Tutorial 2
Arsitektur dan Pemrograman Aplikasi Perusahaan
Semester Genap 2017/2018
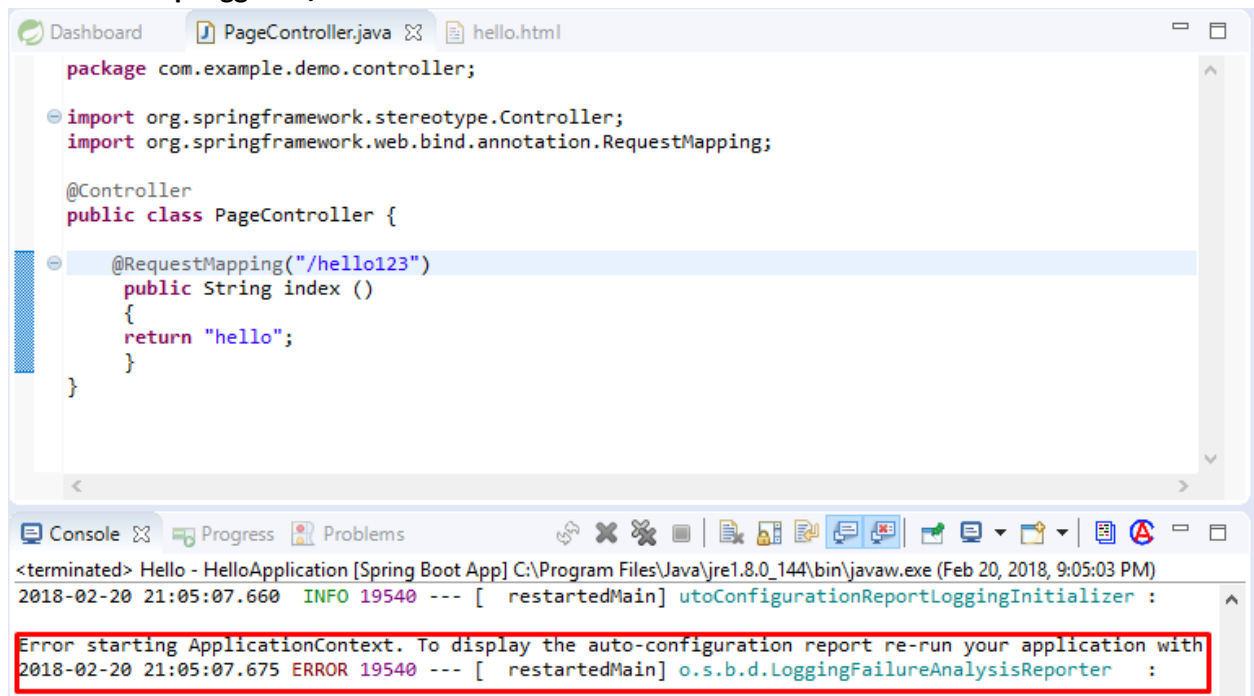
FAKULTAS
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Pada tutorial 2 ini, memperlajari model pemograman MVC. Aplikasi yang digunakan dalam pemograman ini adalah JDK, Eclipse, Maven, dan Spring Tools Suite. Framework yang di jelaskan pada tutorial ini yaitu spring, spring boot, dan spring mvc. Ketiga frame work ini memiliki kesamaan dan saling terkait dan biasanya digunakan untuk membangun suatu aplikasi berskala perusahaan. Nah! Pada tutorial ini saying menggunakan STS (Spring Tool Suit) dimana pada aplikasi ini saya dapat membuat program dan akan di jalankan dalam user interface website. Proses pemograman pada tutuorial ini lebih menekankan bagaimana pemrograman dengan menggunakan controller.

Latihan 1 Project Hello World

1. Ganti baris tersebut menjadi @RequestMapping("/hello123") Pertanyaan: Apakah compile error? Jika tidak, stop Spring Boot yang sedang berjalan, run kembali dan buka localhost:8080/hello apa yang terjadi?
   Jawab : Terjadi error. Error karena @requestmapping nya adalah /hello123 sedangkan pada web browser dipanggil url /hello.

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localhost:8080/hello

Whitelabel Error Page

This application has no explicit mapping for /error, so you are seeing this as a fallback.

Tue Feb 20 21:11:37 ICT 2018
There was an unexpected error (type=Not Found, status=404).
No message available

2. Ganti nama method index() dengan nama method hello()
   Pertanyaan: Apakah compile error? Jika tidak, Stop Spring Boot yang sedang berjalan, run kembali dan buka localhost:8080/hello apakah page hello sebelumnya masih muncul? Kembalikan nama method menjadi index()
   Jawab : Ketika di compile tidak terjadi error walaupun nama methodnya di ubah. Nama method dapat di ganti sesuai keinginan namun tidak akan mempengaruhi pada nama url.

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```java
package com.example.demo.controller;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;

@Controller
public class PageController {

    @RequestMapping("/hello")
    public String hello ()
    {
    return "hello";
    }
}
```

```
<terminated> Hello - HelloApplication [Spring Boot App] C:\Program Files\Java\jre1.8.0_144\bin\javaw.exe (Feb 20, 2018, 9:17:32 PM)
2018-02-20 21:17:36.700 ERROR 18592 --- [  restartedMain] o.s.b.d.LoggingFailureAnalysisReporter   :

**************************
APPLICATION FAILED TO START
**************************

Description:

The Tomcat connector configured to listen on port 8080 failed to start. The port may already be in use or

Action:

Verify the connector's configuration, identify and stop any process that's listening on port 8080, or con

2018-02-20 21:17:36.700  INFO 18592 --- [  restartedMain] ationConfigEmbeddedWebApplicationContext : Clos
2018-02-20 21:17:36.700  INFO 18592 --- [  restartedMain] o.s.j.e.a.AnnotationMBeanExporter         : Unre
```

localhost:8080/hello

Hello, world!

3. Ganti string return type menjadi return "hello123"; Pertanyaan: Apakah compile error? Jika tidak, Stop Spring Boot yang sedang berjalan, run kembali dan buka localhost:8080/hello apakah page hello sebelumnya masih muncul? Kembalikan return type menjadi "hello" Pertanyaan: Menandakan apakah String yang di-return tersebut?
Jawab : Akan terjadi error, karena path hello123 tidak di temukan.

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```java
package com.example.demo.controller;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;

@Controller
public class PageController {

    @RequestMapping("/hello")
    public String index ()
    {
        return "hello123";
    }
}
```

```
<terminated> Hello - HelloApplication [Spring Boot App] C:\Program Files\Java\jre1.8.0_144\bin\javaw.exe (Feb 20, 2018, 9:21:37 PM)
2018-02-20 21:21:41.729 ERROR 14080 --- [  restartedMain] o.s.b.d.LoggingFailureAnalysisReporter   :

***************************
APPLICATION FAILED TO START
***************************

Description:

The Tomcat connector configured to listen on port 8080 failed to start. The port may already be in use or

Action:

Verify the connector's configuration, identify and stop any process that's listening on port 8080, or con

2018-02-20 21:21:41.729  INFO 14080 --- [  restartedMain] ationConfigEmbeddedWebApplicationContext : Clos
2018-02-20 21:21:41.729  INFO 14080 --- [  restartedMain] o.s.j.e.a.AnnotationMBeanExporter         : Unre
```

localhost:8080/hello

Whitelabel Error Page

This application has no explicit mapping for /error, so you are seeing this as a fallback.

Tue Feb 20 21:23:29 ICT 2018
There was an unexpected error (type=Internal Server Error, status=500).
Error resolving template "hello123", template might not exist or might not be accessible by any of the configured Template Resolvers

Latihan 2 Request Parameter (Query String)

1. Ubah nilai anotasi RequestMapping dari "/greeting" menjadi "/hello/greeting". Buka
   localhost:8080/hello/greeting?name=chanek. Pertanyaan: apakah hasilnya?

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Jawab : Tidak terjadi error

```java
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.RequestParam;

@Controller
public class PageController {

    @RequestMapping("/hello")
    public String index ()
    {
    return "hello";
    }

    @RequestMapping("/hello/greeting")
    public String greeting (@RequestParam(value = "nama") String nama, Model model)
    {
        model.addAttribute ("nama", nama);
        return "greeting";
```

```
Console ⊠    Progress    Problems                                            ─ ☐
Hello - HelloApplication [Spring Boot App] C:\Program Files\Java\jre1.8.0_144\bin\javaw.exe (Feb 20, 2018, 9:37:23 PM)
2018-02-21 09:02:28.909  INFO 824 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean    : Map
2018-02-21 09:02:28.993  INFO 824 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerAdapter : Lool
2018-02-21 09:02:29.000  INFO 824 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping : Map|
2018-02-21 09:02:29.001  INFO 824 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping : Map|
2018-02-21 09:02:29.003  INFO 824 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping : Map|
2018-02-21 09:02:29.003  INFO 824 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping : Map|
2018-02-21 09:02:29.010  INFO 824 --- [  restartedMain] o.s.w.s.handler.SimpleUrlHandlerMapping  : Map|
2018-02-21 09:02:29.010  INFO 824 --- [  restartedMain] o.s.w.s.handler.SimpleUrlHandlerMapping  : Map|
2018-02-21 09:02:29.022  INFO 824 --- [  restartedMain] o.s.w.s.handler.SimpleUrlHandlerMapping  : Map|
2018-02-21 09:02:29.059  INFO 824 --- [  restartedMain] o.s.b.d.a.OptionalLiveReloadServer       : Live
2018-02-21 09:02:29.110  INFO 824 --- [  restartedMain] o.s.j.e.a.AnnotationMBeanExporter         : Reg:
2018-02-21 09:02:29.159  INFO 824 --- [  restartedMain] s.b.c.e.t.TomcatEmbeddedServletContainer : Tom
2018-02-21 09:02:29.161  INFO 824 --- [  restartedMain] com.example.demo.HelloApplication         : Sta
2018-02-21 09:03:16.941  INFO 824 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/]       : Ini
2018-02-21 09:03:16.941  INFO 824 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet         : Frai
2018-02-21 09:03:16.945  INFO 824 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet         : Frai
```

← → C ⌂   ⓘ localhost:8080/hello/greeting?nama=chanek

Selamat datang chanek!

2. Akses localhost:8080/greeting Pertanyaan: Apakah hasilnya? Ubah header method greeting

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Jawab: Tampilan "Selamat datang null!" karena parameter telah ditambahkan required = false

```
        return  hello ;
    }
    @RequestMapping("/greeting")
    public String greeting (@RequestParam(value = "name", required = false) String name, Model model)
    {
        model.addAttribute ("name", name);
        return "greeting";
    }
}
```

```
Console        Progress    Problems
Hello - HelloApplication [Spring Boot App] C:\Program Files\Java\jre1.8.0_144\bin\javaw.exe (Feb 21, 2018, 10:47:33 PM)
2018-02-21 22:47:36.173  INFO 3756 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean    : Mapping filter: 'hiddenHttpMet
2018-02-21 22:47:36.173  INFO 3756 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean    : Mapping filter: 'httpPutFormCo
2018-02-21 22:47:36.173  INFO 3756 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean    : Mapping filter: 'requestContex
2018-02-21 22:47:36.414  INFO 3756 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerAdapter  : Looking for @ControllerAdvice:
2018-02-21 22:47:36.457  INFO 3756 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping  : Mapped "{[/hello]}" onto publi
2018-02-21 22:47:36.459  INFO 3756 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping  : Mapped "{[/greeting]}" onto pu
2018-02-21 22:47:36.462  INFO 3756 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping  : Mapped "{[/error]}" onto publi
2018-02-21 22:47:36.462  INFO 3756 --- [  restartedMain] s.w.s.m.m.a.RequestMappingHandlerMapping  : Mapped "{[/error],produces=[te
2018-02-21 22:47:36.486  INFO 3756 --- [  restartedMain] o.s.w.s.handler.SimpleUrlHandlerMapping   : Mapped URL path [/webjars/**]
2018-02-21 22:47:36.487  INFO 3756 --- [  restartedMain] o.s.w.s.handler.SimpleUrlHandlerMapping   : Mapped URL path [/**] onto han
2018-02-21 22:47:36.518  INFO 3756 --- [  restartedMain] o.s.w.s.handler.SimpleUrlHandlerMapping   : Mapped URL path [/**/favicon.i
2018-02-21 22:47:36.866  INFO 3756 --- [  restartedMain] o.s.b.d.a.OptionalLiveReloadServer        : LiveReload server is running c
2018-02-21 22:47:36.901  INFO 3756 --- [  restartedMain] o.s.j.e.a.AnnotationMBeanExporter         : Registering beans for JMX expo
2018-02-21 22:47:36.944  INFO 3756 --- [  restartedMain] s.b.c.e.t.TomcatEmbeddedServletContainer  : Tomcat started on port(s): 808
2018-02-21 22:47:36.955  INFO 3756 --- [  restartedMain] com.example.demo.HelloApplication         : Started HelloApplication in 2.
```

Second Page ✕

← → C ⌂ ⓘ localhost:8080/greeting

Selamat datang null!

3. Akses localhost:8080/greeting/

Jawaban: Tampilan "Selamat datang dunia!" karena path variable {name} sesuai dengan parameter yang ada yaitu name

Second Page ✕

← → C ⌂ ⓘ localhost:8080/greeting

Selamat datang dunia!

4. Perhatikan bahwa pada berkas greeting.html, tag paragraf yang kita tambahkan adalah sebagai berikut:

```
<p th:text="'Selamat datang ' + ${name} + '!'" >Sapaan untuk user</p>
```

Pertanyaan: Mengapa tulisan "Sapaan untuk user" tidak pernah muncul?

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Jawaban: Karena controller tidak memanggil

Latihan 3 Path Variable

1. Akses localhost:8080/greeting/

Jawab : Terjadi error karena terdapat method yang ambigu dan pemanggilan tidak dipanggil yaitu

/greeting dan path variable

2. Akses localhost:8080/greeting/chanek

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Jawab : Tampilannya tidak error karena path yang di panggil sesuai url.

← → C ⌂ ⓘ localhost:8080/greeting/chanek
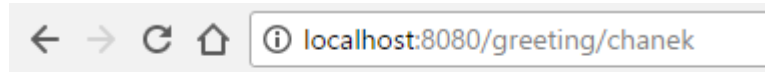
Selamat datang chanek!

LATIHAN PERKALIAN

```java
@RequestMapping("/perkalian")
public String perkalian(@RequestParam(value = "a", required = false, defaultValue = "0")Integer a,
        @RequestParam(value = "b", required = false, defaultValue = "0")Integer b, Model model) {
    model.addAttribute("a", a);
    model.addAttribute("b", b);
    model.addAttribute(a*b);
    return "perkalian";
}
```

```html
<!DOCTYPE html>
<html xmlns:th="http://www.thymeleaf.org">
  <head>
      <title>Perkalian</title>
  </head>
  <body>
      <h2>Perkalian</h2>
      <p th:text="${a} + ' x ' + ${b} + ' = ' +${a*b}"></p>
  </body>
</html>
```

← → C ⌂ ⓘ localhost:8080/perkalian
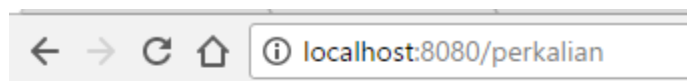
Perkalian

0 x 0 = 0

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← → C ⌂ ⓘ localhost:8080/perkalian?a=20

Perkalian

20 x 0 = 0

← → C ⌂ ⓘ localhost:8080/perkalian?b=30

Perkalian

0 x 30 = 0

← → C ⌂ ⓘ localhost:8080/perkalian?a=30&b=10

Perkalian

30 x 10 = 300