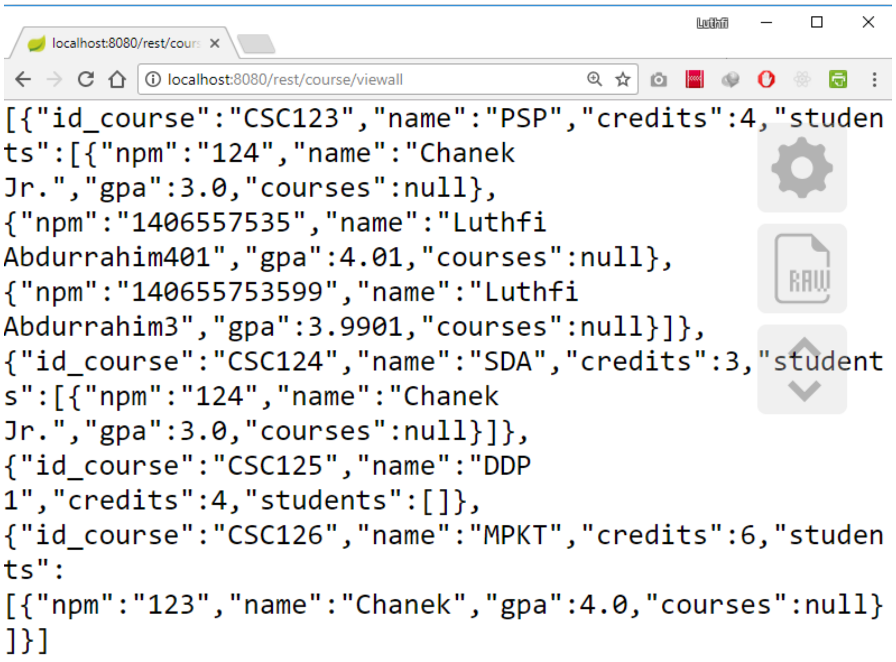
All Mata Kuliah

Show 10 entries Search:

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

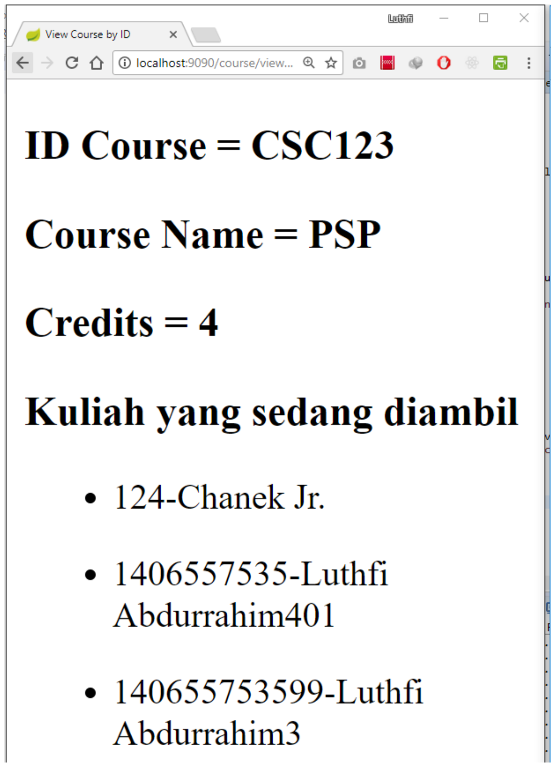
Showing 1 to 4 of 4 entries

Previous 1 Next



```
[{"id_course":"CSC123","name":"PSP","credits":4,"studen
ts":[{"npm":"124","name":"Chanek
Jr.","gpa":3.0,"courses":null},
{"npm":"1406557535","name":"Luthfi
Abdurrahim401","gpa":4.01,"courses":null},
{"npm":"140655753599","name":"Luthfi
Abdurrahim3","gpa":3.9901,"courses":null}]},
{"id_course":"CSC124","name":"SDA","credits":3,"student
s":[{"npm":"124","name":"Chanek
Jr.","gpa":3.0,"courses":null}]},
{"id_course":"CSC125","name":"DDP
1","credits":4,"students":[]},
{"id_course":"CSC126","name":"MPKT","credits":6,"studen
ts":
[{"npm":"123","name":"Chanek","gpa":4.0,"courses":null}
]}]
```

2. Select Course by ID Course
   Kiri: http://localhost:9090/course/view/CSC123
   Kanan: http://localhost:8080/rest/course/view/CSC123


View Course by ID

localhost:9090/course/view...

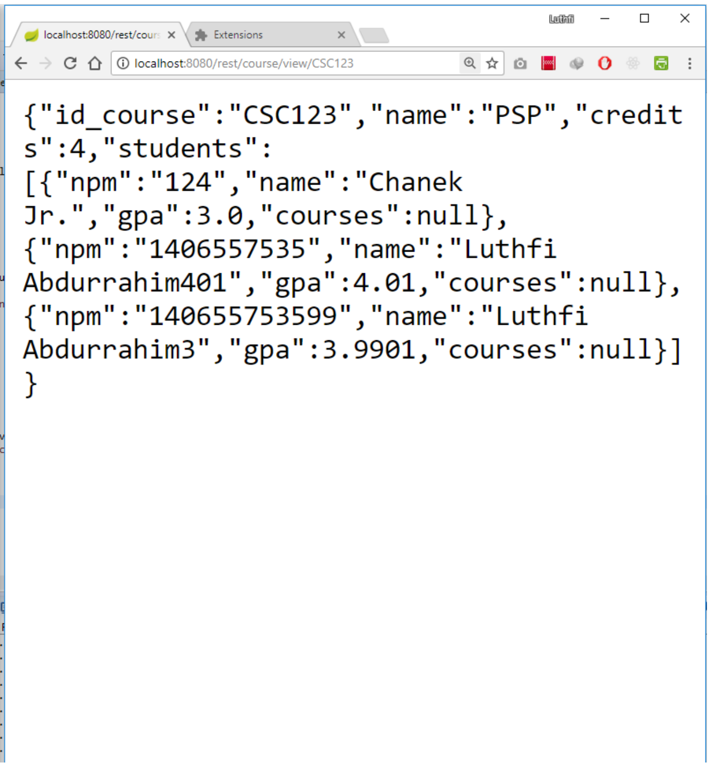
ID Course = CSC123

Course Name = PSP

Credits = 4

Kuliah yang sedang diambil

- 124-Chanek Jr.
- 1406557535-Luthfi Abdurrahim401
- 140655753599-Luthfi Abdurrahim3


localhost:8080/rest/course/view/CSC123

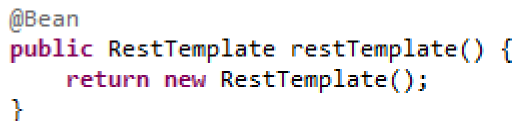
```
{"id_course":"CSC123","name":"PSP","credit
s":4,"students":
[{"npm":"124","name":"Chanek
Jr.","gpa":3.0,"courses":null},
{"npm":"1406557535","name":"Luthfi
Abdurrahim401","gpa":4.01,"courses":null},
{"npm":"140655753599","name":"Luthfi
Abdurrahim3","gpa":3.9901,"courses":null}]
}
```

Write-up

Hal yang penulis pelajari pada tutorial 7 kali ini yaitu:

Penulis mengetahui cara membuat webservice dengan adanya format json dan client yang mengambil objek json tersebut, menggunakan java springboot.

Lalu, hal terpentingnya yaitu, pada client side yang ingin mengambil rest service tersebut, tidak bisa autoconfiguration restTemplate jika menggunakan springboot>=1.4 , sehingga penulis selalu mendapatkan error. Hingga menemukan solusinya yaitu dengan menerapkan method :



```
@Bean
public RestTemplate restTemplate() {
    return new RestTemplate();
}
```

Pada class Tutorial7ConsumerApplication.java

Sehingga, tidak akan terjadi error berikut:

Consider defining a bean of type 'org.springframework.web.client.RestTemplate' in your configuration.

Penulis menjadi mengetahui mengenai penerapan rest service yaitu pada client harus menambahkan service baru berupa StudentServiceRest.java, StudentDAOImpl.java dan StudentDAO.java serta penerapan @primary pada rest service. Sehingga dapat digunakan pada client untuk mengakses rest service tersebut.

Dengan adanya rest service ini, penerapan back end dan front end dapat semakin terpisah layernya, sehingga tidak terlalu dependensi, jika back end berubah maka front end tidak perlu diubah.