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## Membuat Web Service Menggunakan Spring Boot Framework

### Ringkasan Materi Tutorial 7

Pada tutorial 7, mempelajari cara membuat web service menggunakan RestTemplate dan cara pengimplementasiannya pada web. Web service merupakan web aplikasi yang akan mengirimkan atau menampilkan data dalam representasi JSON. Ada 2 service yang digunakan pada tutorial ini yaitu Service Producer dan Service Consumer. Service Producer hanya menyediakan data-data yang berasal dari database. Sedangkan Service Consumer digunakan untuk berinteraksi dengan pengguna yang lebih berfokus untuk menyediakan dan mengolah data ke pengguna tanpa memiliki database.

#### 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”

```
package com.example.rest;

import java.util.List;

@RestController
@RequestMapping("/rest")

public class StudentRestController {

    @Autowired
    StudentService studentService;

    @RequestMapping("/student/view/{npm}")
    public StudentModel view (@PathVariable(value = "npm") String npm) {

        StudentModel student = studentService.selectStudent (npm);
        return student;
    }

    @RequestMapping("/student/viewall")
    public List<StudentModel> viewAll () {

        List<StudentModel> student = studentService.selectAllStudents();
        return student;
    }

}
```



# Tutorial 7

## CSIM603026 – Arsitektur dan Pemrograman

### Aplikasi Perusahaan

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Method diatas akan memanggil seluruh data student dan akan menampilkan tulisan seperti pada gambar dibawah ini :

← → ↺ ① localhost:8080/rest/student/viewall

```
[{"npm":"140102920","name":"Mutiarani Ramadhan","gpa":3.95}, {"npm":"1406557503","name":"Desy Ulfasari","gpa":2.75}, {"npm":"1406623083","name":"Dwi Arfi Faradina Mawardi","gpa":3.0}, {"npm":"1502839","name":"Shabrina","gpa":3.2}, {"npm":"1506737823","name":"Kermie","gpa":3.32}, {"npm":"1506737824","name":"Ellene","gpa":2.89}, {"npm":"1506737825","name":"Delmer","gpa":2.58}, {"npm":"1506737826","name":"Kristian","gpa":2.33}, {"npm":"1506737827","name":"Marilyn","gpa":3.49}, {"npm":"1506737828","name":"Katti","gpa":3.73}, {"npm":"1506737829","name":"Titus","gpa":3.11}, {"npm":"1506737830","name":"Glenden","gpa":3.38}, {"npm":"1506737831","name":"Milt","gpa":3.39}, {"npm":"1506737832","name":"Henri","gpa":2.31}, {"npm":"1506737833","name":"Buffy","gpa":3.35}, {"npm":"1506737834","name":"Roda","gpa":2.2}, {"npm":"1506737835","name":"Petronille","gpa":2.61}, {"npm":"1506737836","name":"Kelley","gpa":3.27}, {"npm":"1506737837","name":"Morey","gpa":3.95}, {"npm":"1506737838","name":"Ronda","gpa":2.23}, {"npm":"1506737839","name":"Corbin","gpa":3.93}, {"npm":"1506737840","name":"Jeanie","gpa":2.5}, {"npm":"1506737841","name":"Berri","gpa":3.9}, {"npm":"1506737842","name":"Lesley","gpa":3.0}, {"npm":"1506737843","name":"Fliss","gpa":3.72}, {"npm":"1506737844","name":"Merell","gpa":3.15}, {"npm":"1506737845","name":"Ibbie","gpa":3.45}, {"npm":"1506737846","name":"Tony","gpa":2.69}, {"npm":"1506737847","name":"Klarika","gpa":2.83}, {"npm":"1506737848","name":"Brewster","gpa":2.62}, {"npm":"1506737849","name":"Zacherie","gpa":3.12}, {"npm":"1506737850","name":"Betsey","gpa":2.24}, {"npm":"1506737851","name":"Avery","gpa":3.38}, {"npm":"1506737852","name":"Gill","gpa":3.12}, {"npm":"1506737853","name":"Stephan","gpa":3.62}, {"npm":"1506737854","name":"Viole","gpa":3.91}, {"npm":"1506737855","name":"Caryl","gpa":3.83}, {"npm":"1506737856","name":"Nettie","gpa":2.52}, {"npm":"1506737857","name":"Emyle","gpa":3.69}, {"npm":"1506737858","name":"Bird","gpa":3.15}, {"npm":"1506737859","name":"Geno","gpa":2.19}, {"npm":"1506737860","name":"Saxon","gpa":2.91}, {"npm":"1506737861","name":"Juliana","gpa":2.41}, {"npm":"1506737862","name":"Harris","gpa":2.14}, {"npm":"1506737863","name":"Sheba","gpa":2.41}, {"npm":"1506737864","name":"Marcelline","gpa":3.67}, {"npm":"1506737865","name":"Aubrey","gpa":2.22}, {"npm":"1506737866","name":"Bliss","gpa":2.7}, {"npm":"1506737867","name":"Merry","gpa":2.32}, {"npm":"1506737868","name":"Portia","gpa":2.56}, {"npm":"1506737869","name":"Jewel","gpa":2.35}, {"npm":"1506737870","name":"Andris","gpa":3.38}, {"npm":"1506737871","name":"Nadiya","gpa":3.86}, {"npm":"1506737872","name":"Aggie","gpa":2.92}, {"npm":"1506737873","name":"Ramsay","gpa":3.6}, {"npm":"1506737874","name":"Saundra","gpa":3.28}, {"npm":"1506737875","name":"Sylas","gpa":2.43}, {"npm":"1506737876","name":"Clyde","gpa":3.04}, {"npm":"1506737877","name":"Modestine","gpa":2.83}, 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{"npm":"1506737918","name":"Silvia","gpa":3.37}, {"npm":"1506737919","name":"Arluene","gpa":2.03}, {"npm":"1506737920","name":"Ellissa","gpa":3.64}, {"npm":"1506737921","name":"Shirley","gpa":3.23}, {"npm":"1506737922","name":"Lorrie","gpa":3.75}, {"npm":"1506737923","name":"Beverlee","gpa":3.39}, {"npm":"1506737924","name":"Julissa","gpa":3.82}, {"npm":"1506737925","name":"Patrick","gpa":2.65}, {"npm":"1506737926","name":"Gwenneth","gpa":3.03}, {"npm":"1506737927","name":"Chiara","gpa":2.01}, {"npm":"1506737928","name":"Whitaker","gpa":2.71}, {"npm":"1506737929","name":"Coreen","gpa":2.61}, {"npm":"1506737930","name":"Averell","gpa":2.38}, {"npm":"1506737931","name":"Duffie","gpa":3.35}, {"npm":"1506737932","name":"Tasia","gpa":2.63}, {"npm":"1506737933","name":"Lorelie","gpa":3.84}, {"npm":"1506737934","name":"Mario","gpa":2.38}, {"npm":"1506737935","name":"Inojean","gpa":2.98}, {"npm":"1506737936","name":"Phylis","gpa":3.17}, {"npm":"1506737937","name":"Xenia","gpa":3.47}, {"npm":"1506737938","name":"Claybourne","gpa":2.91}, {"npm":"1506737939","name":"Nicholas","gpa":3.45}, {"npm":"1506737940","name":"Joelyn","gpa":2.66}, {"npm":"1506737941","name":"Harli","gpa":3.06}, {"npm":"1506737942","name":"Lucille","gpa":2.63}, {"npm":"1506737943","name":"Warren","gpa":2.75}, {"npm":"1506737944","name":"Carleton","gpa":3.37}, {"npm":"1506737945","name":"Walther","gpa":3.17}, {"npm":"1506737946","name":"Denny","gpa":3.96}, {"npm":"1506737947","name":"Dulcine","gpa":3.71}, {"npm":"1506737948","name":"Tatiana","gpa":2.47}, {"npm":"1506737949","name":"Win","gpa":3.54}, {"npm":"1506737950","name":"Katya","gpa":3.2}, {"npm":"1506737951","name":"Vaclav","gpa":3.59}, {"npm":"1506737952","name":"Dave","gpa":2.21}, {"npm":"1506737953","name":"Filia","gpa":3.27}, {"npm":"1506737954","name":"Kit","gpa":3.23}, {"npm":"1506737955","name":"Evonne","gpa":2.5}, {"npm":"1506737956","name":"Siward","gpa":3.3}, {"npm":"1506737957","name":"Nolie","gpa":3.22}, 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{"npm":"1506737978","name":"Cassie","gpa":3.12}, {"npm":"1506737979","name":"Doy","gpa":3.77}, {"npm":"1506737980","name":"Lynne","gpa":2.64}, {"npm":"1506737981","name":"Rosabelle","gpa":3.85}, {"npm":"1506737982","name":"Ramona","gpa":3.38}, {"npm":"1506737983","name":"Sheba","gpa":2.67}, {"npm":"1506737984","name":"Anderson","gpa":2.66}, {"npm":"1506737985","name":"Roanna","gpa":3.14}, {"npm":"1506737986","name":"Islahi","gpa":3.01}, {"npm":"1506737987","name":"Emerson","gpa":3.64}, {"npm":"1506737988","name":"Kimmie","gpa":2.07}, {"npm":"1506737989","name":"Roxi","gpa":2.92}, {"npm":"1506737990","name":"Parry","gpa":2.96}, {"npm":"1506737991","name":"Donall","gpa":3.01}, {"npm":"1506737992","name":"Maynord","gpa":3.87}, {"npm":"1506737993","name":"Cindra","gpa":3.5}, {"npm":"1506737994","name":"Ulrikauneko","gpa":2.82}, {"npm":"1506737995","name":"Anabel","gpa":3.92}, {"npm":"1506737996","name":"Coleman","gpa":2.25}, {"npm":"1506737997","name":"Othilia","gpa":3.29}, {"npm":"1506737998","name":"Horten","gpa":3.63}, {"npm":"1506737999","name":"Antonie","gpa":3.2}, {"npm":"1506738000","name":"Carissa","gpa":2.19}, {"npm":"1506738001","name":"Lazare","gpa":3.24}, {"npm":"1506738002","name":"Marta","gpa":3.71}, {"npm":"1506738003","name":"Eliza","gpa":3.01}, {"npm":"1506738004","name":"Cecilia","gpa":3.04}, {"npm":"1506738005","name":"Teresa","gpa":3.01}
```

Latihan 2 : Implementasikan service consumer untuk view all Students dengan melengkapi method selectAllStudents yang ada di kelas StudentServiceRest.

```

application.prop... StudentDAOImpl.java StudentServiceRe... StudentController... StudentModel.java StudentService.ja

@Autowired
@Lazy
private RestTemplate restTemplate;

@Bean
public RestTemplate restTemplate(RestTemplateBuilder builder) {
    return builder.build();
}

@Override
public StudentModel selectStudent (String npm)
{
    StudentModel student =
        restTemplate.getForObject(
            "http://localhost:8080/rest/student/view/"+npm,
            StudentModel.class);
    return student;
}

@Override
public List<StudentModel>selectAllStudents ()
{
    ResponseEntity<StudentModel[]> student = restTemplate.getForEntity("http://localhost:8080/rest/student/viewall",
        StudentModel[].class);
    return Arrays.asList(student.getBody());
}

```

Method diatas merupakan method yang diimplementasikan pada StudentDAOImpl.

APAP EKSTENSI Home Daftar Mahasiswa Menambah Mahasiswa						
All Students						
No	NPM	Name	GPA	Cum laude	Delete	Update
1	140102920	Mutiarani Ramadhan	3.95	Cum Laude!	Delete	Update
2	1406557503	Desy Ulfasari	2.75	Sangat Memuaskan!	Delete	Update
3	1406623083	Dwi Arfi Faradina Mawardi	3.0	Sangat Memuaskan!	Delete	Update
4	1502839	Shabrina	3.2	Sangat Memuaskan!	Delete	Update
5	1506737823	Kermie	3.32	Sangat Memuaskan!	Delete	Update
6	1506737824	Ellene	2.89	Sangat Memuaskan!	Delete	Update
7	1506737825	Delmer	2.58	Sangat Memuaskan!	Delete	Update
8	1506737826	Kristian	2.33	Sangat Memuaskan!	Delete	Update
9	1506737827	Marilyn	3.49	Cum Laude!	Delete	Update

Sebelumnya telah dibuat service producer untuk method view all yang kemudian akan diimplementasikan method tersebut pada service producer untuk membuat tampilan interaksi dengan user seperti pada gambar diatas. Method viewAll ditambahkan dengan berisi list dari data-data student dan menggunakan RestTemplate untuk berkomunikasi dengan service producer dan menambahkan link dari service producer ke service consumer untuk method viewall. Hal ini berfungsi untuk mengambil data dari database service producer dan mengembalikan object dari list student.