Thymeleaf with Spring Boot

What is Thymeleaf?

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Thymeleaf

www.thymeleaf.org

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- However, it is a general purpose templating engine
  - Can use Thymeleaf outside of web apps (more on this later)

Thymeleaf

www.thymeleaf.org

Separate project
Unrelated to spring.io

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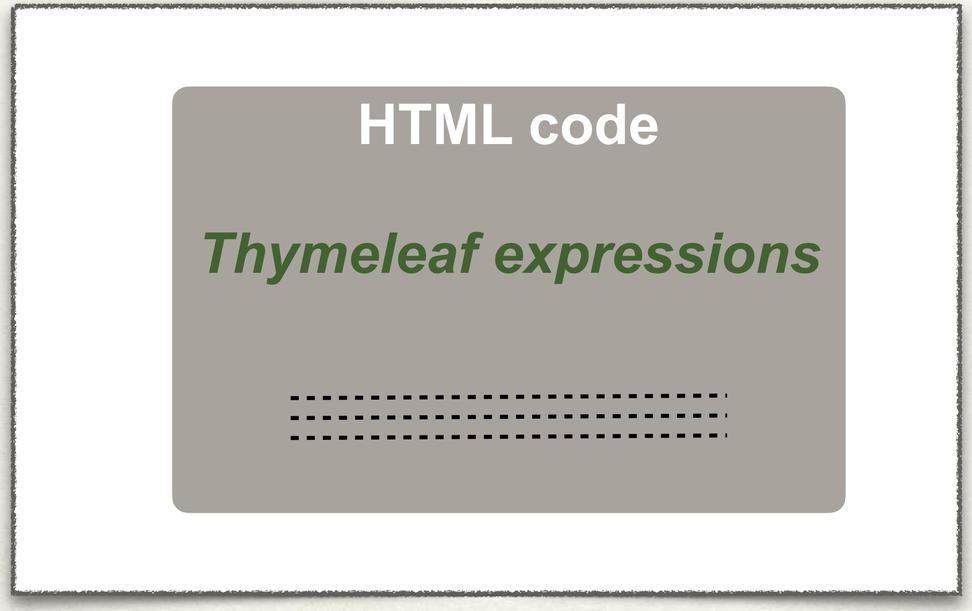

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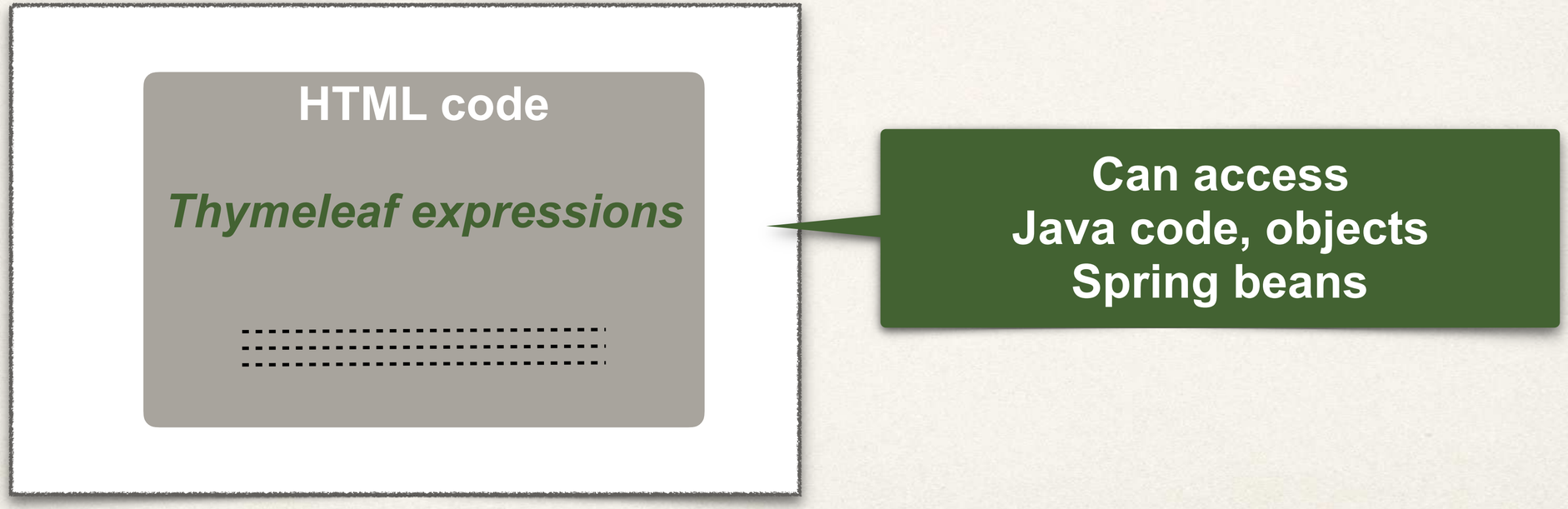

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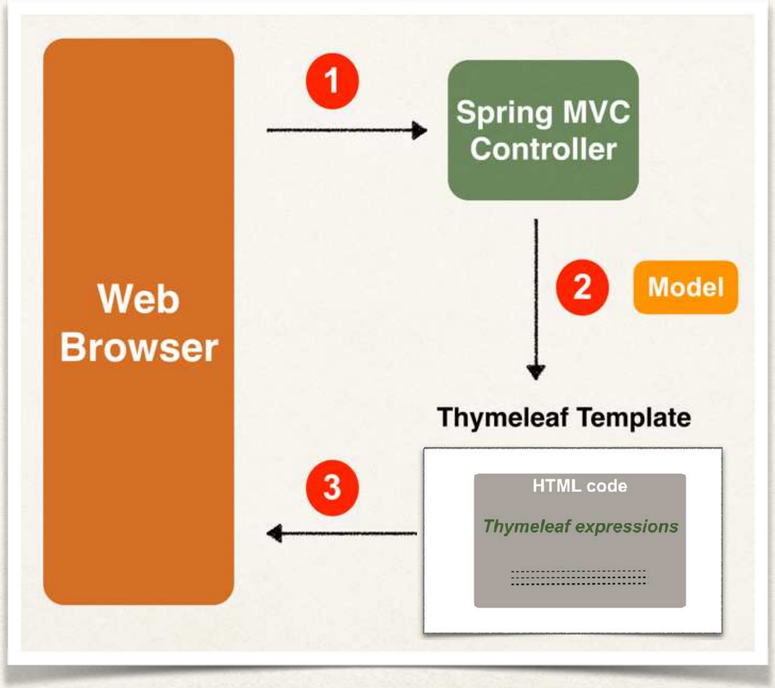

Hmmm …

This sounds similar to JSP …

Thymeleaf vs JSP

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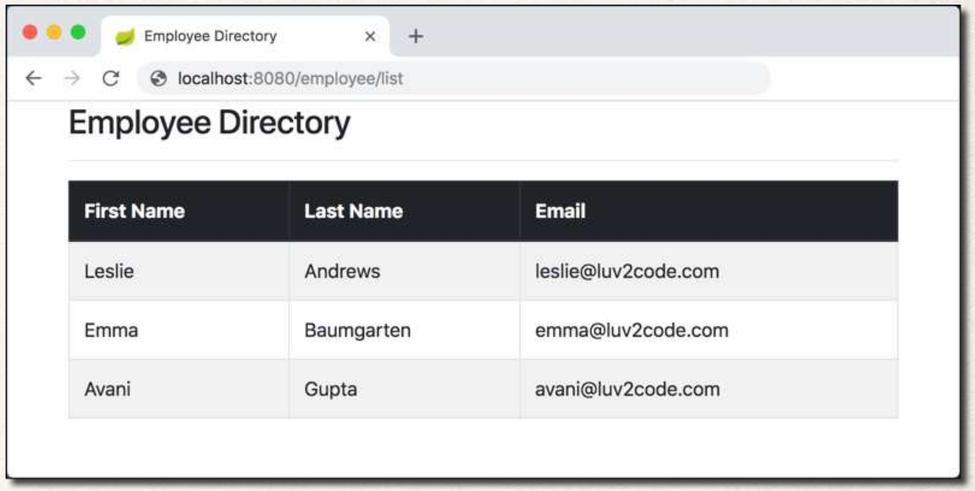

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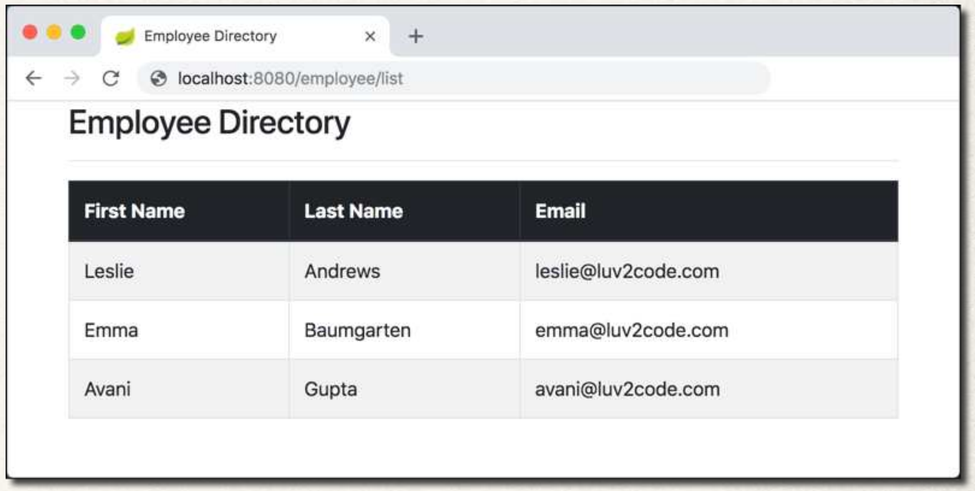
- One key difference



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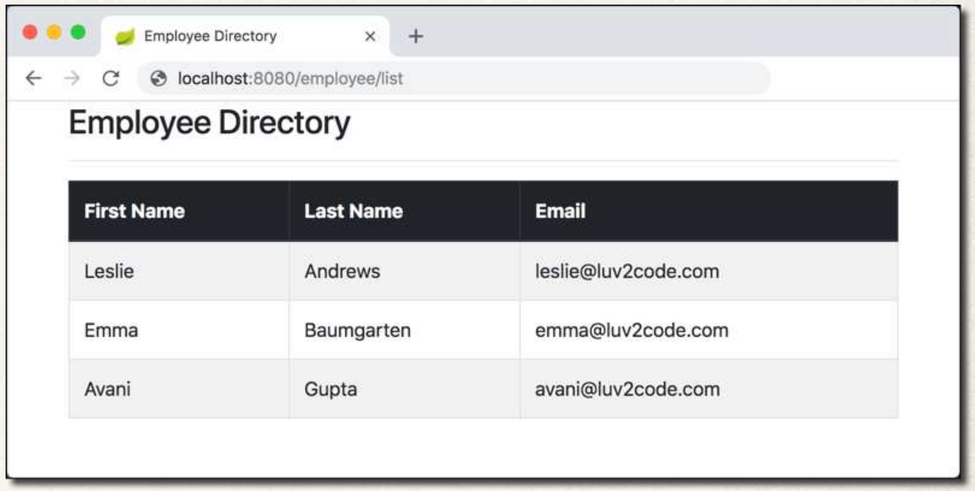
  - JSP can only be used in a web environment



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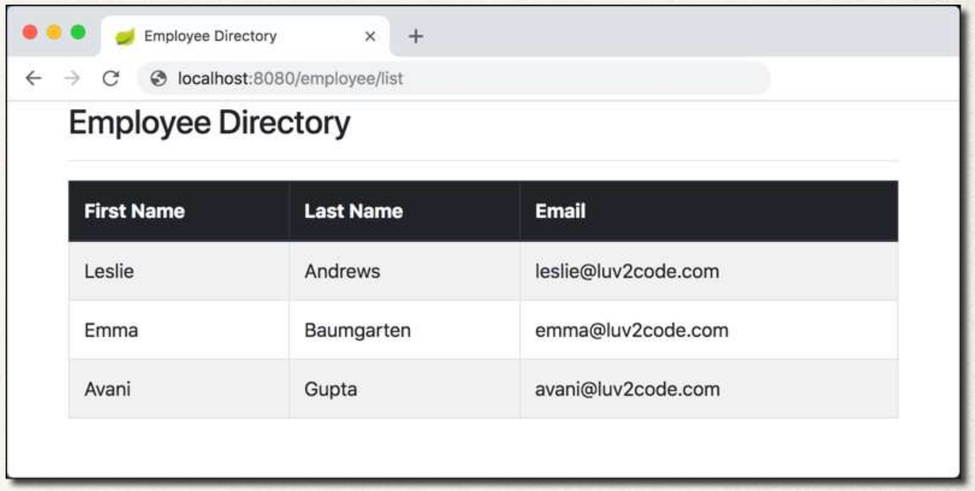

- One key difference
  - JSP can only be used in a web environment
  - Thymeleaf can be used in web OR non-web environments

Thymeleaf Use Cases (non-web)

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- Email Template

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- Email Template
  - When student signs up for a course then send welcome email

```
Hi <<firstName>>,

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Email

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  - Generate a monthly report as CSV then upload to Google drive

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Product,Quantity,Price,Total
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CSV

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Product,Quantity,Price,Total
…
…
```

CSV

- PDF Template
  - Generate a travel confirmation PDF then send via email

```
Flight: <<flightNum>>
Depart: <<departAirport>>
Arrive: <<arrivalAirport>>
```

PDF

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- If you only need web views you can go either way
- If you need a general purpose template engine (non-web) use Thymeleaf
- If you want to **impress your interviewer**, mention Thymeleaf … LOL!

Thymeleaf Demo

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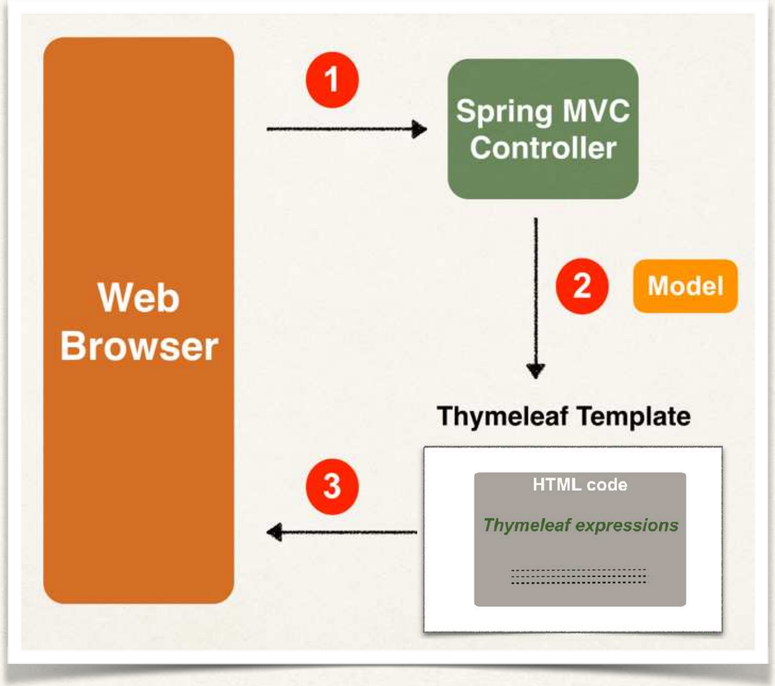

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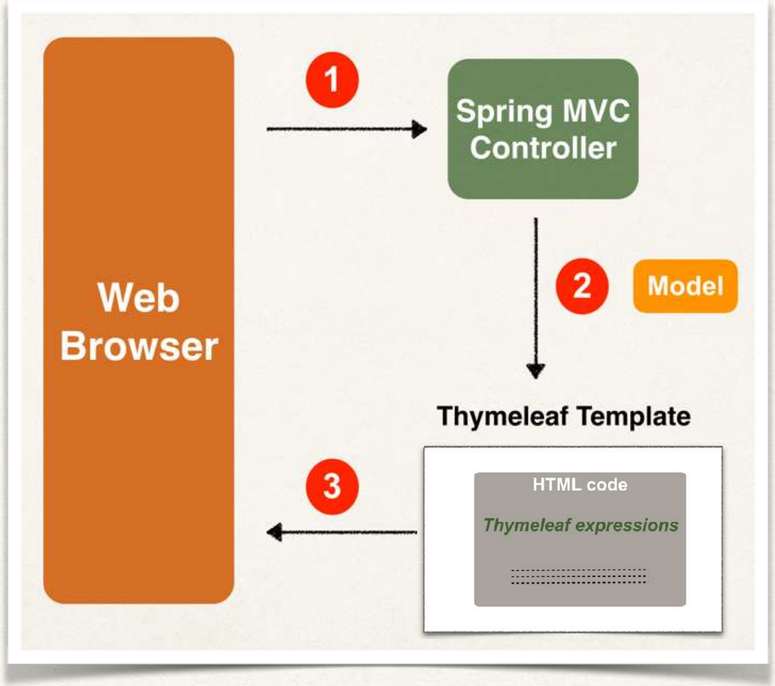

Output

Time on the server is Sun Jan 06 17:00:40 EST 2019

Development Process

Step-By-Step

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1. Add Thymeleaf to Maven POM file

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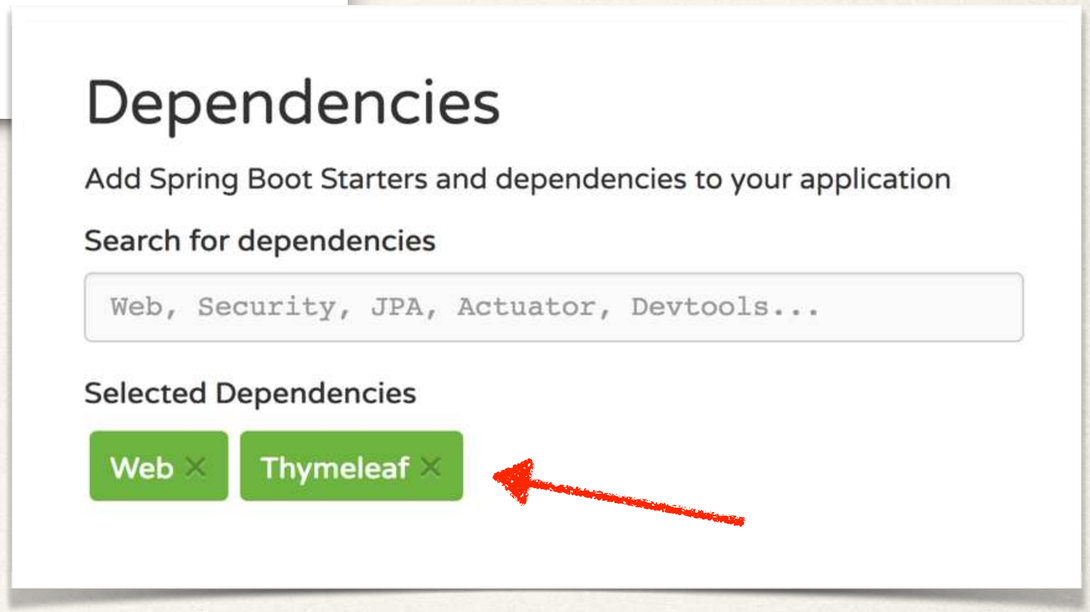

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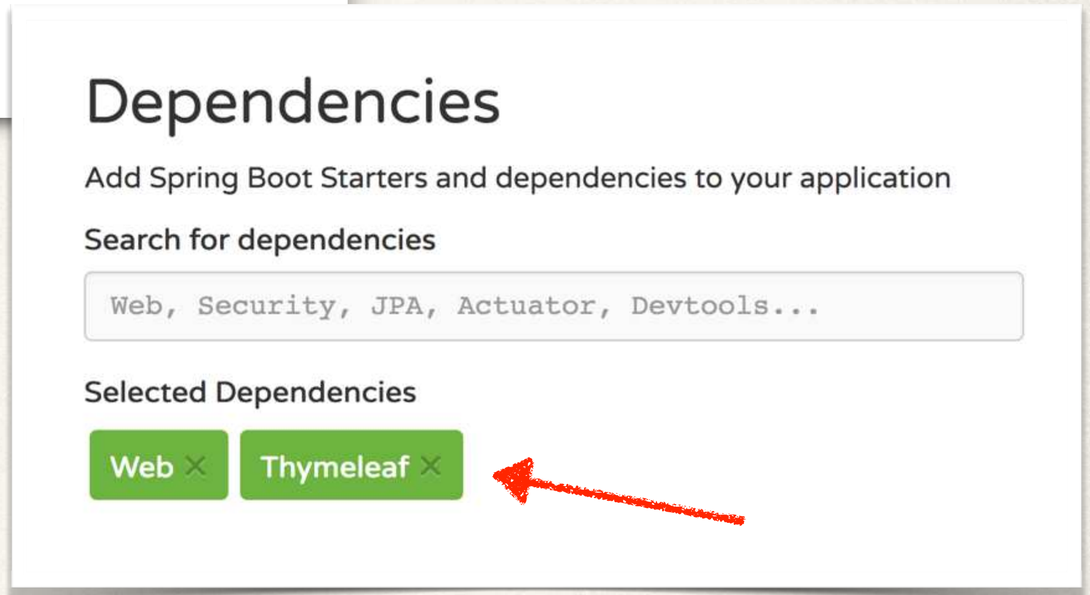

Based on this,
Spring Boot will auto configure to use Thymeleaf templates

Step 2: Develop Spring MVC Controller

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File: DemoController.java

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- For web apps, Thymeleaf templates have a **.html** extension

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www.thymeleaf.org

CSS and Thymeleaf

Let's Apply CSS Styles to our Page

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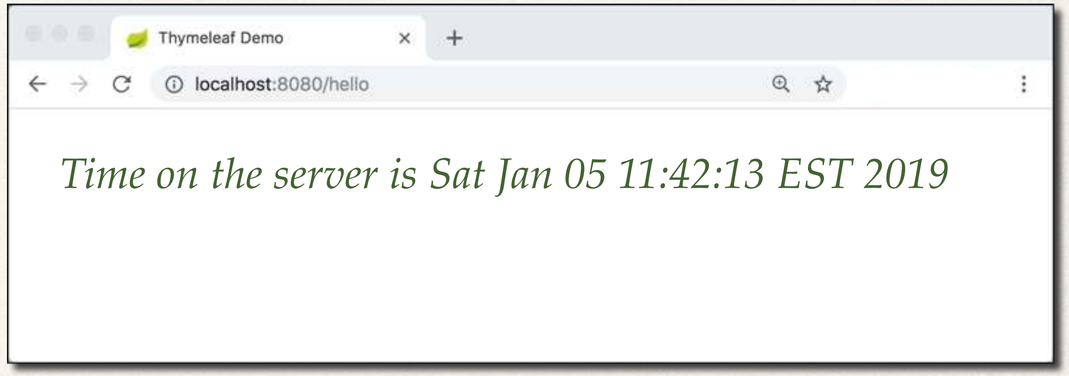
Before

Let's Apply CSS Styles to our Page

Before

After



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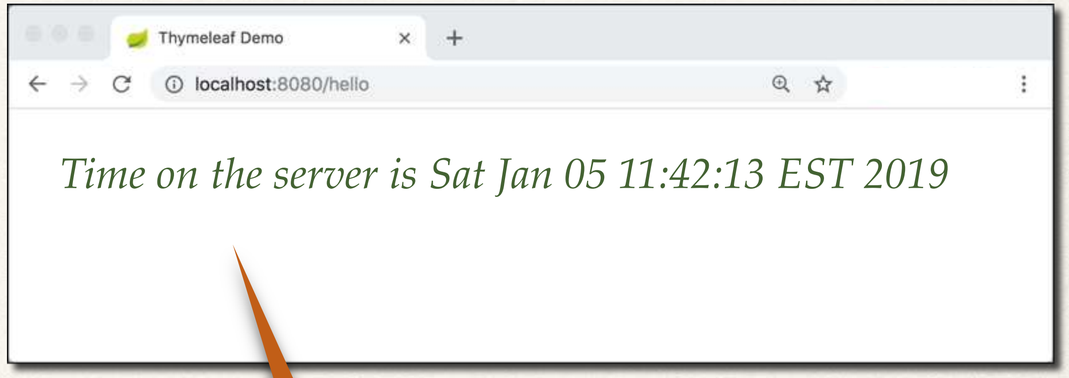


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Using CSS with Thymleaf Templates

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  - Local CSS files as part of your project

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- We'll cover both options in this video

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Step-By-Step

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Step-By-Step

1. Create CSS file

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Step-By-Step

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2. Reference CSS in Thymeleaf template

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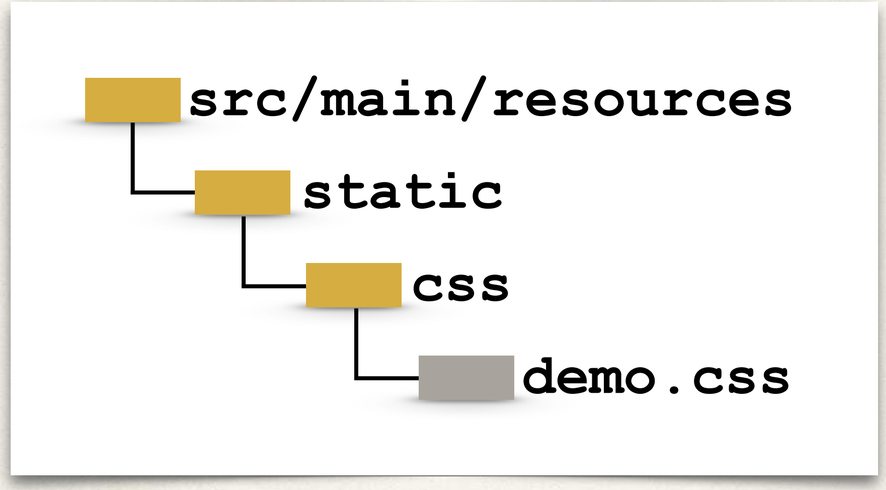

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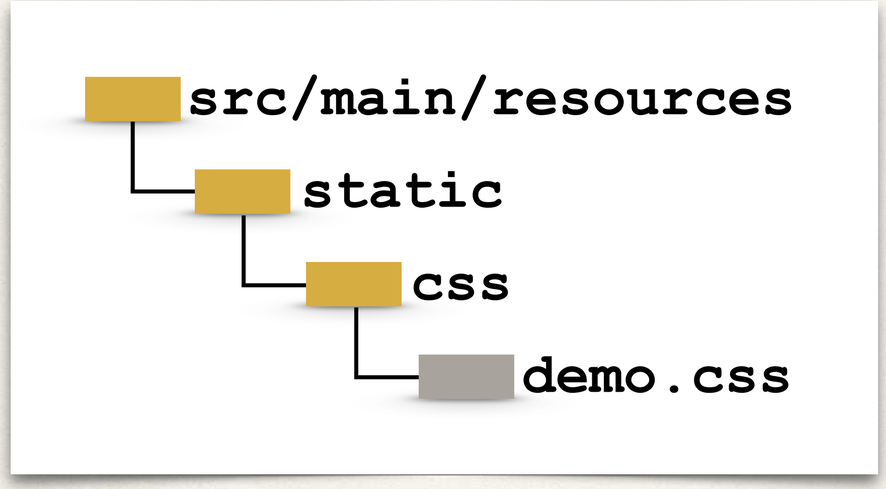

File: demo.css

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.funny {
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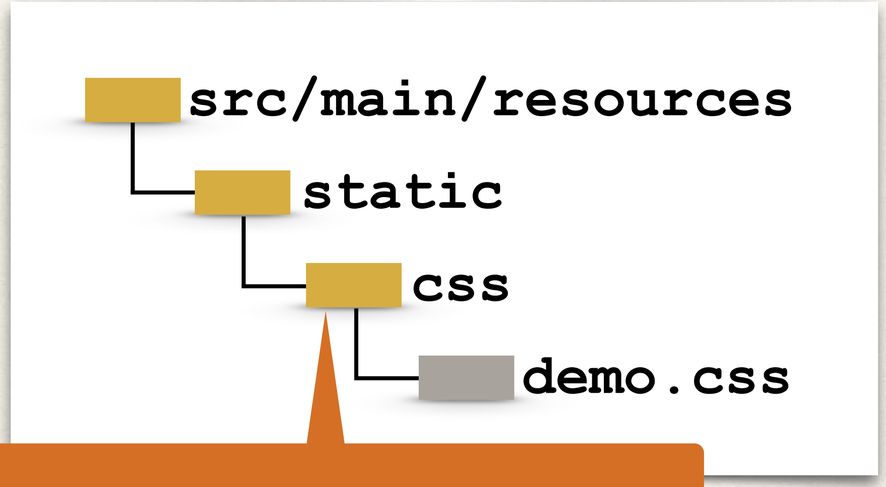

Can be any sub-directory name

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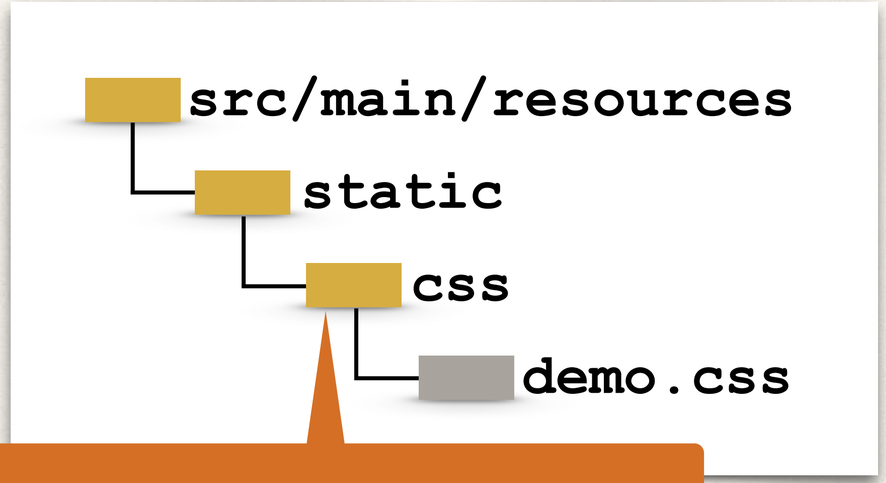
You can create your own custom sub-directories
`static/css`
`static/images`
`static/js`
etc …



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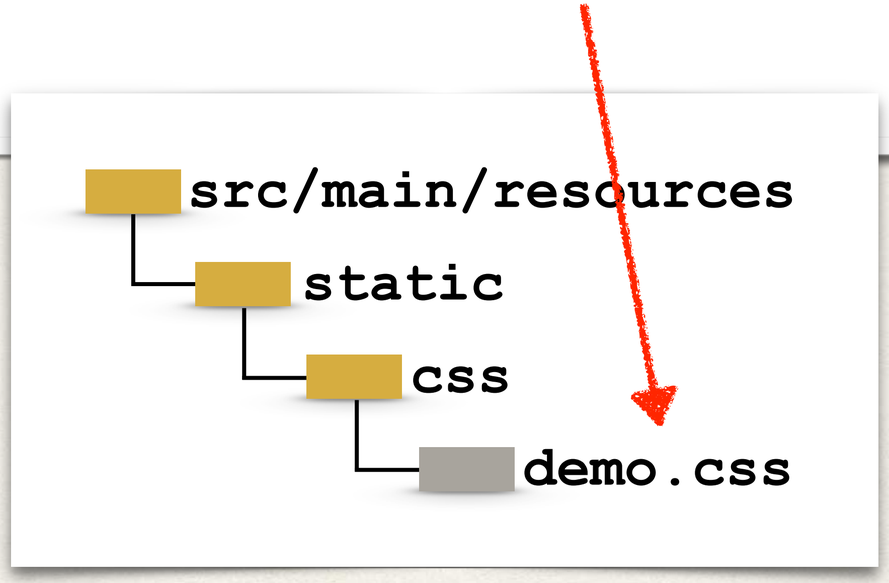

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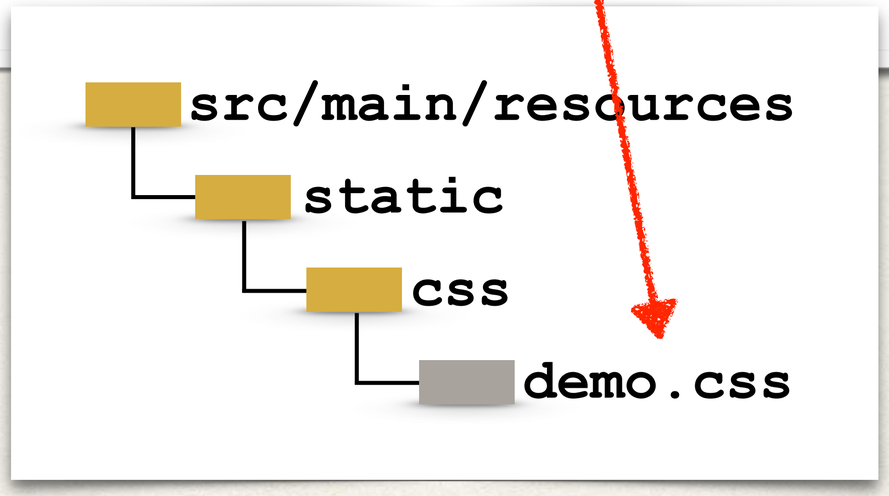
@ symbol
Reference context path of your application (app root)



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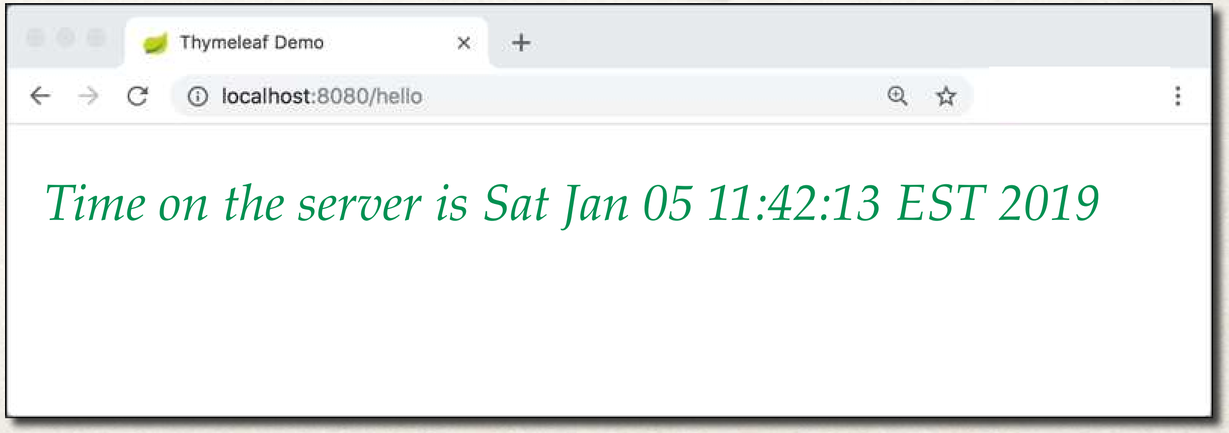
  font-style: italic;
  color: green;
}
```



Step 3: Apply CSS

File: helloworld.html

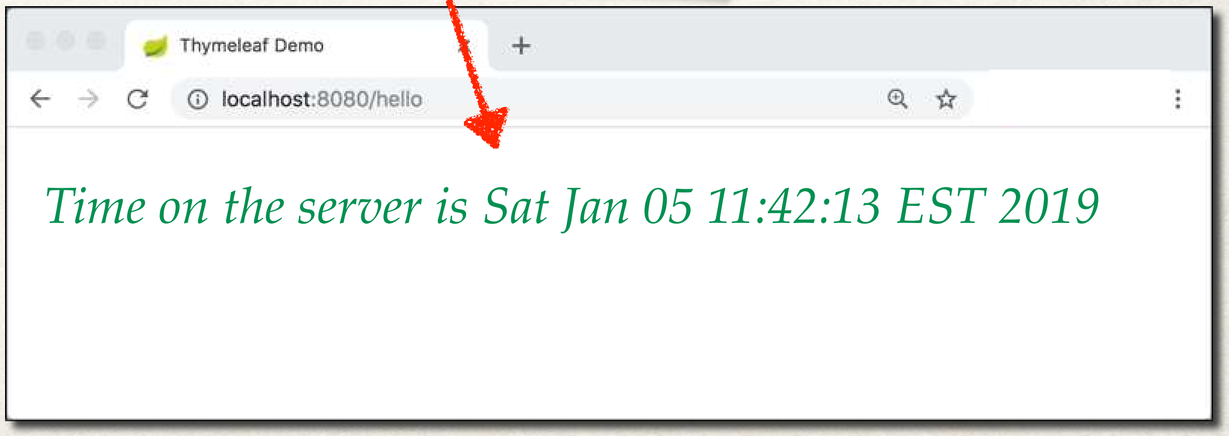
```
<head>
  <title>Thymeleaf Demo</title>

  <!-- reference CSS file -->
  <link rel="stylesheet" th:href="@{/css/demo.css}" />
</head>

<body>
  <p th:text="'Time on the server is ' + ${theDate}" class="funny" />
</body>
```

File: demo.css

```
.funny {
  font-style: italic;
  color: green;
}
```



Other search directories

Other search directories

Spring Boot will search following directories for static resources:

`/src/main/resources`

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1. **`/META-INF/resources`**

Other search directories

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`/src/main/resources`

1. **`/META-INF/resources`**
2. **`/resources`**

Other search directories

Spring Boot will search following directories for static resources:

`/src/main/resources`

1. **`/META-INF/resources`**
2. **`/resources`**
3. **`/static`**

Other search directories

Spring Boot will search following directories for static resources:

`/src/main/resources`

1. **`/META-INF/resources`**
2. **`/resources`**
3. **`/static`**
4. **`/public`**

Other search directories

Spring Boot will search following directories for static resources:

`/src/main/resources`

1. `/META-INF/resources`
2. `/resources`
3. `/static`
4. `/public`

Search order: top-down

3rd Party CSS Libraries - Bootstrap

3rd Party CSS Libraries - Bootstrap

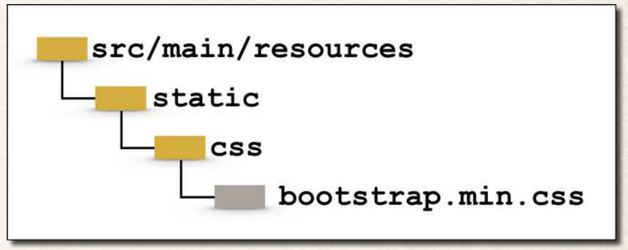
- Local Installation

3rd Party CSS Libraries - Bootstrap

- Local Installation
- Download Bootstrap file(s) and add to **`/static/css`** directory

3rd Party CSS Libraries - Bootstrap

- Local Installation
- Download Bootstrap file(s) and add to **`/static/css`** directory



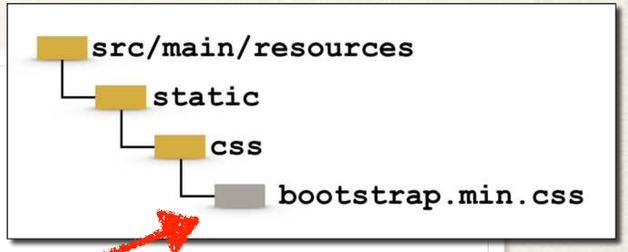
3rd Party CSS Libraries - Bootstrap

- Local Installation
- Download Bootstrap file(s) and add to **`/static/css`** directory

```
<head>
  … …

  <!-- reference CSS file -->
  <link rel="stylesheet" th:href="@{/css/bootstrap.min.css}" />

</head>
```



3rd Party CSS Libraries - Bootstrap

3rd Party CSS Libraries - Bootstrap

- Remote Files

3rd Party CSS Libraries - Bootstrap

- Remote Files

```
<head>
  … …

  <!-- reference CSS file -->
  <link rel="stylesheet"
       href="https://stackpath.bootstrapcdn.com/bootstrap/4.2.1/css/bootstrap.min.css" />

  … …
</head>
```

Create HTML Tables with Thymeleaf

HTML Tables

Start with plain table
Will add CSS in later videos

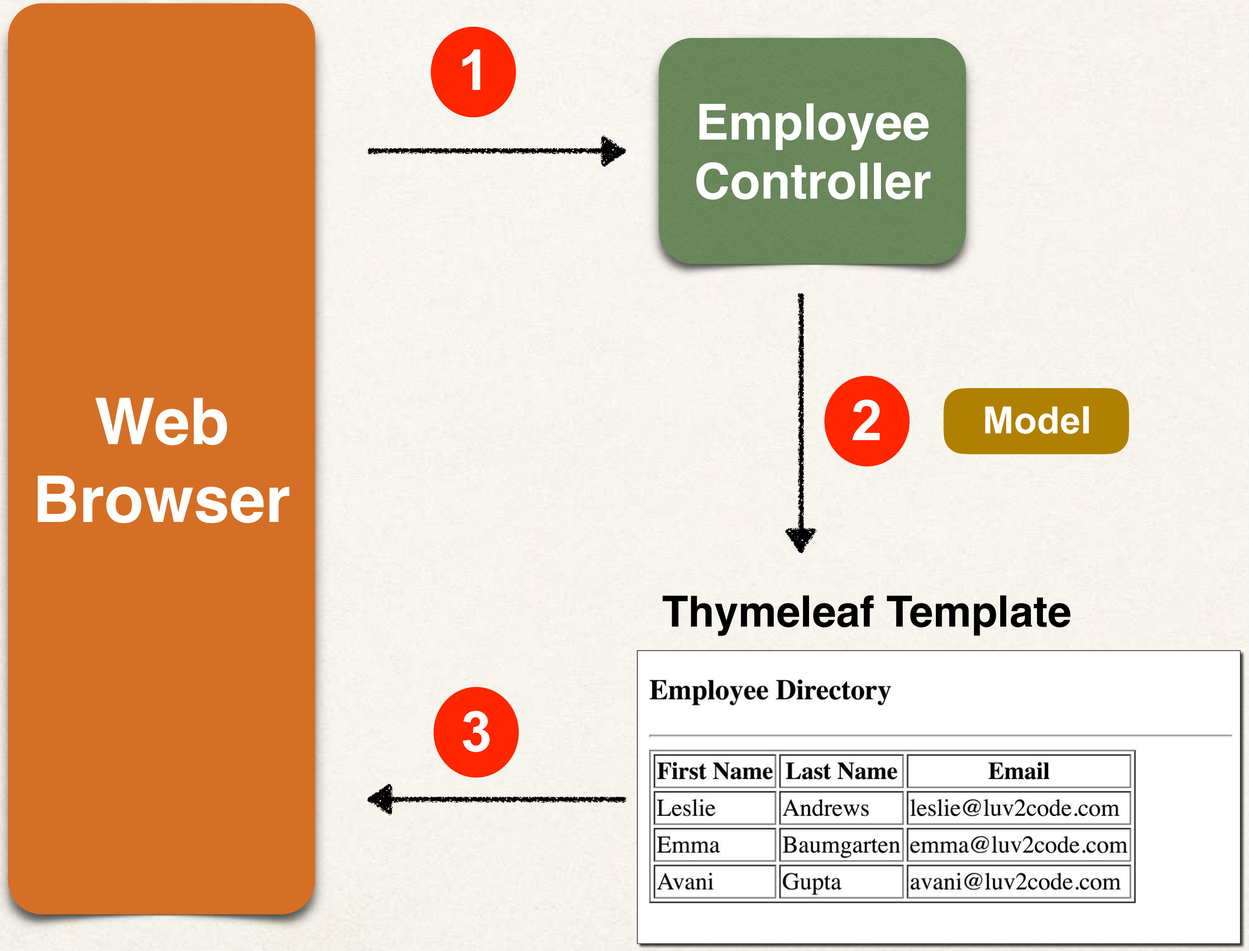
HTML Tables

Start with plain table
Will add CSS in later videos

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Big Picture


Web Browser
1
Employee Controller
2
Model
Thymeleaf Template
Employee Directory
First Name | Last Name | Email
Leslie | Andrews | leslie@luv2code.com
Emma | Baumgarten | emma@luv2code.com
Avani | Gupta | avani@luv2code.com
3

Development Process

Step-By-Step

Development Process

Step-By-Step

1. Create Employee.java

Development Process

Step-By-Step

1. Create Employee.java

2. Create EmployeeController.java

Development Process

Step-By-Step

1. Create Employee.java

2. Create EmployeeController.java

3. Create Thymeleaf template

Step 1: Create Employee.java

```java
public class Employee {

    private int id;
    private String firstName;
    private String lastName;
    private String email;

    public Employee() {

    }

    public Employee(int id, String firstName, String lastName, String email) {
        this.id = id;
        this.firstName = firstName;
        this.lastName = lastName;
        this.email = email;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
```

Step 1: Create Employee.java

- Regular Java class: fields, constructors, getters / setters

```
public class Employee {

    private int id;
    private String firstName;
    private String lastName;
    private String email;

    public Employee() {

    }

    public Employee(int id, String firstName, String lastName, String email) {
        this.id = id;
        this.firstName = firstName;
        this.lastName = lastName;
        this.email = email;
    }

    public int getId() {
        return id;
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    public void setId(int id) {
        this.id = id;
```

Step 2: Create EmployeeController.java

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```
@Controller
@RequestMapping("/employees")
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@Controller
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```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      Employee emp1 = new Employee(1, "Leslie", "Andrews", "leslie@luv2code.com");
      Employee emp2 = new Employee(2, "Emma", "Baumgarten", "emma@luv2code.com");
      Employee emp3 = new Employee(3, "Avani", "Gupta", "avani@luv2code.com");
```

Will add database integration later

Step 2: Create EmployeeController.java

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      Employee emp1 = new Employee(1, "Leslie", "Andrews", "leslie@luv2code.com");
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      // create the list
      List<Employee> theEmployees = new ArrayList<>();
```

Step 2: Create EmployeeController.java

```
@Controller
@RequestMapping("/employees")
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      // create employees
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      Employee emp3 = new Employee(3, "Avani", "Gupta", "avani@luv2code.com");

      // create the list
      List<Employee> theEmployees = new ArrayList<>();

      // add to the list
      theEmployees.add(emp1);
      theEmployees.add(emp2);
      theEmployees.add(emp3);
```

Step 2: Create EmployeeController.java

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
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      // create employees
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      theEmployees.add(emp3);

      // add to the spring model
      theModel.addAttribute("employees", theEmployees);
```

Step 2: Create EmployeeController.java

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      Employee emp1 = new Employee(1, "Leslie", "Andrews", "leslie@luv2code.com");
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```

Our Thymleaf template will access this data

Step 2: Create EmployeeController.java

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      Employee emp1 = new Employee(1, "Leslie", "Andrews", "leslie@luv2code.com");
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      // create the list
      List<Employee> theEmployees = new ArrayList<>();

      // add to the list
      theEmployees.add(emp1);
      theEmployees.add(emp2);
      theEmployees.add(emp3);

      // add to the spring model
      theModel.addAttribute("employees", theEmployees);

      return "list-employees";
   }
}
```

Our Thymleaf template will access this data

Step 2: Create EmployeeController.java

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      Employee emp1 = new Employee(1, "Leslie", "Andrews", "leslie@luv2code.com");
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      // add to the spring model
      theModel.addAttribute("employees", theEmployees);

      return "list-employees";
   }
}
```

Our Thymleaf template will access this data

`src/main/resources/templates/list-employees.html`

Step 3: Create Thymeleaf template

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
```

To use Thymeleaf expressions

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>
```

To use Thymeleaf expressions

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>

  <table border="1">

    <!-- Build HTML table based on employees -->

  </table>
```

To use Thymeleaf expressions

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>

  <table border="1">

    <!-- Build HTML table based on employees -->

  </table>
```

To use Thymeleaf expressions

To Do
Add code to loop over employees

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
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Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>

  <table border="1">

    <!-- Build HTML table based on employees -->

  </table>

</body>

</html>
```

To use Thymeleaf expressions

To Do
Add code to loop over employees

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
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Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
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Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
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    </tr>
  </thead>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Loop over
list of employees

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
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Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      ail</th>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Loop parameter

Loop over list of employees

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Leslie	Andrews	leslie@luv2code.com
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Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      ail</th>


  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Loop parameter

Loop over list of employees

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      // create the list
      // add to the list
      … …

      // add to the spring model
      theModel.addAttribute("employees", theEmployees);

      return "list-employees";
   }
}
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      ail</th>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">

      <td th:text="${tempEmployee.firstName}" />
      <td th:text="${tempEmployee.lastName}" />
      <td th:text="${tempEmployee.email}" />

    </tr>
  </tbody>
</table>
```

Loop parameter

Loop over list of employees

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
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Thymeleaf and Bootstrap

Let's Make our Page Beautiful

Let's Make our Page Beautiful

Before

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
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Let's Make our Page Beautiful

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After

Employee Directory

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Emma	Baumgarten	emma@luv2code.com
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Let's Make our Page Beautiful

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Employee Directory

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Bootstrap

Development Process

Step-By-Step

Development Process

Step-By-Step

1. Get links for remote Bootstrap files

Development Process

Step-By-Step

1. Get links for remote Bootstrap files

2. Add links in Thymeleaf template

Development Process

Step-By-Step

1. Get links for remote Bootstrap files

2. Add links in Thymeleaf template

3. Apply Bootstrap CSS styles

Step 1: Get links for remote Bootstrap files

Step 1: Get links for remote Bootstrap files

- Visit Bootstrap website: **`www.getbootstrap.com`**

Step 1: Get links for remote Bootstrap files

- Visit Bootstrap website: **`www.getbootstrap.com`**

- Website has instructions on how to **Get Started**

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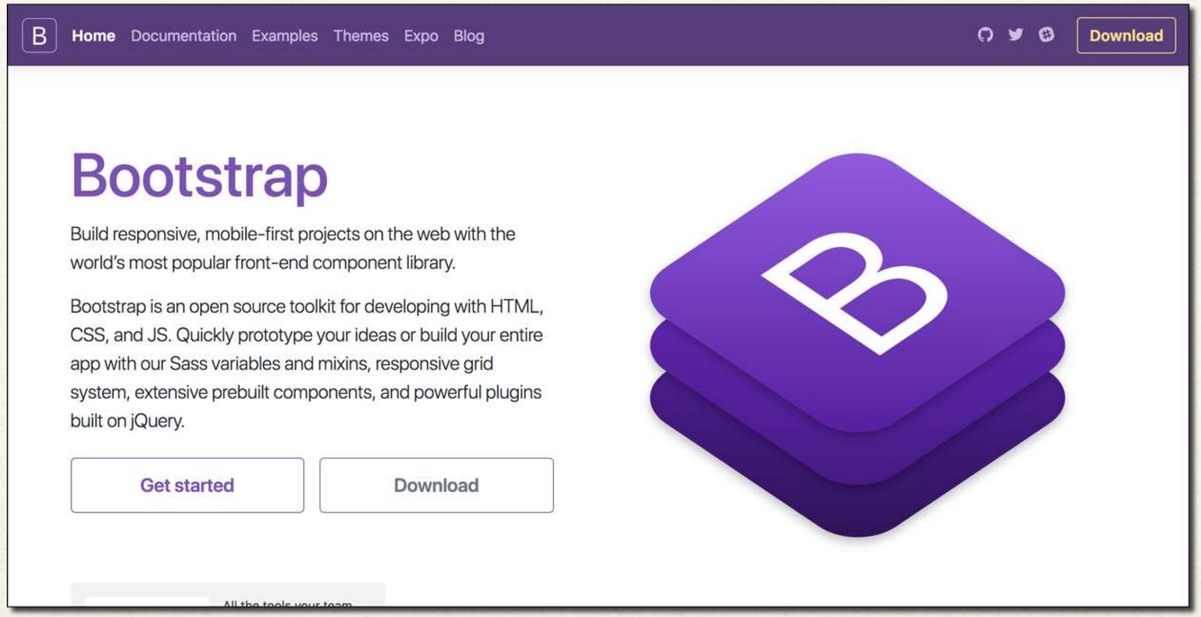

Step 2: Add links in Thymeleaf template

Step 2: Add links in Thymeleaf template

```
<head>
    …
    <!-- Bootstrap CSS -->
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/x.y.z/css/bootstrap.min.css" …>
    …
</head>
```

Step 2: Add links in Thymeleaf template

```
<head>
    …
    <!-- Bootstrap CSS -->
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/x.y.z/css/bootstrap.min.css" …>
    …
</head>
```

Version number

Step 3: Apply CSS

Step 3: Apply CSS

```
<body>
  <div class="container">

    <h3>Employee Directory</h3>
    <hr>

    <table class="table table-bordered table-striped">
      <thead class="thead-dark">
        <tr>
          <th>First Name</th>
          <th>Last Name</th>
          <th>Email</th>
        </tr>
      </thead>
      … …
    </table>

  </div>
</body>
```

Step 3: Apply CSS

Bootstrap CSS style

```
<body>
  <div class="container">

    <h3>Employee Directory</h3>
    <hr>

    <table class="table table-bordered table-striped">
      <thead class="thead-dark">
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          <th>Email</th>
        </tr>
      </thead>
      … …
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  </div>
</body>
```

Step 3: Apply CSS

Bootstrap CSS style

Bootstrap CSS styles

```
<body>
  <div class="container">

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    <hr>

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      </thead>
      … …
    </table>

  </div>
</body>
```

Step 3: Apply CSS

Bootstrap CSS style

Bootstrap CSS styles

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    <hr>

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      … …
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First Name	Last Name	Email
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Create HTML Tables with Thymeleaf

HTML Tables

HTML Tables

Employee Directory

First Name	Last Name	Email
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HTML Tables

Start with plain table
Will add CSS in later videos

Employee Directory

First Name	Last Name	Email
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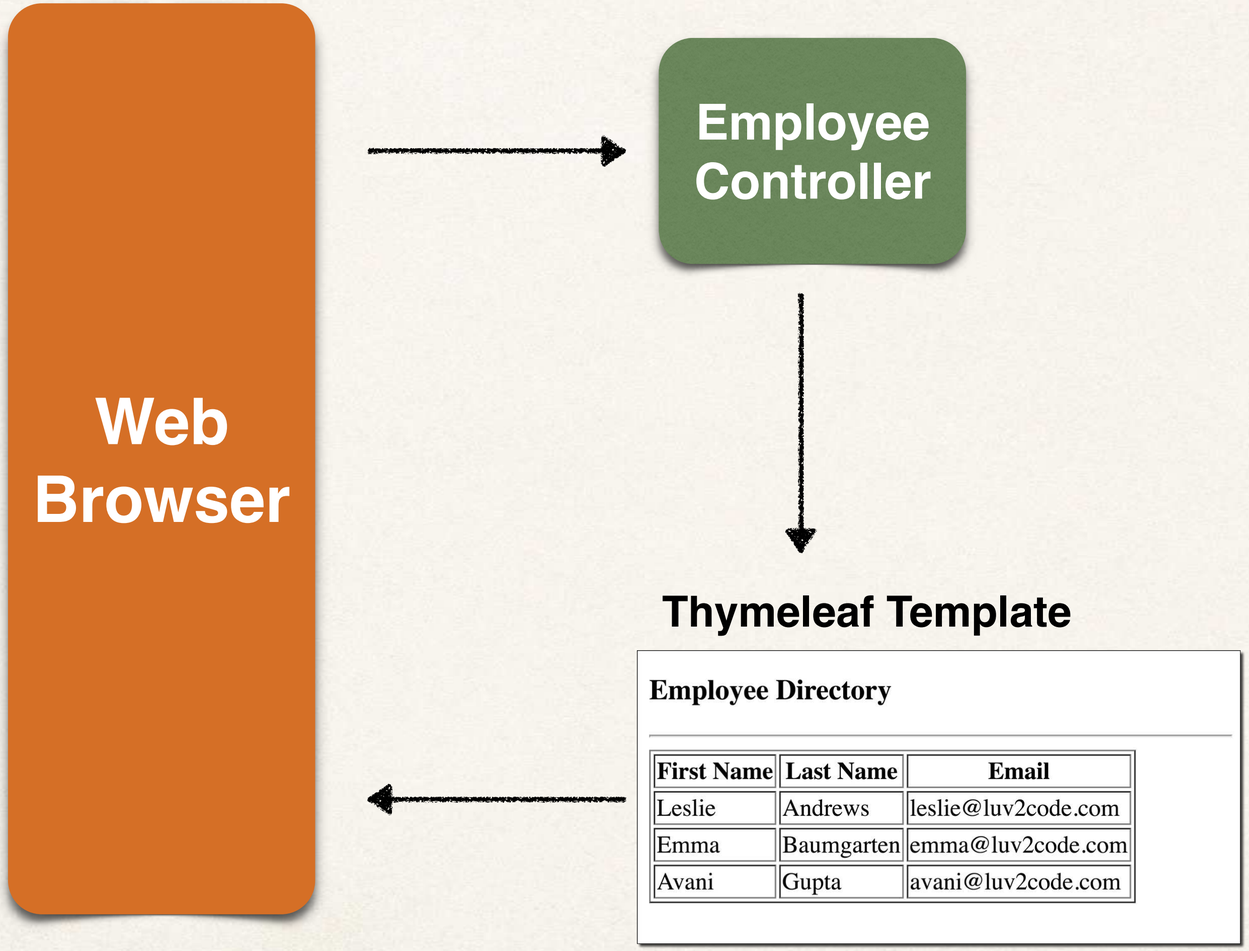
Avani	Gupta	avani@luv2code.com

Big Picture


Web Browser
Employee Controller
Thymeleaf Template
Employee Directory
First Name | Last Name | Email
Leslie | Andrews | leslie@luv2code.com
Emma | Baumgarten | emma@luv2code.com
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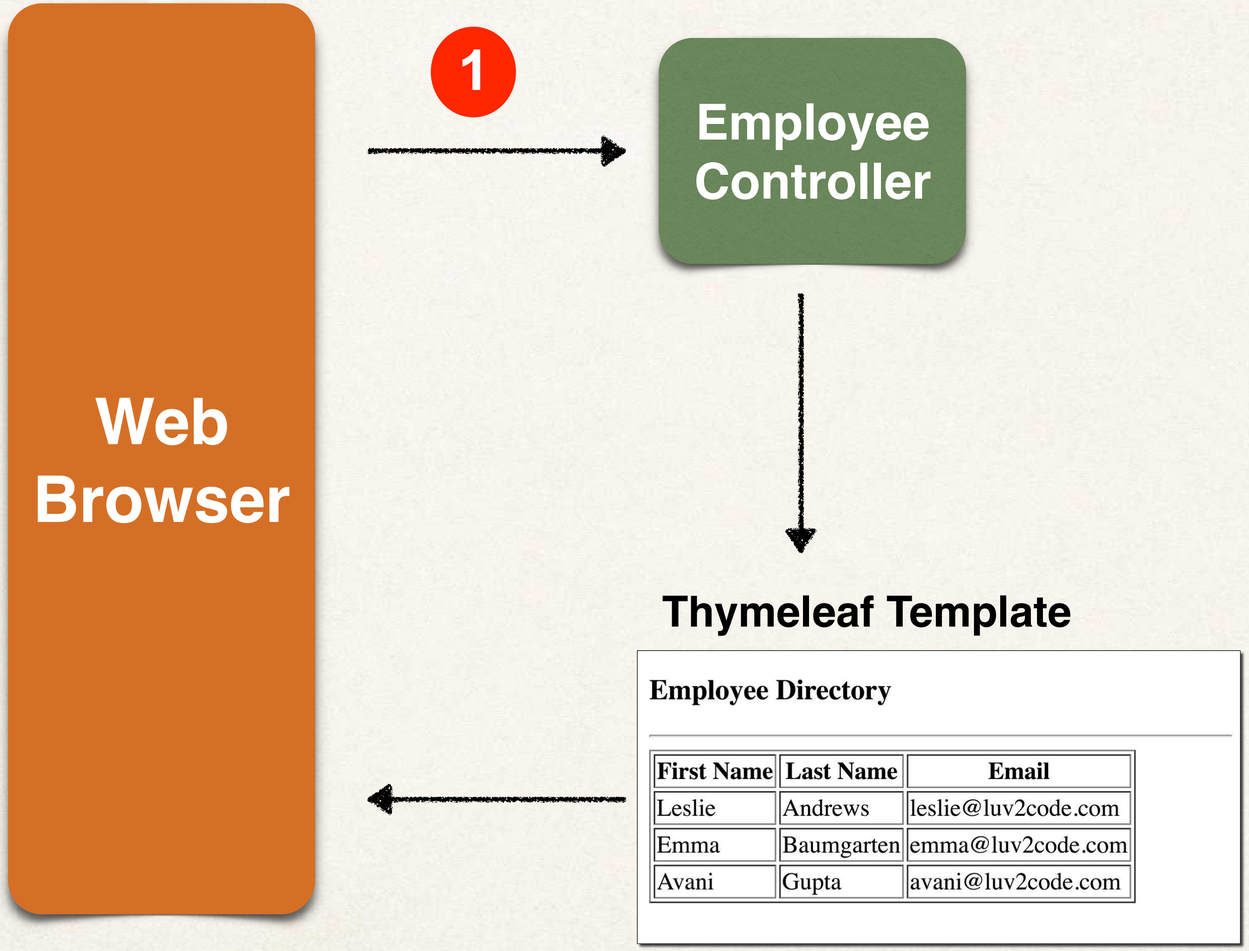
1
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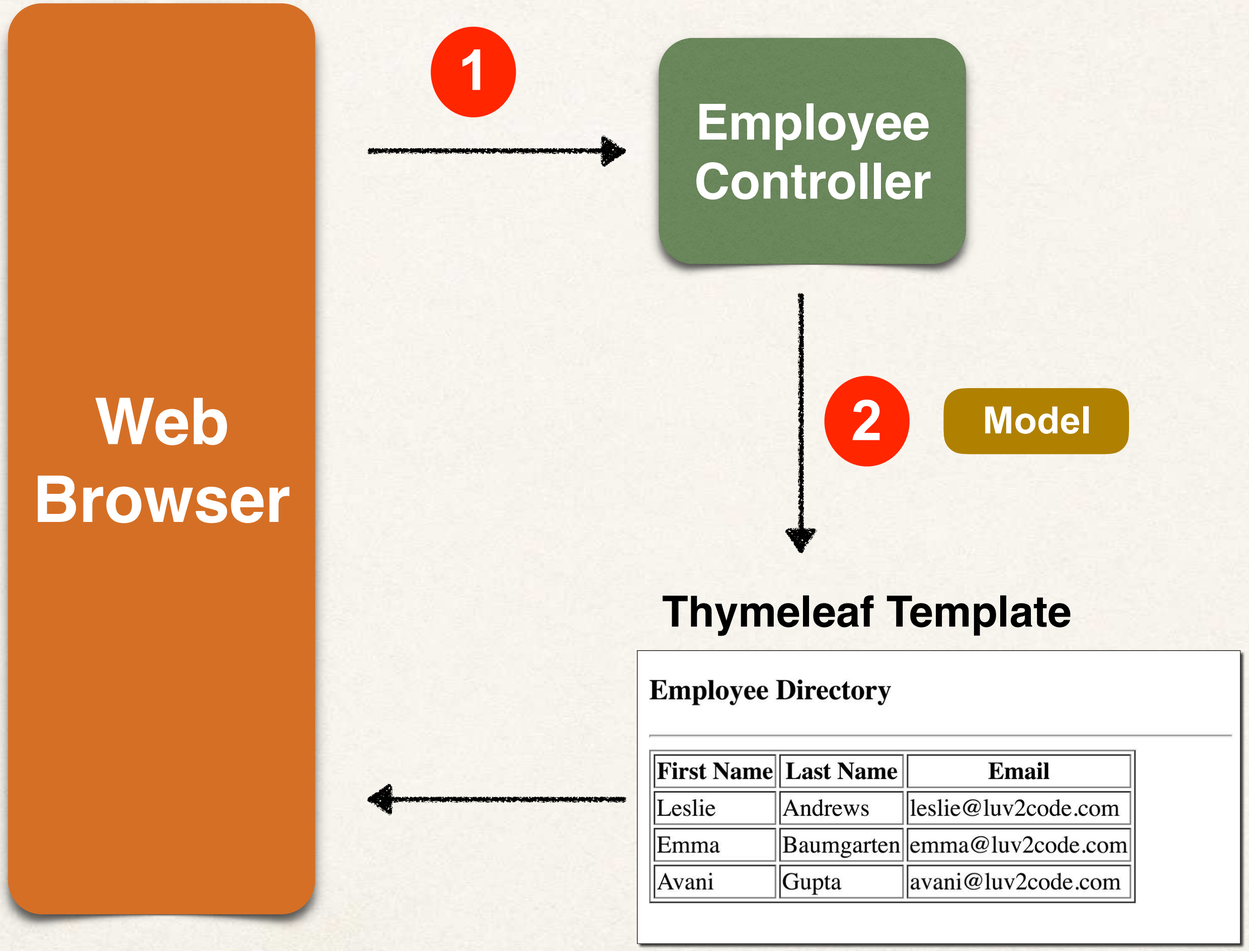
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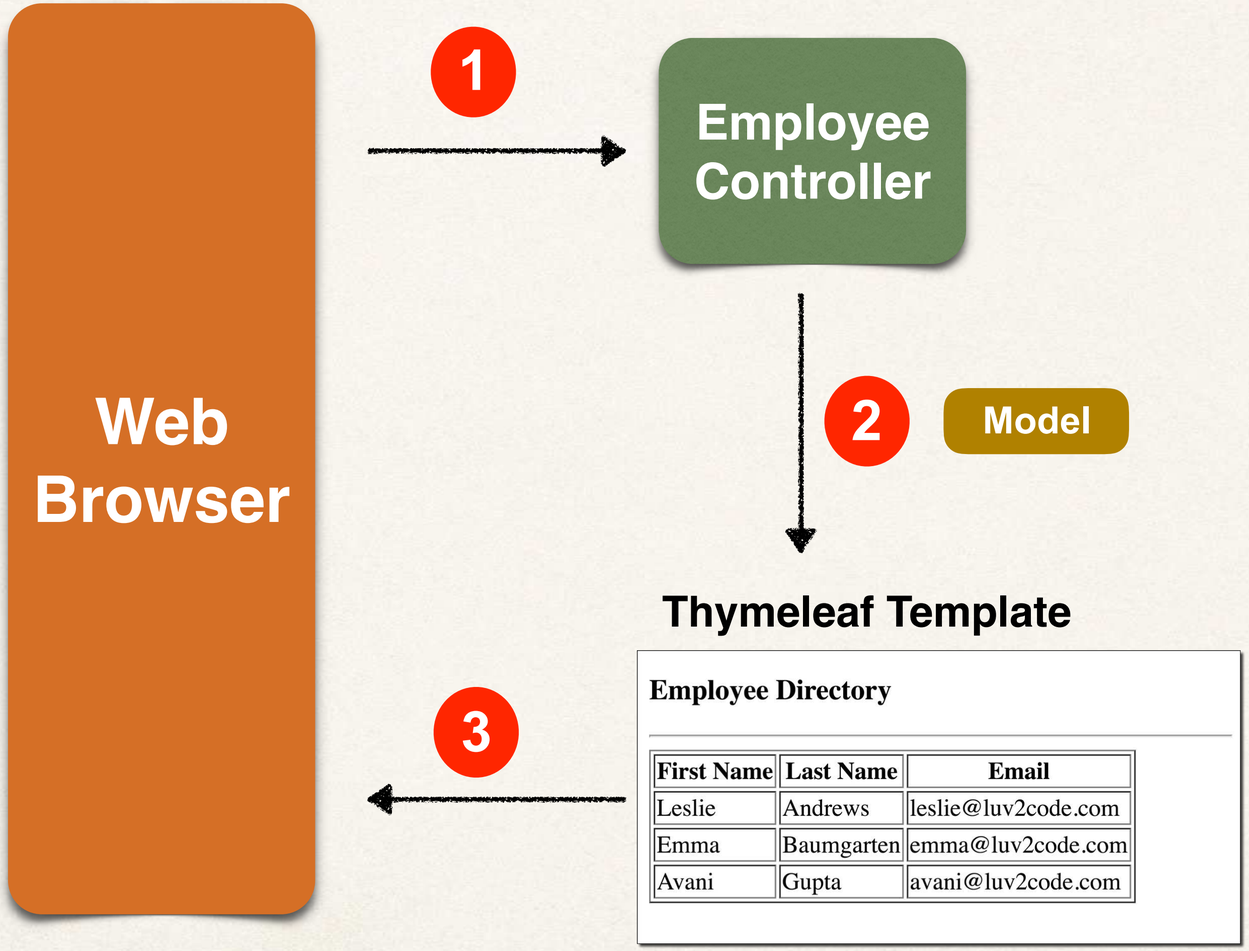
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3

Development Process

Step-By-Step

Development Process

Step-By-Step

1. Create Employee class

Development Process

Step-By-Step

1. Create Employee class

2. Create Employee Controller

Development Process

Step-By-Step

1. Create Employee class
2. Create Employee Controller
3. Create Thymeleaf template

Step 1: Create Employee class

Step 1: Create Employee class

- Regular Java class: fields, constructors, getters / setters

```
public class Employee {

    private int id;
    private String firstName;
    private String lastName;
    private String email;

    public Employee() {

    }

    public Employee(int id, String firstName, String lastName, String email) {
        this.id = id;
        this.firstName = firstName;
        this.lastName = lastName;
        this.email = email;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
```

Step 2: Create Employee Controller

Step 2: Create Employee Controller

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
```

Step 2: Create Employee Controller

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {
```

Step 2: Create Employee Controller

```
@Controller
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   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      Employee emp1 = new Employee(1, "Leslie", "Andrews", "leslie@luv2code.com");
      Employee emp2 = new Employee(2, "Emma", "Baumgarten", "emma@luv2code.com");
      Employee emp3 = new Employee(3, "Avani", "Gupta", "avani@luv2code.com");
```

Will add database integration later

Step 2: Create Employee Controller

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
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      // create the list
      List<Employee> theEmployees = new ArrayList<>();
```

Step 2: Create Employee Controller

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      // create the list
      List<Employee> theEmployees = new ArrayList<>();

      // add to the list
      theEmployees.add(emp1);
      theEmployees.add(emp2);
      theEmployees.add(emp3);
```

Step 2: Create Employee Controller

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

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      // create the list
      List<Employee> theEmployees = new ArrayList<>();

      // add to the list
      theEmployees.add(emp1);
      theEmployees.add(emp2);
      theEmployees.add(emp3);

      // add to the Spring MVC model
      theModel.addAttribute("employees", theEmployees);
```

Step 2: Create Employee Controller

```
@Controller
@RequestMapping("/employees")
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      // add to the list
      theEmployees.add(emp1);
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      theModel.addAttribute("employees", theEmployees);
```

Our Thymleaf template will access this data

Step 2: Create Employee Controller

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      // add to the list
      theEmployees.add(emp1);
      theEmployees.add(emp2);
      theEmployees.add(emp3);

      // add to the Spring MVC model
      theModel.addAttribute("employees", theEmployees);

      return "list-employees";
   }
}
```

Our Thymleaf template will access this data

Step 2: Create Employee Controller

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
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      theEmployees.add(emp3);

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      theModel.addAttribute("employees", theEmployees);

      return "list-employees";
   }
}
```

Our Thymleaf template will access this data

`src/main/resources/templates/list-employees.html`

Step 3: Create Thymeleaf template

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
```

To use Thymeleaf expressions

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>
```

To use Thymeleaf expressions

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>

  <table border="1">

    <!-- Build HTML table based on employees -->

  </table>

</body>

</html>
```

To use Thymeleaf expressions

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

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<!DOCTYPE HTML>
<html lang="en" xmlns:th="http://www.thymeleaf.org">
…
<body>

  <h3>Employee Directory</h3>
  <hr>

  <table border="1">

    <!-- Build HTML table based on employees -->

  </table>

</body>

</html>
```

To use Thymeleaf expressions

To Do
Add code to loop over employees

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
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Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

```
<table border="1">
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      <th>Last Name</th>
      <th>Email</th>
    </tr>
  </thead>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Loop over
list of employees

Employee Directory

First Name	Last Name	Email
Leslie	Andrews	leslie@luv2code.com
Emma	Baumgarten	emma@luv2code.com
Avani	Gupta	avani@luv2code.com

Step 3: Create Thymeleaf template

File: list-employees.html

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<table border="1">
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    <tr>
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      <th>Last Name</th>
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  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Loop parameter

Loop over list of employees

Employee Directory

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Leslie	Andrews	leslie@luv2code.com
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Step 3: Create Thymeleaf template

File: list-employees.html

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  <tbody>
    <tr th:each="tempEmployee : ${employees}">
```

Loop parameter

Loop over list of employees

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   @GetMapping("/list")
   public String listEmployees(Model theModel) {

      // create employees
      // create the list
      // add to the list
      … …

      // add to the spring model
      theModel.addAttribute("employees", theEmployees);

      return "list-employees";
   }
}
```

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First Name	Last Name	Email
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Step 3: Create Thymeleaf template

File: list-employees.html

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<table border="1">
  <thead>
    <tr>
      <th>First Name</th>
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      ail</th>

  <tbody>
    <tr th:each="tempEmployee : ${employees}">

      <td th:text="${tempEmployee.firstName}" />
      <td th:text="${tempEmployee.lastName}" />
      <td th:text="${tempEmployee.email}" />

    </tr>
  </tbody>
</table>
```

Loop parameter

Loop over list of employees

```
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Thymeleaf and Bootstrap

Let's Make our Page Beautiful

Let's Make our Page Beautiful

Before

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Let's Make our Page Beautiful

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Let's Make our Page Beautiful

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Bootstrap

Development Process

Step-By-Step

Development Process

Step-By-Step

1. Get links for remote Bootstrap files

Development Process

Step-By-Step

1. Get links for remote Bootstrap files

2. Add links in Thymeleaf template

Development Process

Step-By-Step

1. Get links for remote Bootstrap files

2. Add links in Thymeleaf template

3. Apply Bootstrap CSS styles

Step 1: Get links for remote Bootstrap files

Step 1: Get links for remote Bootstrap files

- Visit Bootstrap website: **`www.getbootstrap.com`**

Step 1: Get links for remote Bootstrap files

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- Website has instructions on how to **Get Started**

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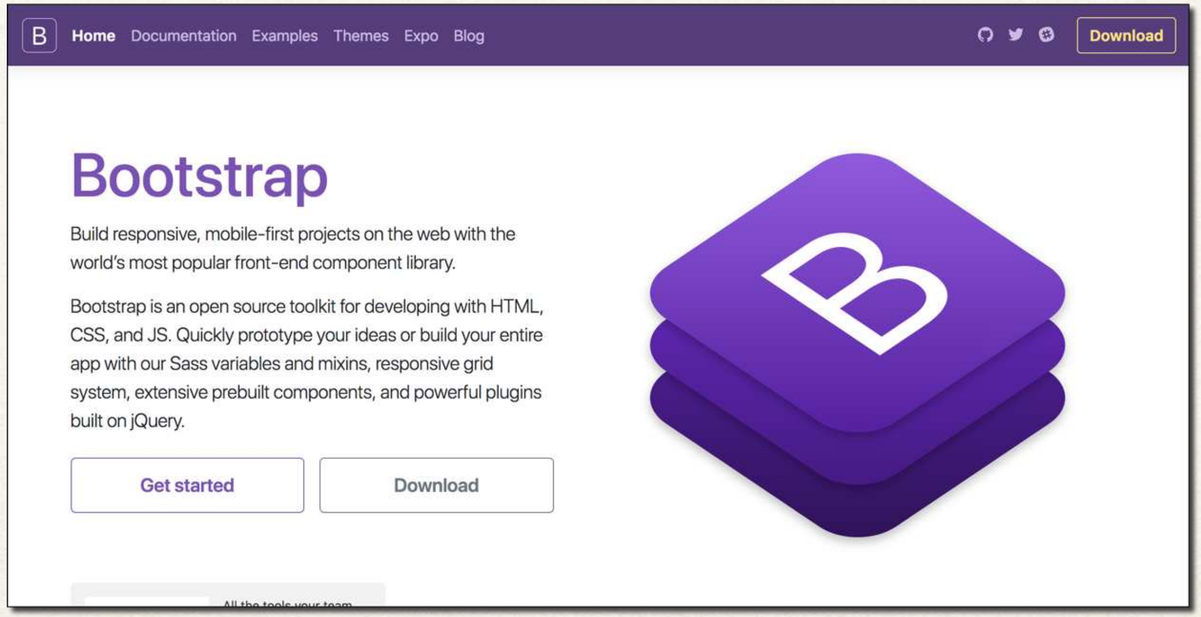

Step 2: Add links in Thymeleaf template

Step 2: Add links in Thymeleaf template

```
<head>
    …
    <!-- Bootstrap CSS -->
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/x.y.z/css/bootstrap.min.css" …>
    …
</head>
```

Step 2: Add links in Thymeleaf template

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    …
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```

Version number

Step 3: Apply CSS

Step 3: Apply CSS

```
<body>
  <div class="container">

    <h3>Employee Directory</h3>
    <hr>

    <table class="table table-bordered table-striped">
      <thead class="thead-dark">
        <tr>
          <th>First Name</th>
          <th>Last Name</th>
          <th>Email</th>
        </tr>
      </thead>
      … …
    </table>

  </div>
</body>
```

Step 3: Apply CSS

Bootstrap CSS style

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<body>
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Step 3: Apply CSS

Bootstrap CSS style

Bootstrap CSS styles

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Bootstrap CSS style

Bootstrap CSS styles

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Thymeleaf CRUD - Real Time Project

Application Requirements

Application Requirements

From the Boss

Create a Web UI for the Employee Directory

Application Requirements

From the Boss

Create a Web UI for the Employee Directory

Users should be able to

- Get a list of employees

Application Requirements

From the Boss

Create a Web UI for the Employee Directory

Users should be able to
- Get a list of employees
- Add a new employee

Application Requirements

From the Boss

Create a Web UI for the Employee Directory

Users should be able to

- Get a list of employees
- Add a new employee
- Update an employee

Application Requirements

From the Boss

Create a Web UI for the Employee Directory

Users should be able to

- Get a list of employees
- Add a new employee
- Update an employee
- Delete an employee

Application Requirements

From the Boss

Create a Web UI for the Employee Directory

Users should be able to

- Get a list of employees
- Add a new employee
- Update an employee
- Delete an employee

Thymeleaf + Spring Boot

Real-Time Project

Thymeleaf + Spring Boot

Real-Time Project

Thymeleaf + Spring Boot

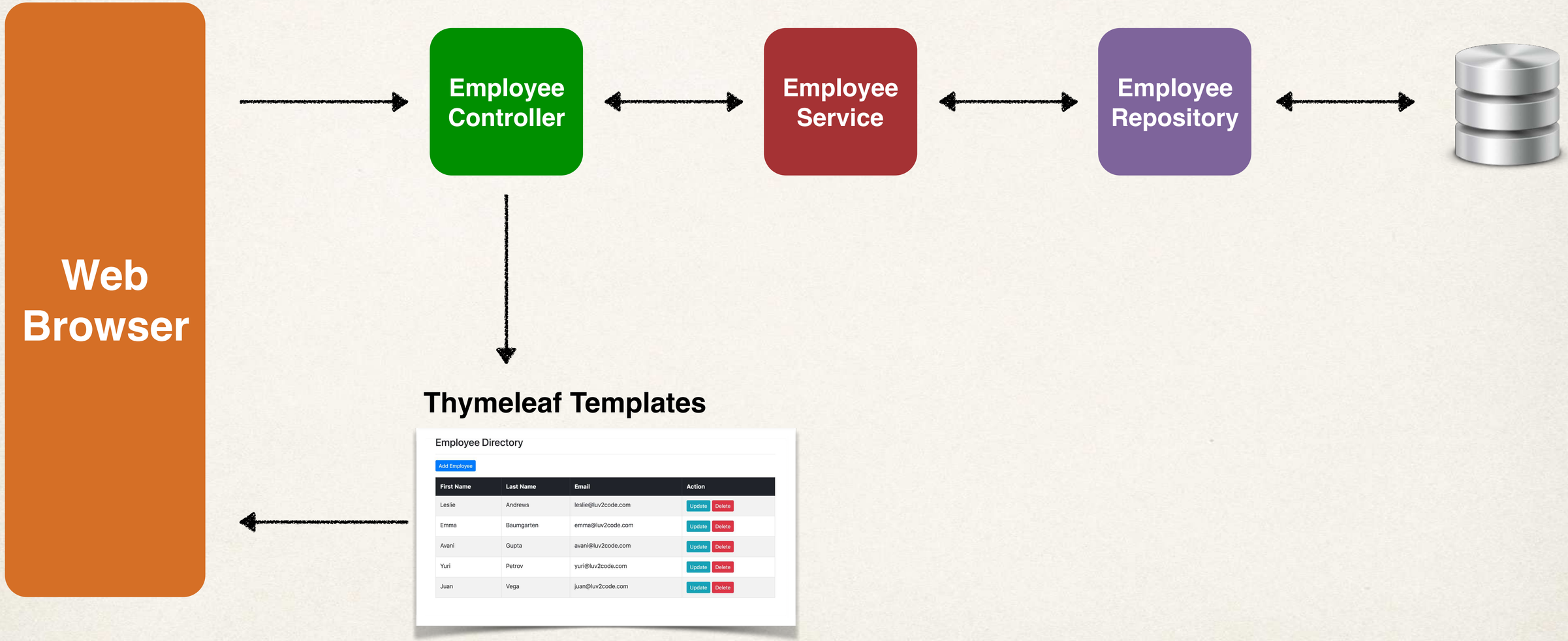
Employee Directory

Add Employee

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete
Emma	Baumgarten	emma@luv2code.com	Update Delete
Avani	Gupta	avani@luv2code.com	Update Delete
Yuri	Petrov	yuri@luv2code.com	Update Delete
Juan	Vega	juan@luv2code.com	Update Delete

Big Picture

Big Picture


Web Browser
Employee Controller
Employee Service
Employee Repository
Thymeleaf Templates
Employee Directory
Add Employee
First Name
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Action
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Andrews
leslie@luv2code.com
Update
Delete
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Update
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Gupta
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Yuri
Petrov
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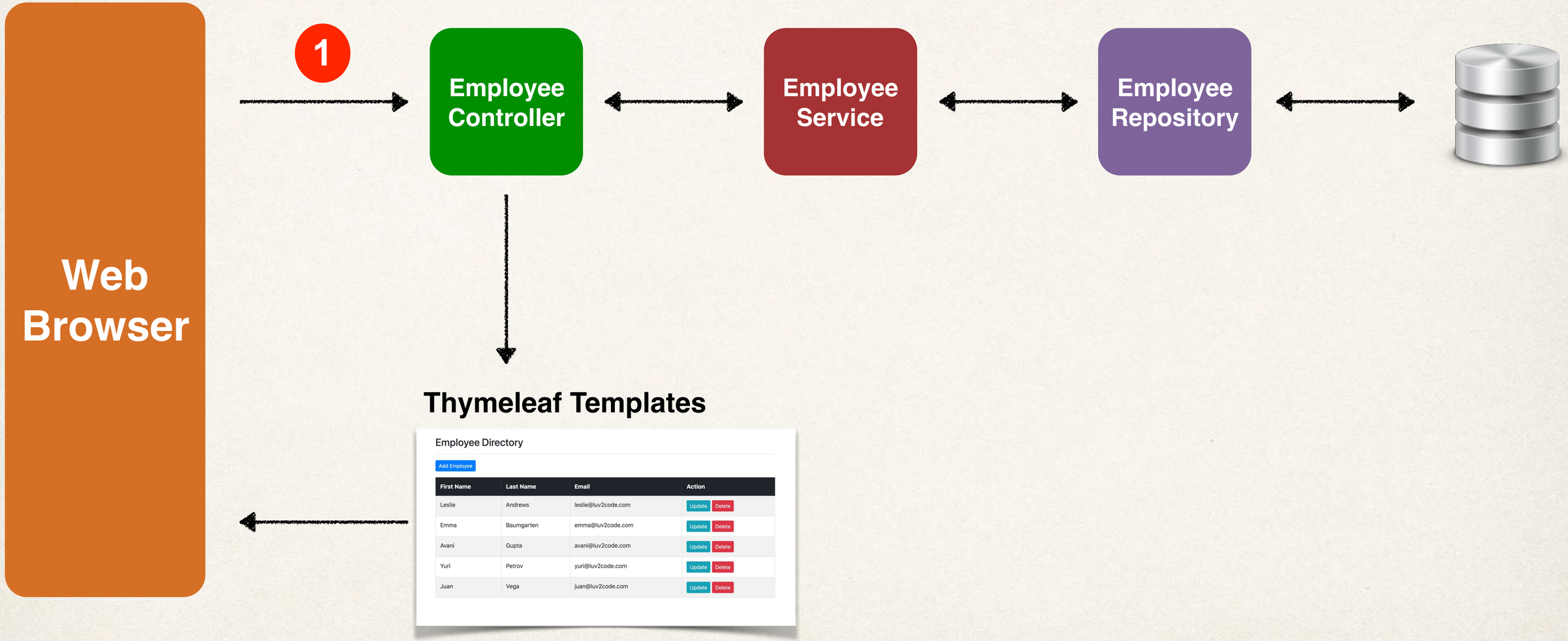
Update
Delete
Juan
Vega
juan@luv2code.com
Update
Delete

Big Picture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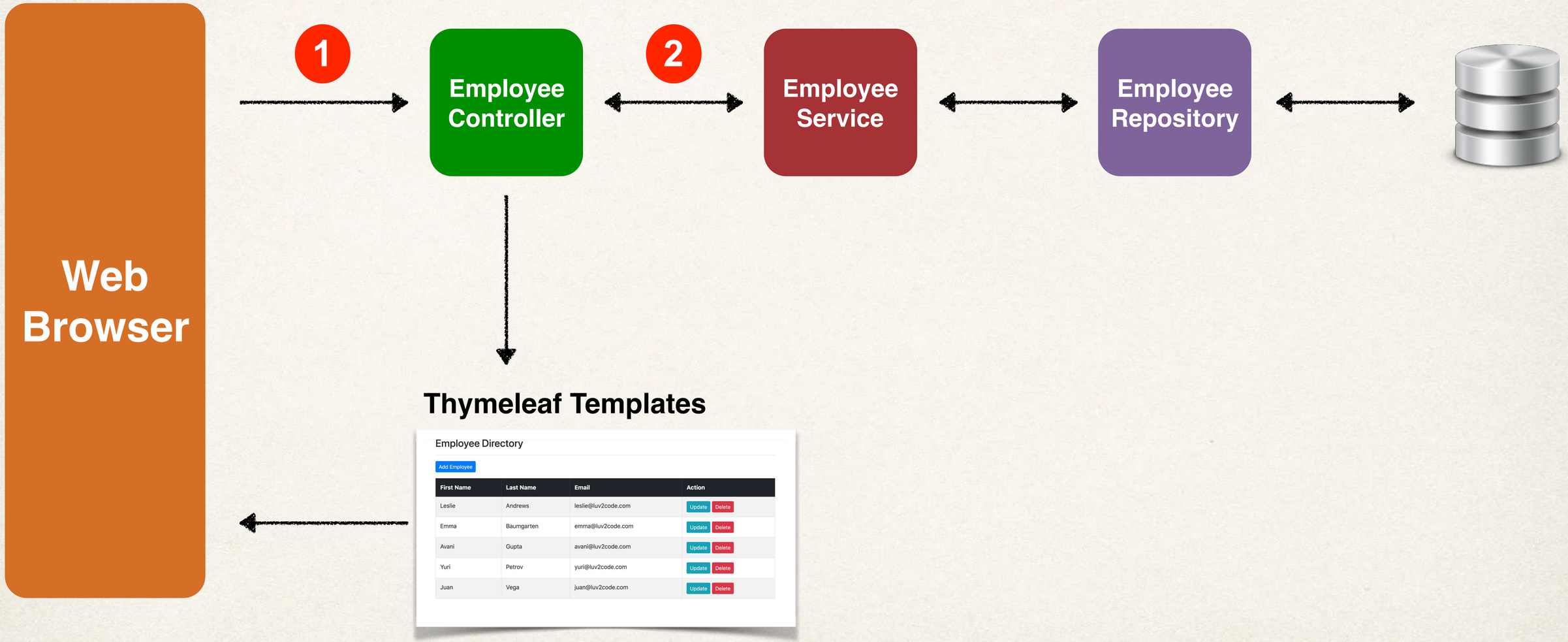
Big Picture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Avani
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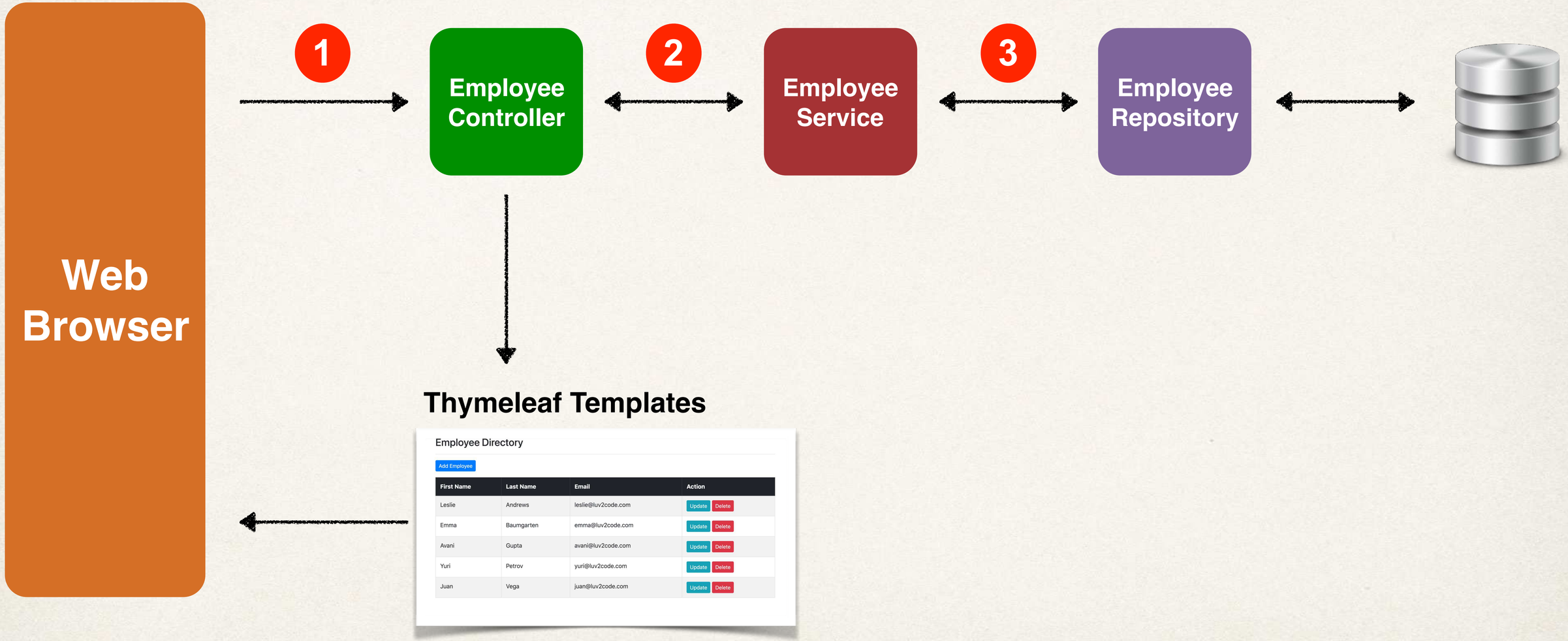
avani@luv2code.com
Update
Delete
Yuri
Petrov
yuri@luv2code.com
Update
Delete
Juan
Vega
juan@luv2code.com
Update
Delete

Big Picture


Web Browser
1
Employee Controller
2
Employee Service
3
Employee Repository
Thymeleaf Templates
Employee Directory
Add Employee
First Name | Last Name | Email | Action
Leslie | Andrews | leslie@luv2code.com | Update Delete
Emma | Baumgarten | emma@luv2code.com | Update Delete
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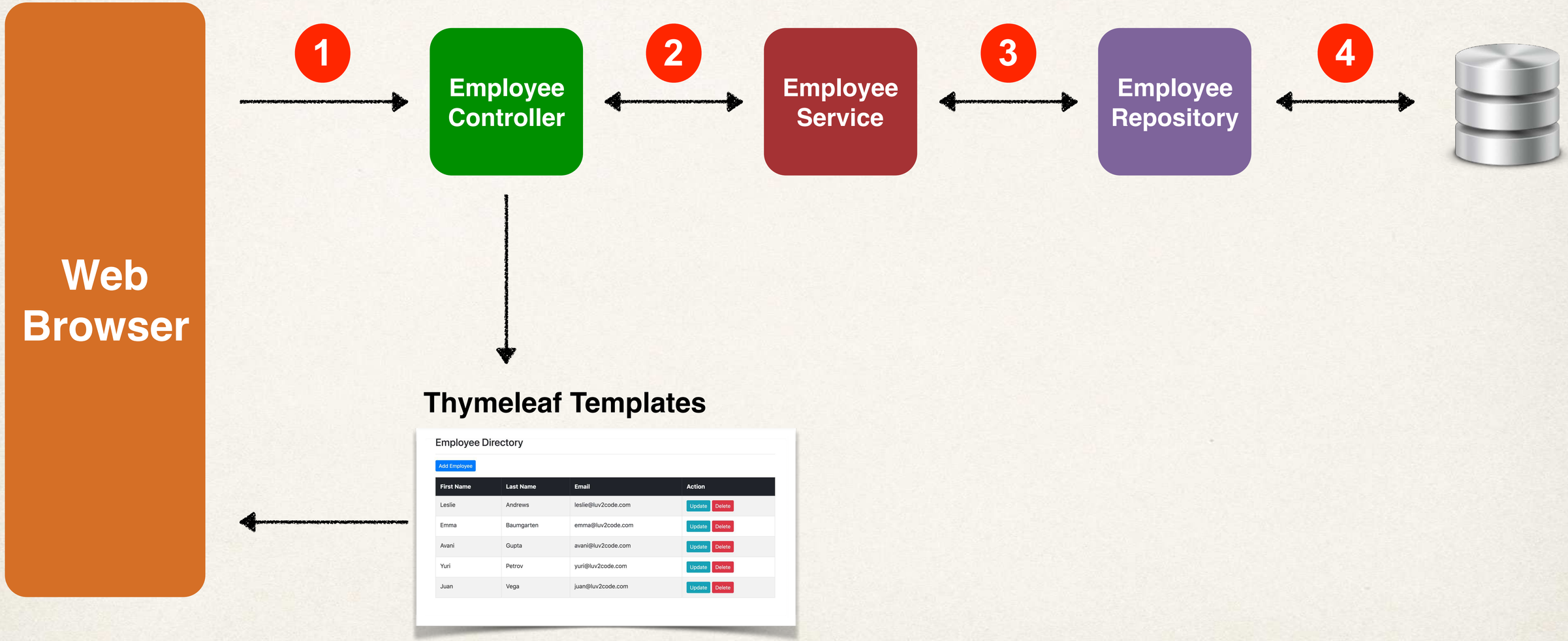
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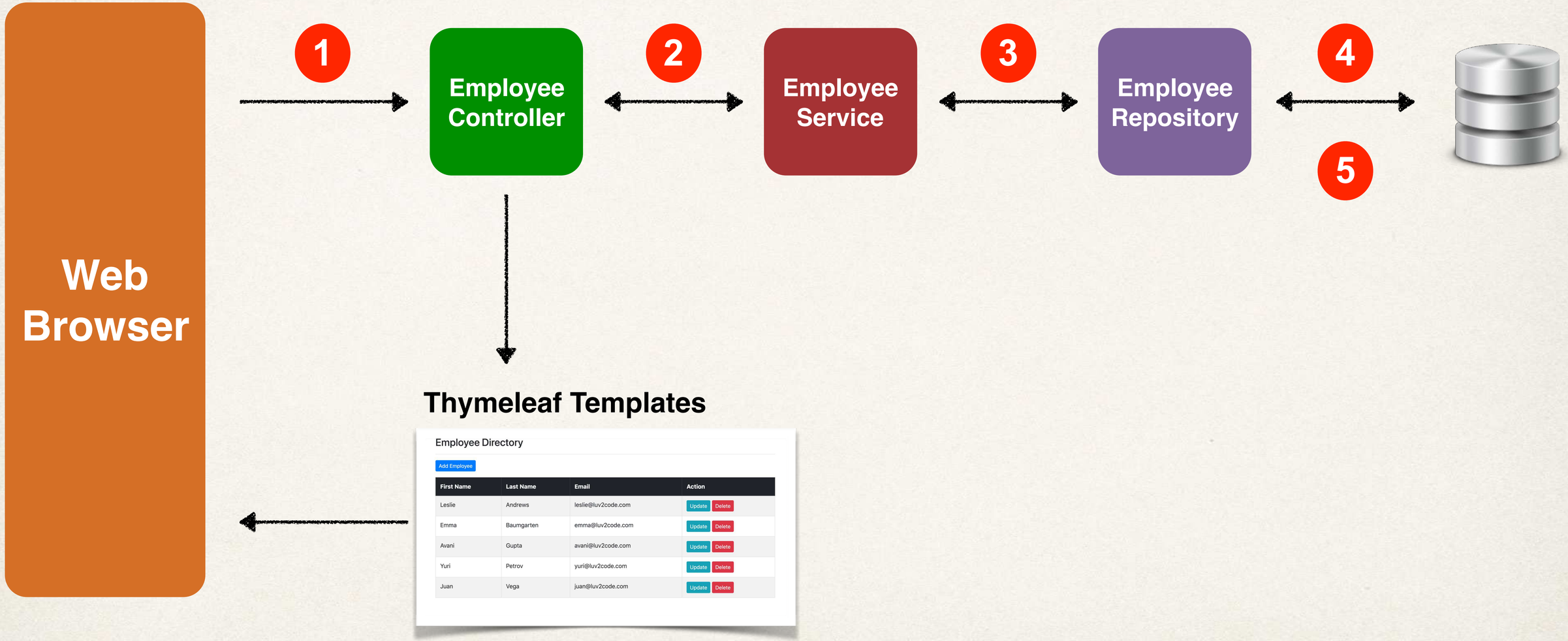
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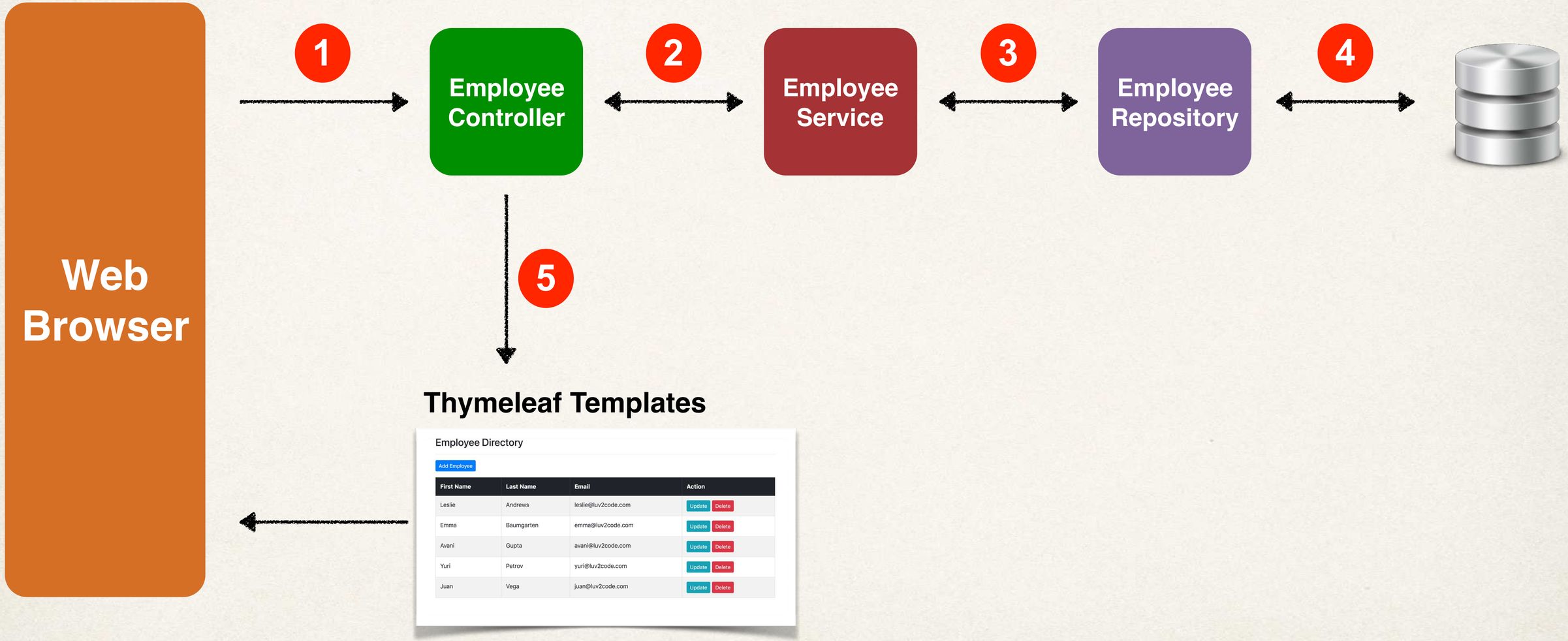
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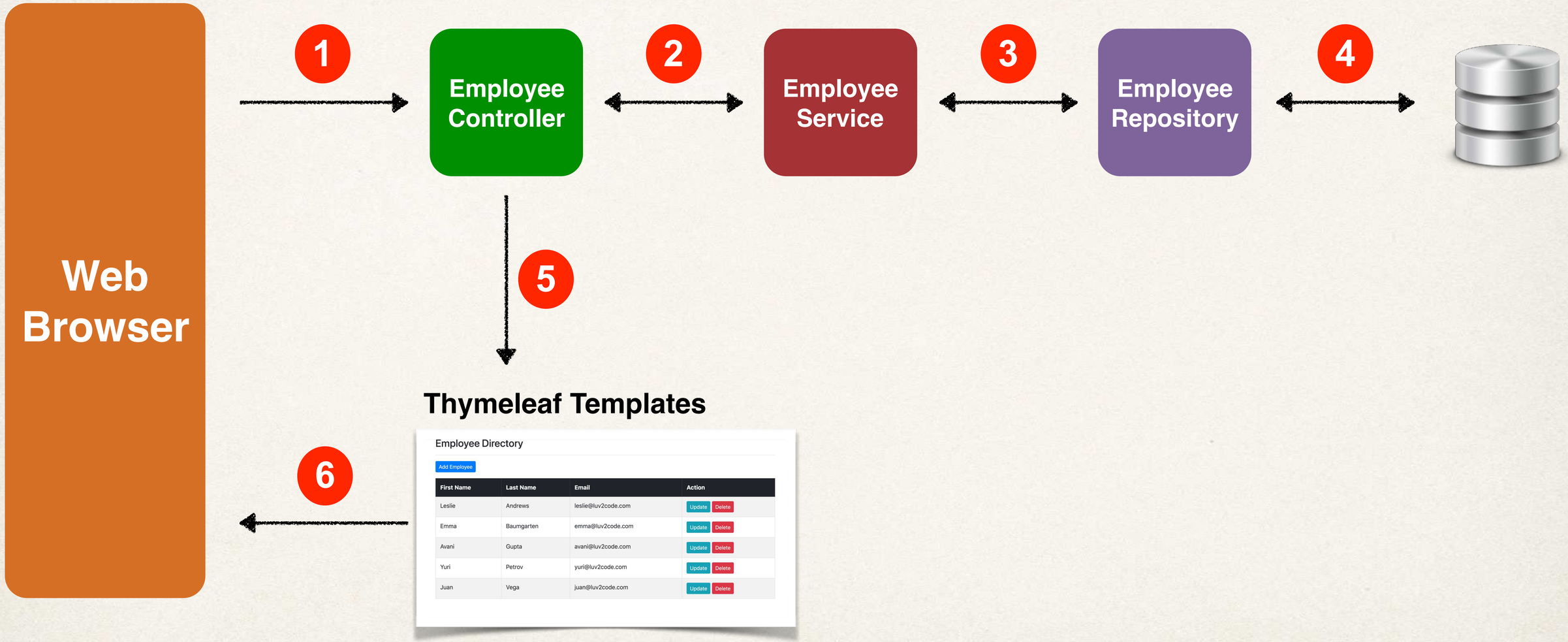
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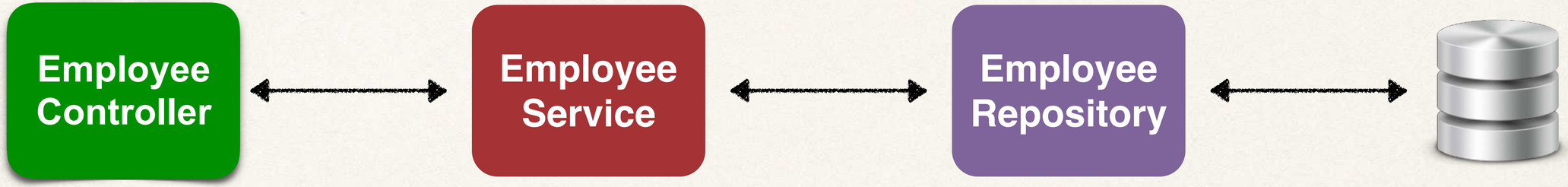
Application Architecture



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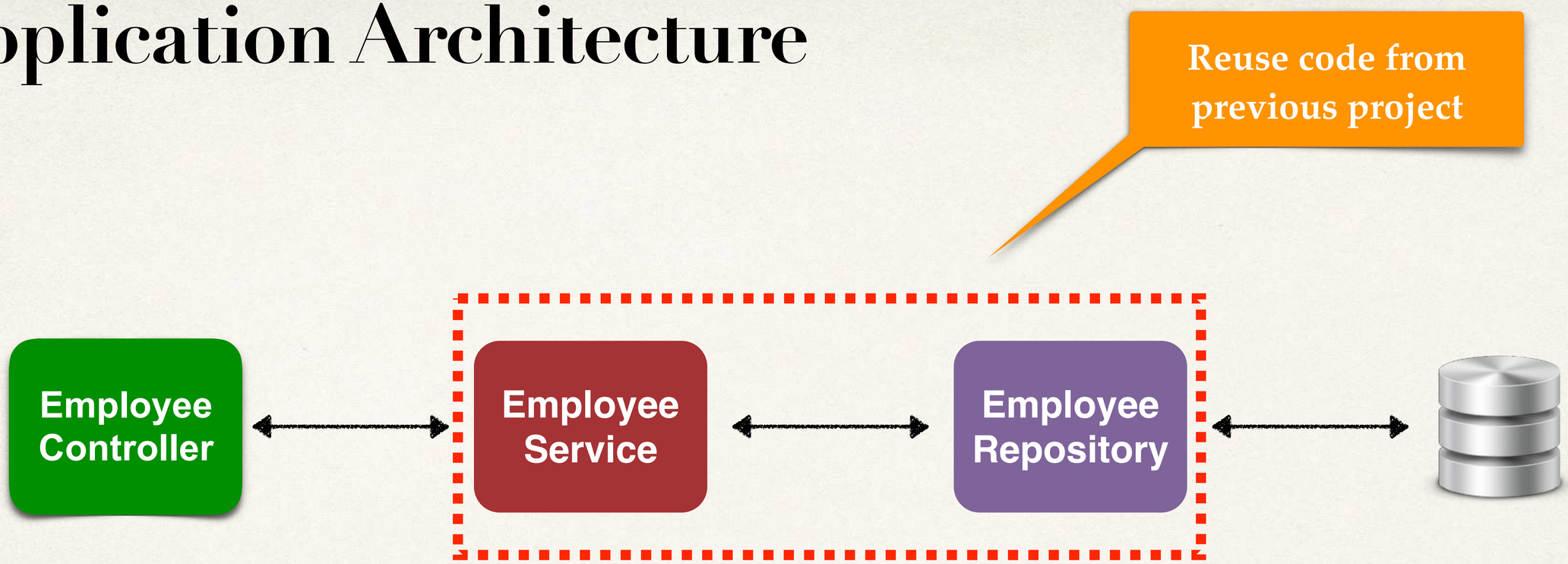

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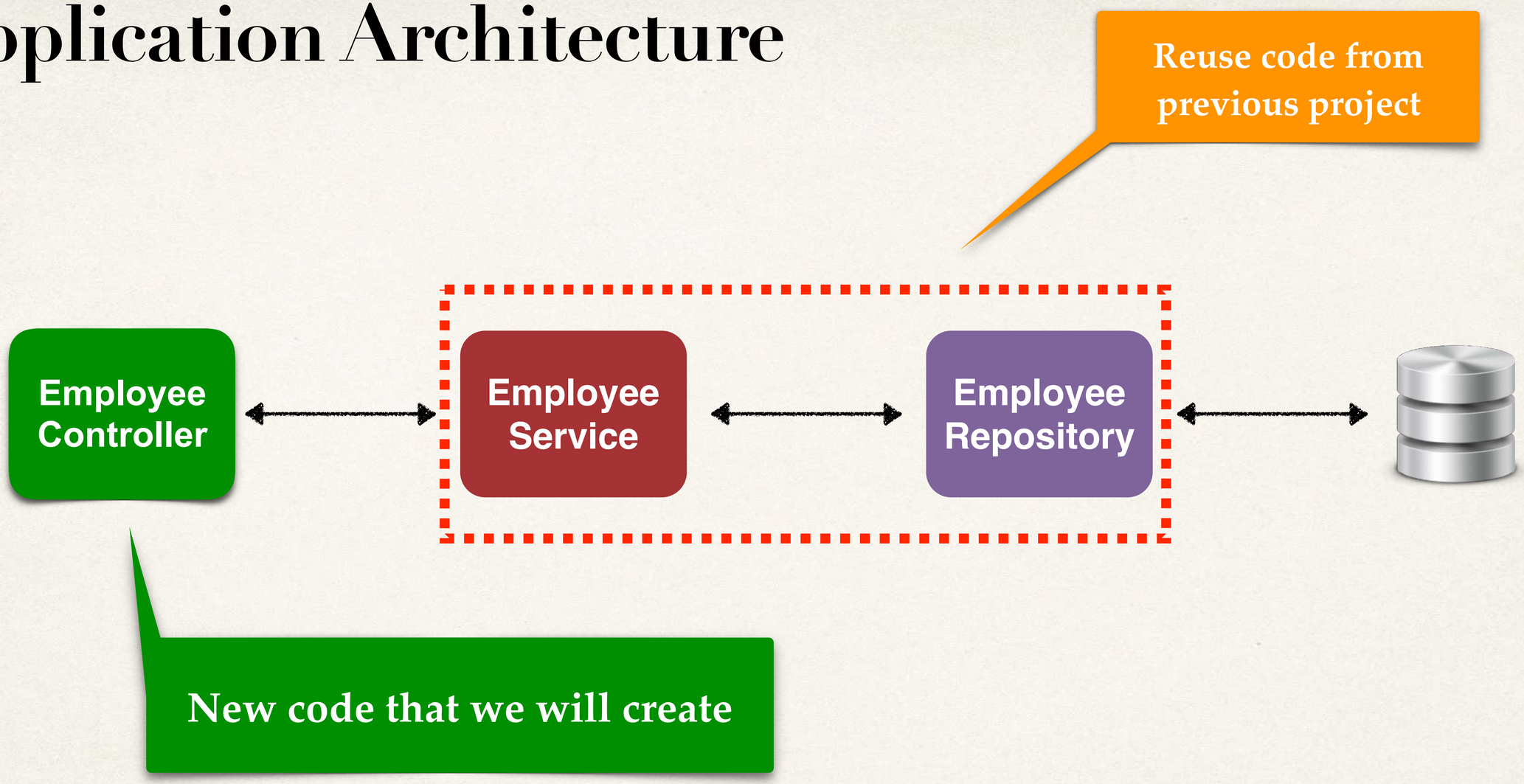

Project Set Up

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- Allows us to focus on creating **`EmployeeController`** and Thymeleaf templates

Development Process - Big Picture

Step-By-Step

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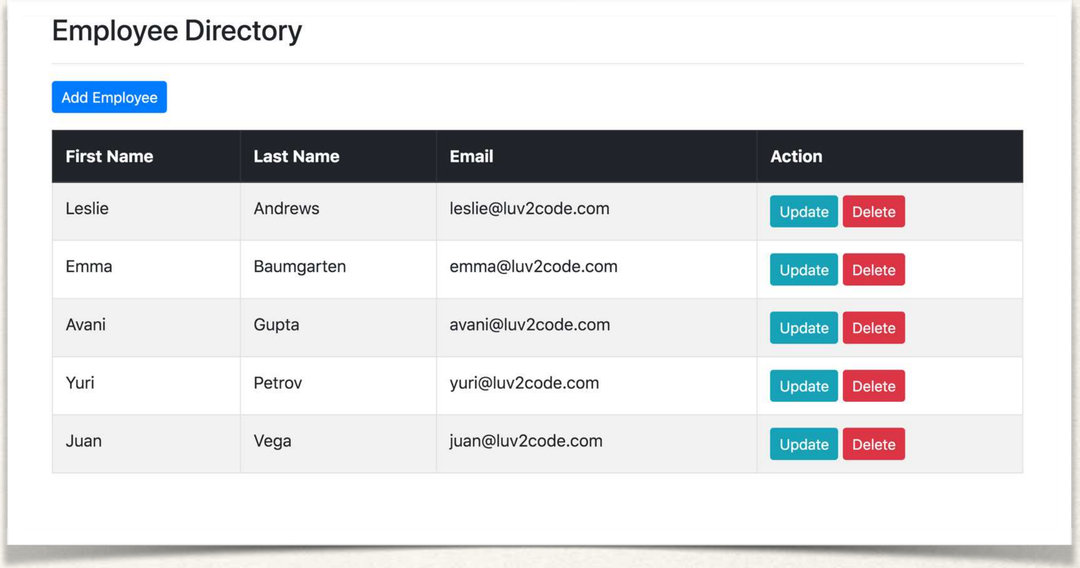
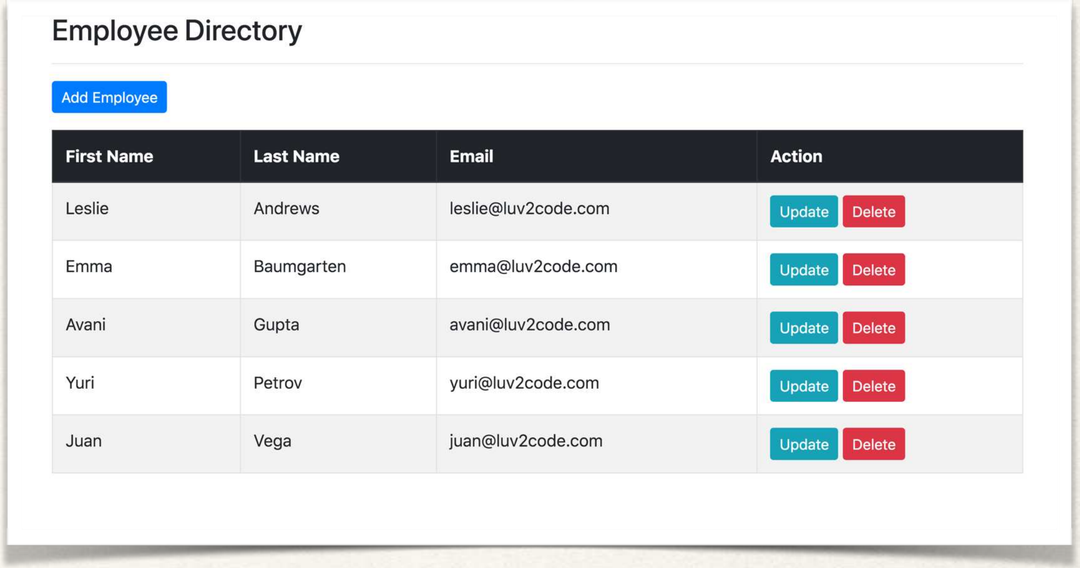
Step-By-Step



Development Process - Big Picture

Step-By-Step

1. Get list of employees



Development Process - Big Picture

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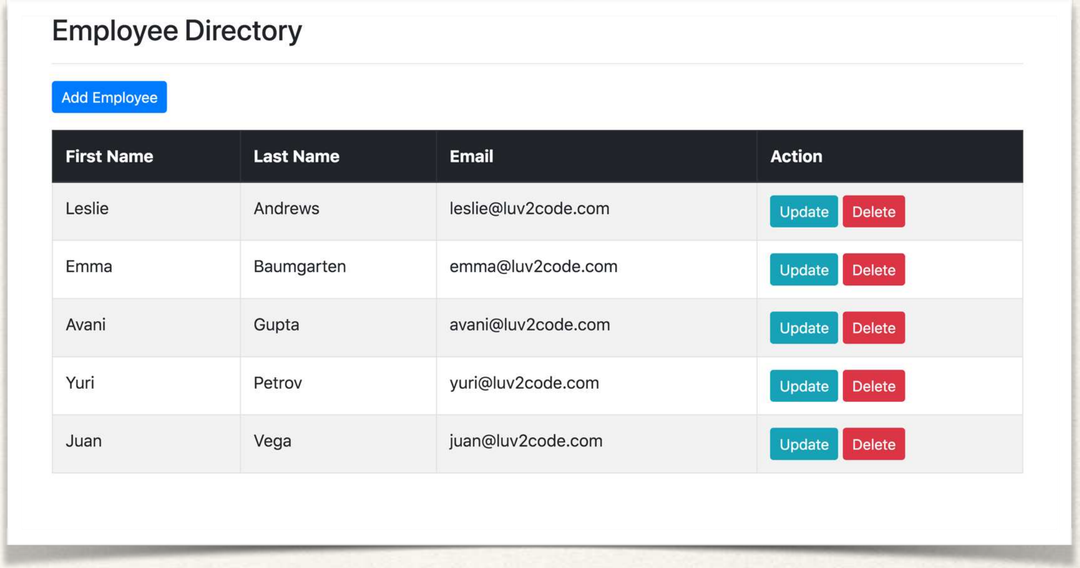

Development Process - Big Picture

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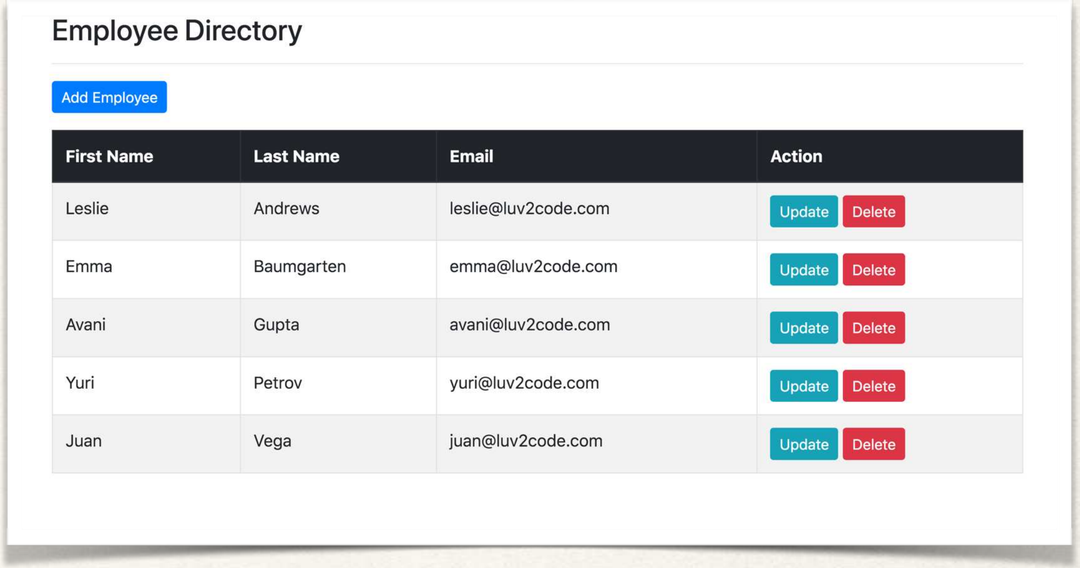

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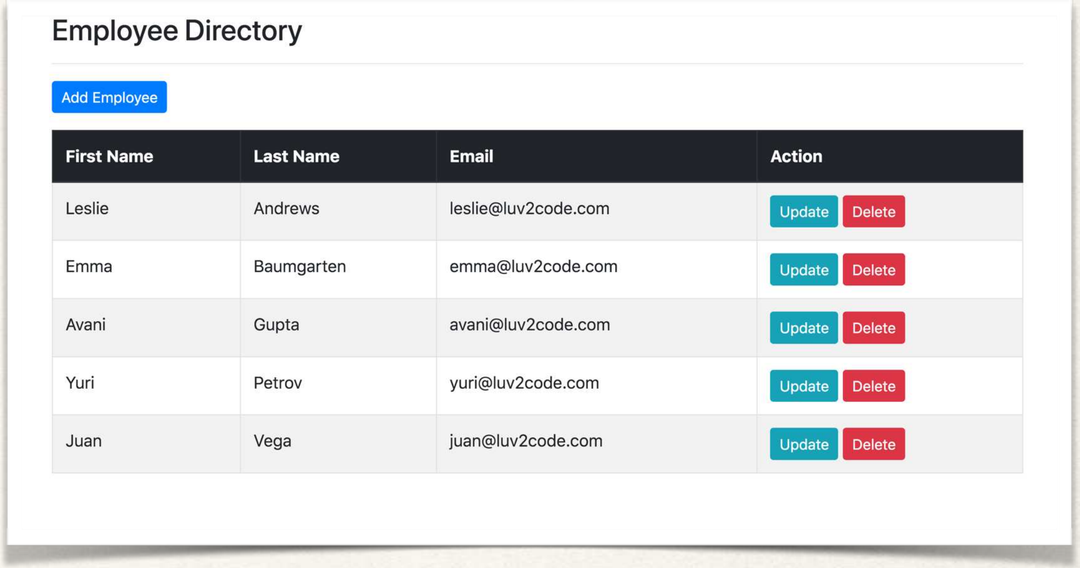

Thymeleaf - Add Employee

Add Employee - DEMO

Employee Directory

Add Employee

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Leslie	Andrews	leslie@luv2code.com
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Add Employee

Step-By-Step

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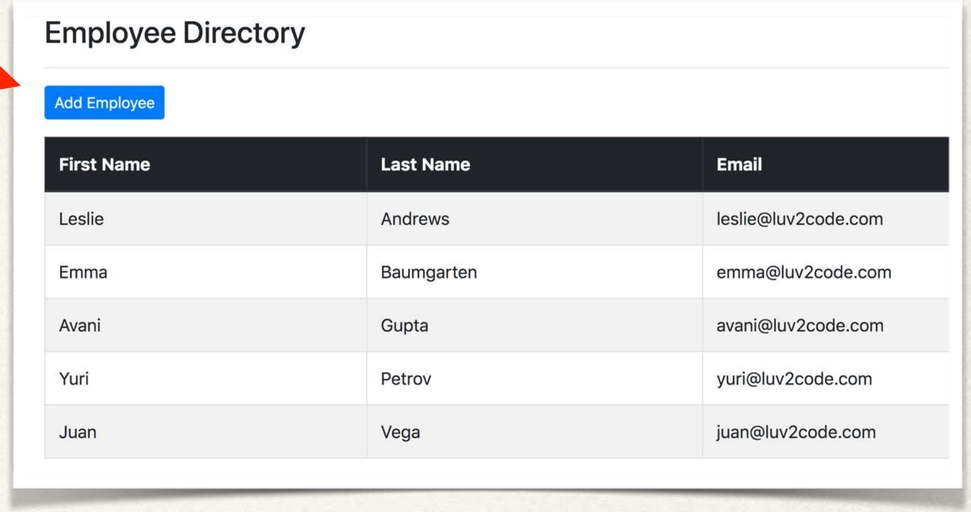
1. New **Add Employee** button for list-employees.html



Add Employee

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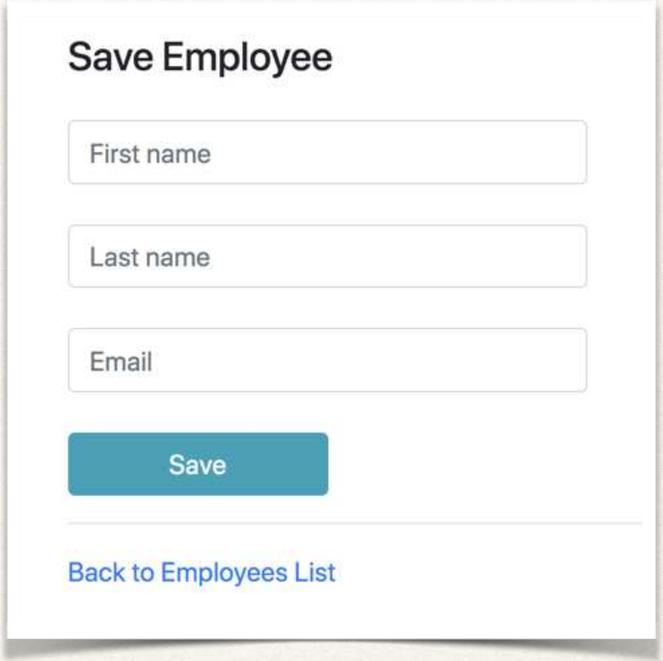

Add Employee

Step-By-Step

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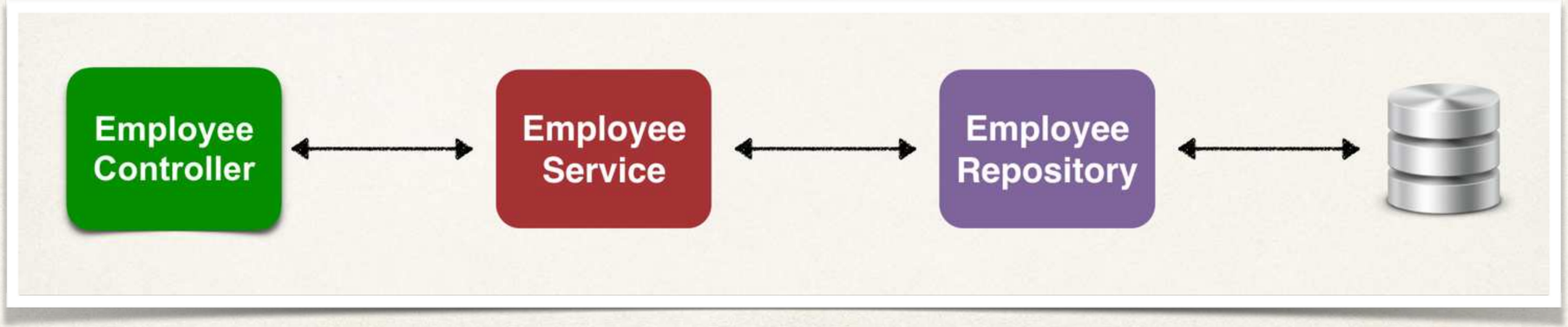
2. Create HTML form for new employee

3. Process form data to save employee



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Add Employee

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- **Add Employee** bu
  - request mapping

@ symbol
Reference context path of your application
(app root)

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<a th:href="@{/employees/showFormForAdd}"
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Button
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Docs on Bootstrap styles: www.getbootstrap.com

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TODO:
Add controller request mapping for
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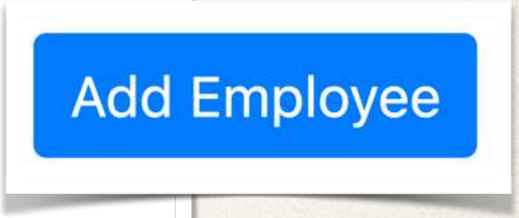

Showing Form

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In your Spring Controller

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- Before you show the form, you must add a ***model attribute***

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- This is an object that will hold form data for the ***data binding***

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`src/main/resources/templates/employees/employee-form.html`

Thymeleaf and Spring MVC Data Binding

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- Automatically setting / retrieving data from a Java object

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- Thymeleaf expressions can help you build the HTML form :-)

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`th:action`	Location to send form data
`th:object`	Reference to model attribute
`th:field`	Bind input field to a property on model attribute
more ….	*See - **www.luv2code.com/thymeleaf-create-form***

Step 2: Create HTML form for new employee

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<form action="#" th:action="@{/employees/save}"
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Empty place holder
Thymeleaf will handle real work

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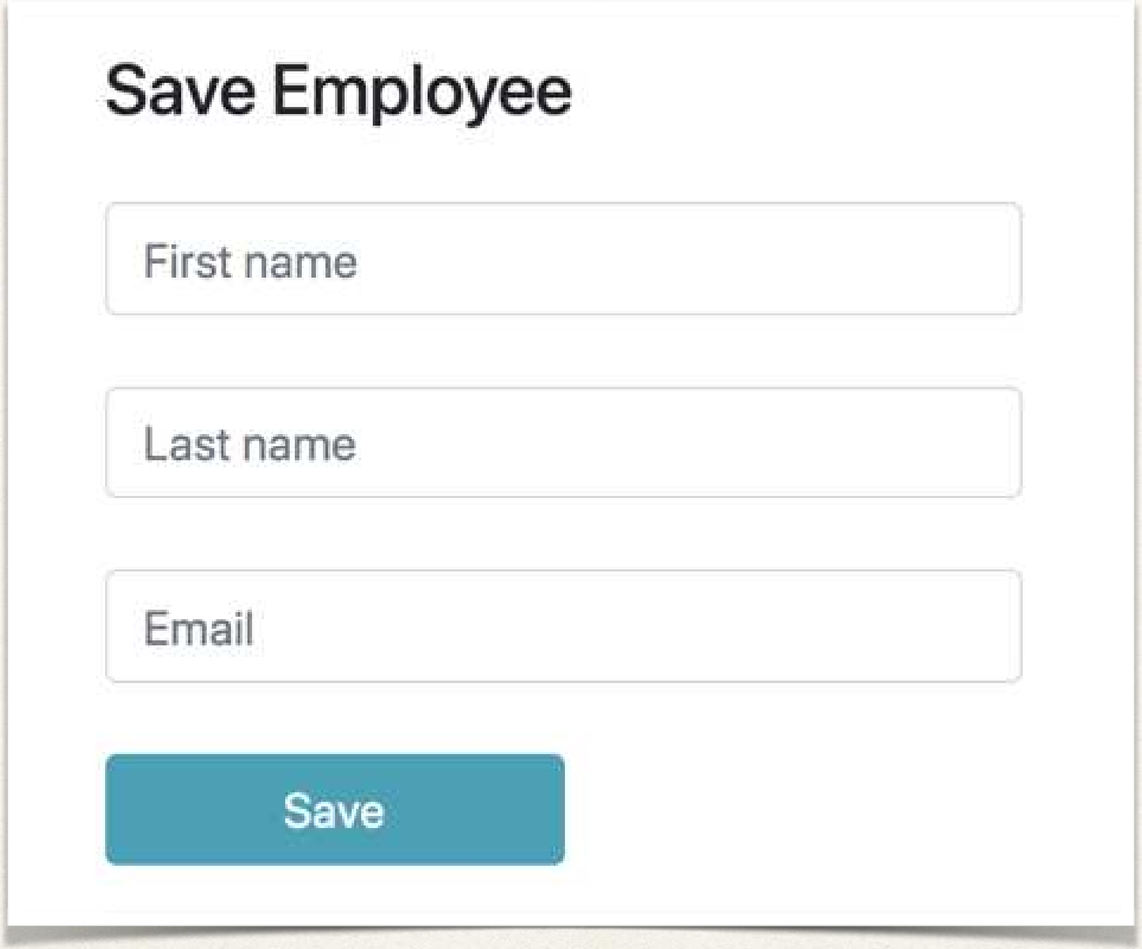

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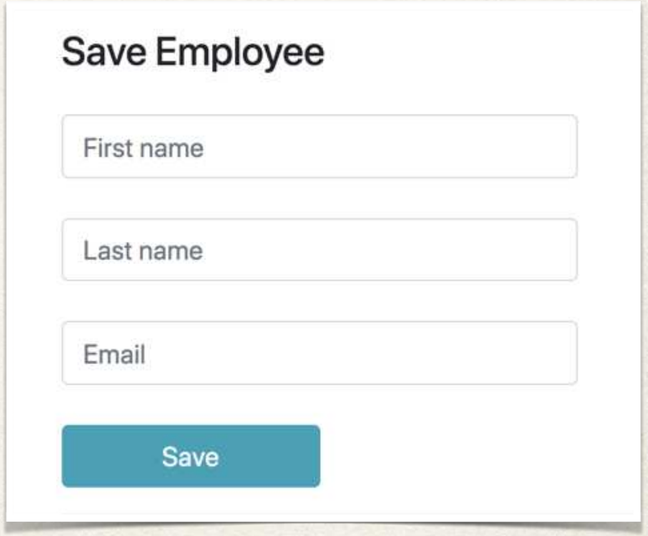

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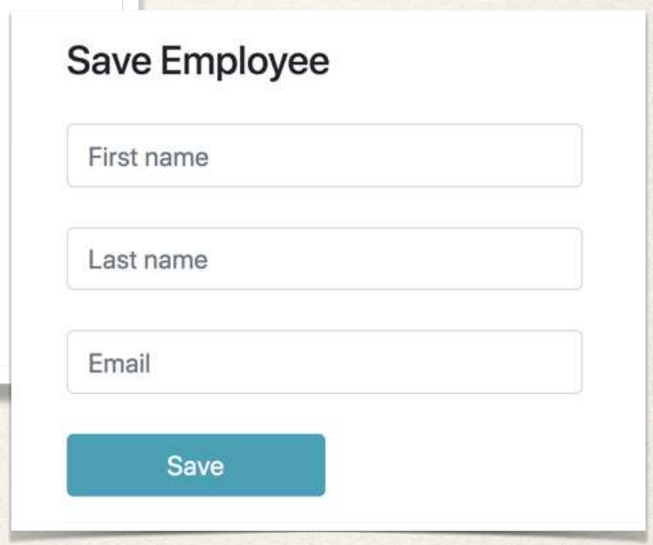

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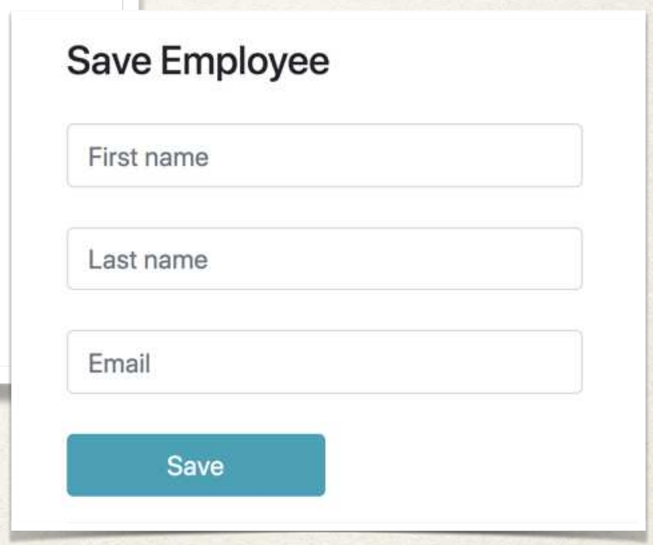

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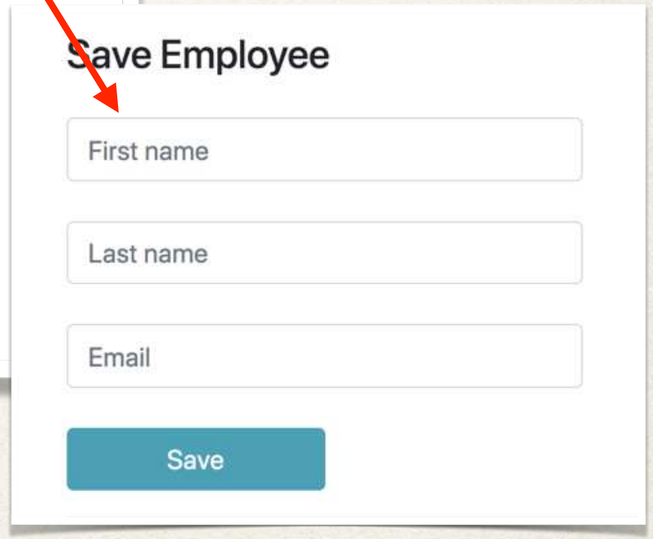

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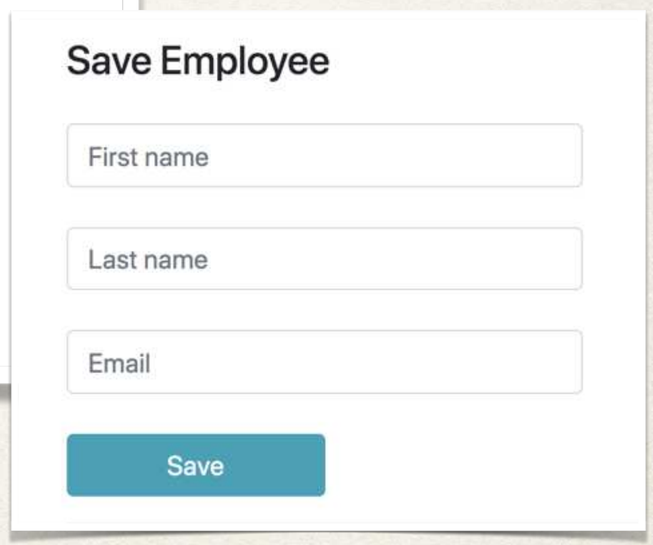

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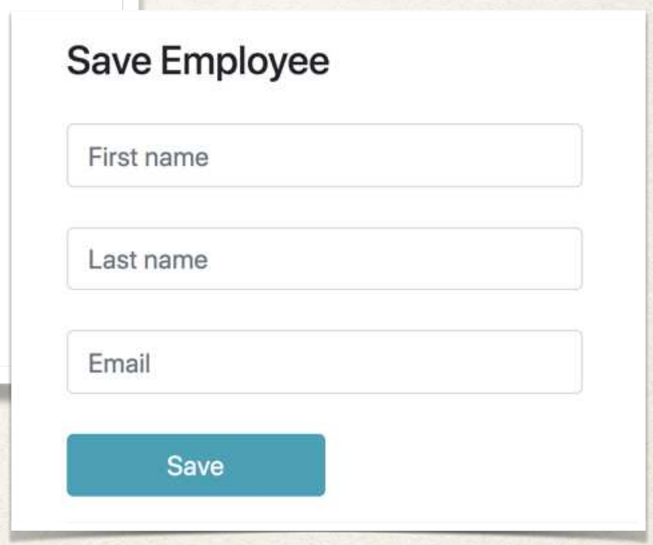

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  <input type="text" th:field="*{email}" placeholder="Email">
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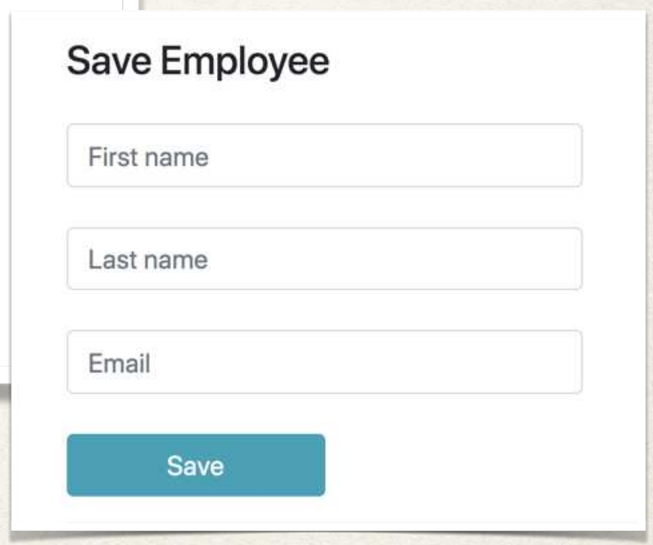

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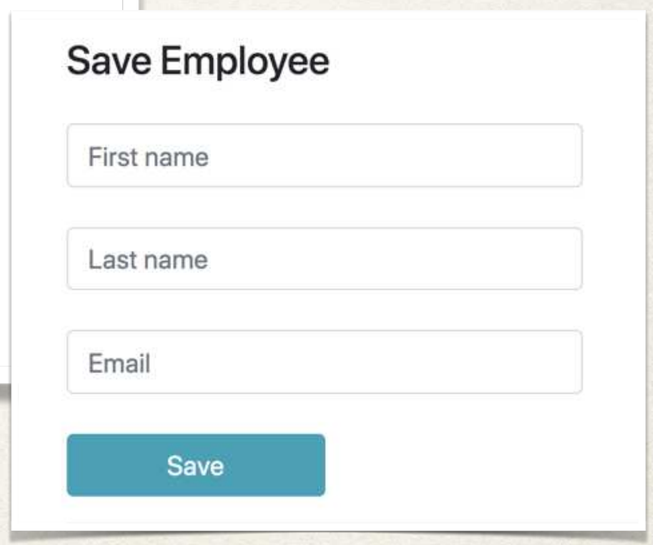
  <button type="submit">Save</button>

</form>
```



Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name">


  <input type="text" th:field="*{lastName}" placeholder="Last name">


  <input type="text" th:field="*{email}" placeholder="Email">


  <button type="submit">Save</button>

</form>
```

Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name">

  <input type="text" th:field="*{lastName}" placeholder="Last name">

  <input type="text" th:field="*{email}" placeholder="Email">

  <button type="submit">Save</button>

</form>
```

1

When form is **loaded**, will call:

employee.getFirstName()
...
employee.getLastName

Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name">

  <input type="text" th:field="*{lastName}" placeholder="Last name">

  <input type="text" th:field="*{email}" placeholder="Email">

  <button type="submit">Save</button>

</form>
```

1

When form is **loaded**, will call:

employee.getFirstName()
...
employee.getLastName

2

When form is **submitted**, will call:

employee.setFirstName(...)
...
employee.setLastName(...)

Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name">


  <input type="text" th:field="*{lastName}" placeholder="Last name">


  <input type="text" th:field="*{email}" placeholder="Email">


  <button type="submit">Save</button>

</form>
```

Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name">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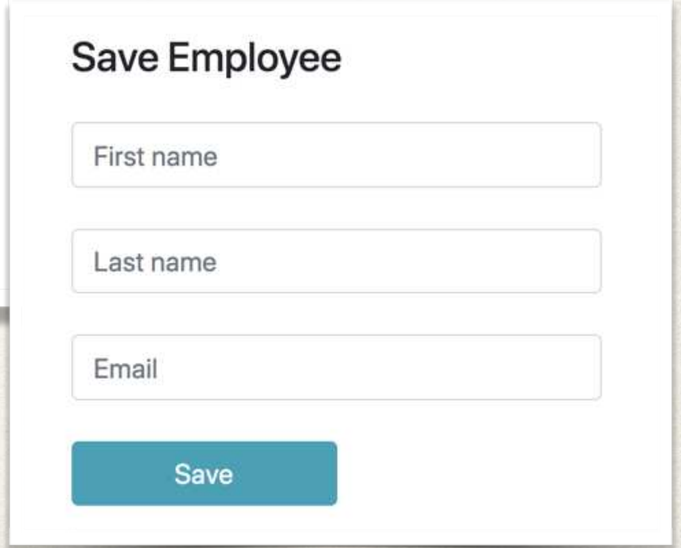
</form>
```



Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name">

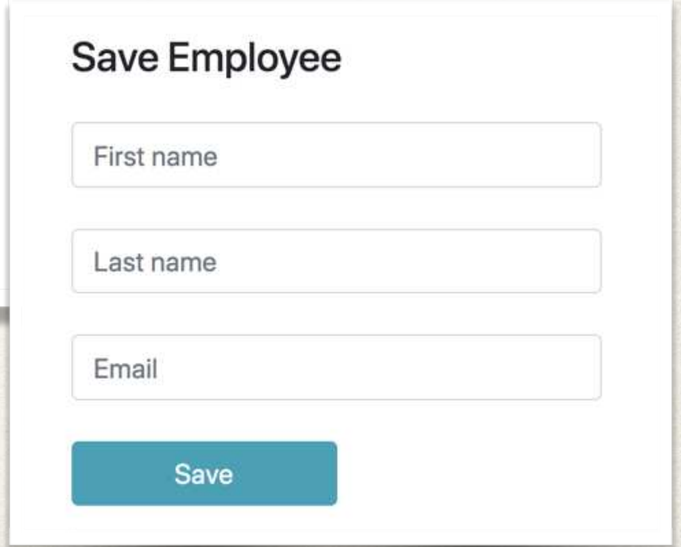

  <input type="text" th:field="*{lastName}" placeholder="Last name">


  <                                {email}" placeholder="Email">


  <button type="submit">Save</button>

</form>
```

Apply Bootstrap styles



Step 2: Create HTML form for new employee

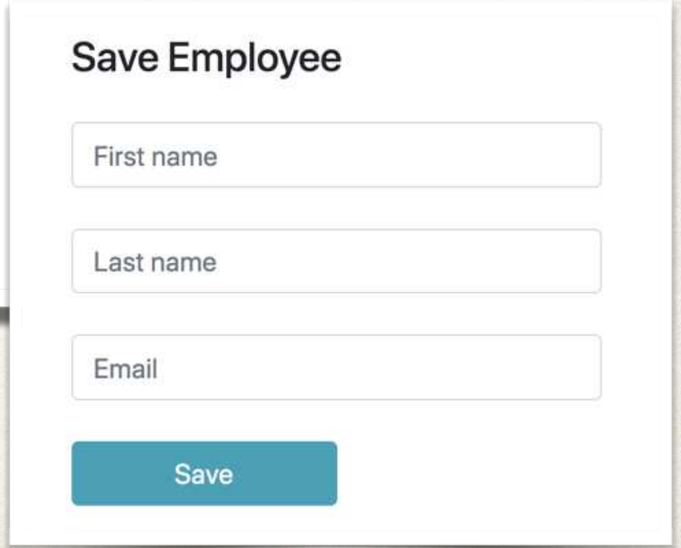
```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name"
         class="form-control mb-4 col-4">



</form>
```

Apply Bootstrap styles



Step 2: Create HTML form for new employee

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<form action="#" th:action="@{/employees/save}"
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  <input type="text" th:field="*{firstName}" placeholder="First name"
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</form>
```
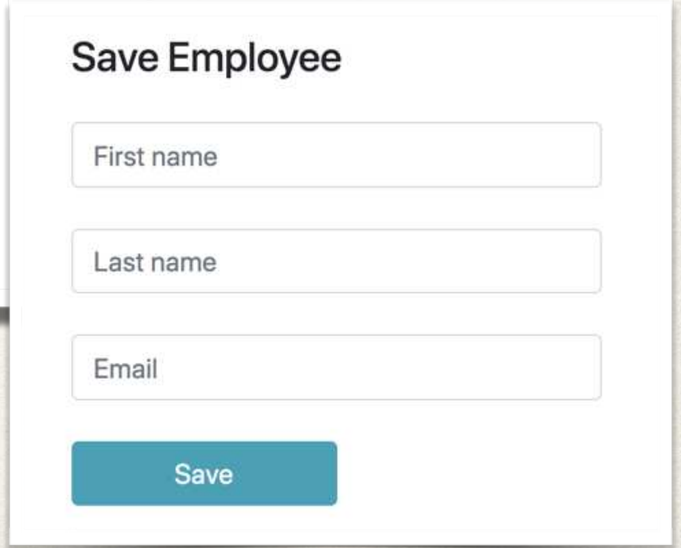

Apply Bootstrap styles



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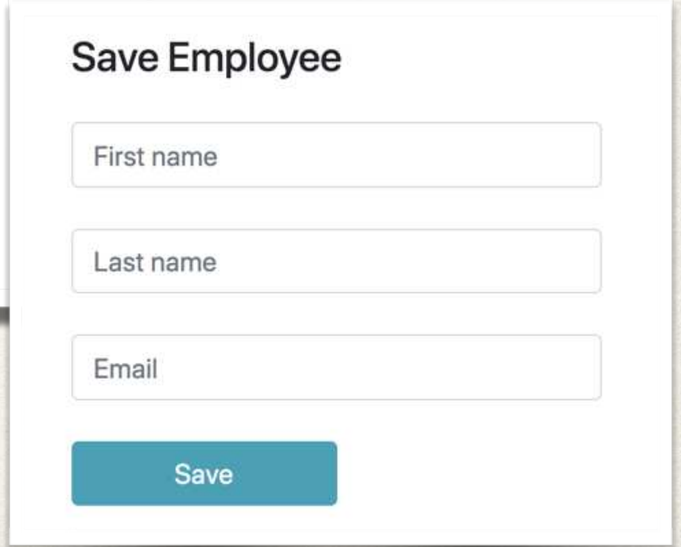
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name"
         class="form-control mb-4 col-4">

</form>
```

Apply Bootstrap styles

Form control
Margin Bottom, 4 pixels
Column Span 4



Step 2: Create HTML form for new employee

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          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name"
         class="form-control mb-4 col-4">



</form>
```

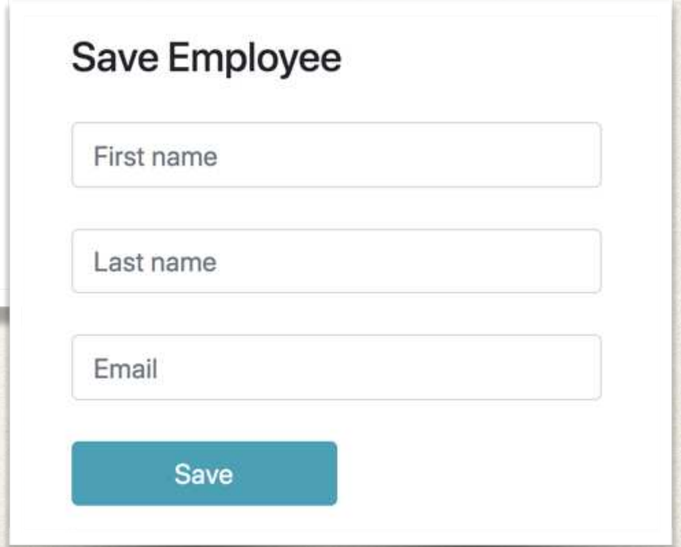

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<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placehol
         class="form-control mb-4 col-4">

  <input type="text" th:field="*{lastName}" placeholde
         class="form-control mb-4 col-4">

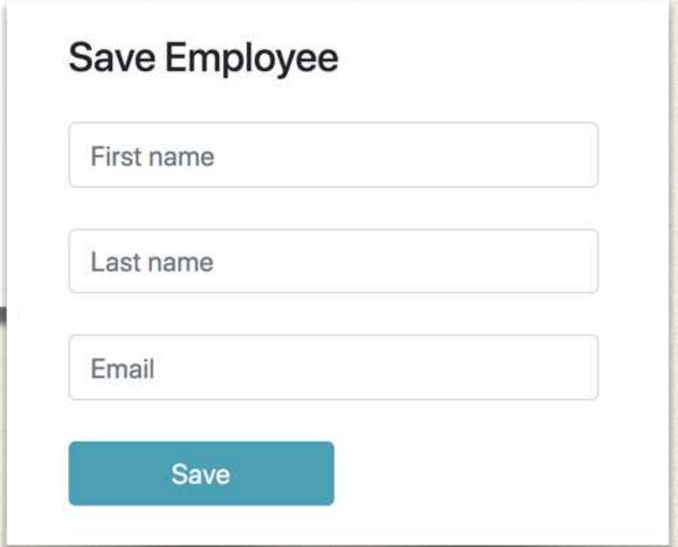
  <input type="text" th:field="*{email}" placeholder="Email"
         class="form-control mb-4 col-4">

  <button type="submit" class="btn btn-info col-2">Save</button>

 </form>
```

Button
Button Info
Column Span 2

Apply Bootstrap styles



Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

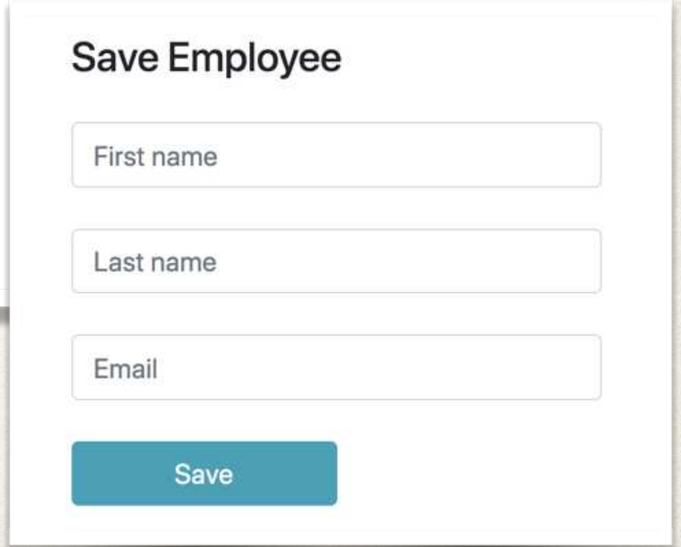
  <input type="text" th:field="*{firstName}" placeholder="First name"
         class="form-control mb-4 col-4">

  <input type="text" th:field="*{lastName}" placeholder="Last name"
         class="form-control mb-4 col-4">

  <input type="text" th:field="*{email}" placeholder="Email"
         class="form-control mb-4 col-4">

  <button type="submit" class="btn btn-info col-2">Save</button>

 </form>
```



Step 2: Create HTML form for new employee

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <input type="text" th:field="*{firstName}" placeholder="First name"
         class="form-control mb-4 col-4">

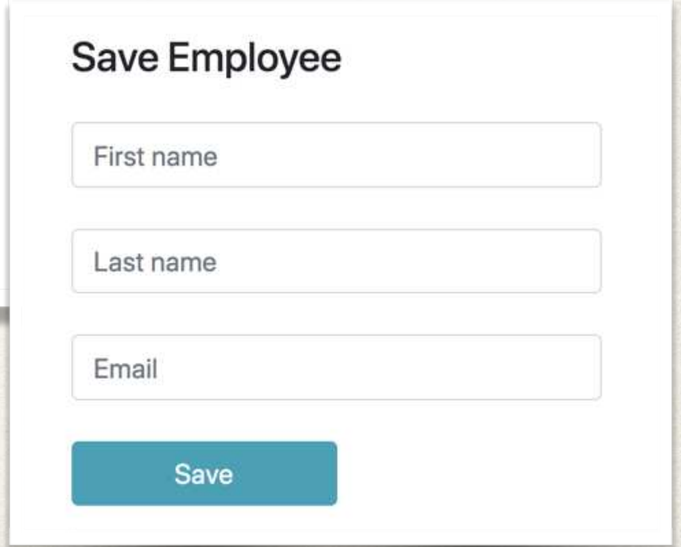
  <input type="text
         class="for

  <input type="text
         class="for

  <button type="submit" class="btn btn-info col-2">Save</button>

 </form>
```

TODO:
Add controller request mapping for `/employees/save`



Step 3: Process form data to save employee

Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
```

Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   private EmployeeService employeeService;

   public EmployeeController(EmployeeService theEmployeeService) {
      employeeService = theEmployeeService;
   }
```

Constructor injection

Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/e
public class Employ

   private EmployeeService employeeService;

   public EmployeeController(EmployeeService theEmployeeService) {
      employeeService = theEmployeeService;
   }
```

Since only one constructor
`@Autowired` is optional

Constructor injection

Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   private EmployeeService employeeService;

   public EmployeeController(EmployeeService theEmployeeService) {
      employeeService = theEmployeeService;
   }

   @PostMapping("/save")
   public String saveEmployee(@ModelAttribute("employee") Employee theEmployee) {
```

Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   private EmployeeService emp

   public EmployeeController(E
      employeeService = theEmpl
   }

   @PostMapping("/save")
   public String saveEmployee(@ModelAttribute("employee") Employee theEmployee) {
```

```
<form action="#" th:action="@{/employees/save}"
                 th:object="${employee}" method="POST">
```

Step 3: Process form data to save employee

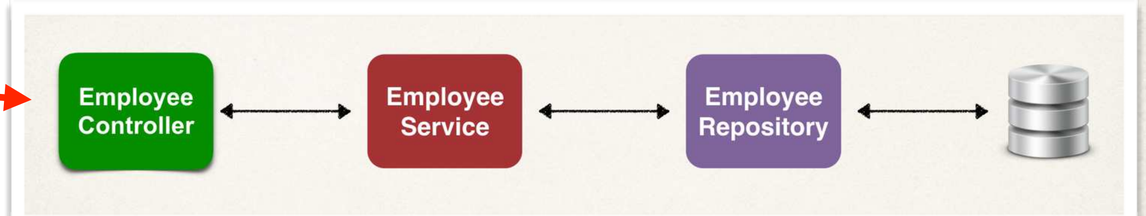
```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   private EmployeeService employeeService;

   public EmployeeController(EmployeeService theEmployeeService) {
      employeeService = theEmployeeService;
   }

   @PostMapping("/save")
   public String saveEmployee(@ModelAttribute("employee") Employee theEmployee) {

      // save the employee
      employeeService.save(theEmployee);
```



Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   private EmployeeService employeeService;

   public EmployeeController(EmployeeService theEmployeeService) {
      employeeService = theEmployeeService;
   }

   @PostMapping("/save")
   public String saveEmployee(@ModelAttribute("employee") Employee theEmployee) {

      // save the employee
      employeeService.save(theEmployee);

      // use a redirect to prevent duplicate submissions
      return "redirect:/employees/list";
   }
   …
}
```

Redirect to request mapping
`/employees/list`

Step 3: Process form data to save employee

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {

   private EmployeeService employeeService;

   public EmployeeController(EmployeeService theEmployeeService) {
      employeeService = theEmployeeService;
   }

   @PostMapping("/save")
   public String saveEmployee(@ModelAttribute("employee") Employee theEmployee) {

      // save the employee
      employeeService.save(theEmployee);

      // use a redirect to prevent duplicate submissions
      return "redirect:/employees/list";
   }
   …
}
```

Redirect to request mapping `/employees/list`

"Post/Redirect/Get" pattern

For more info see www.luv2code.com/post-redirect-get

Thymeleaf - Update Employee

Update Employee - Demo

Employee Directory

Add Employee

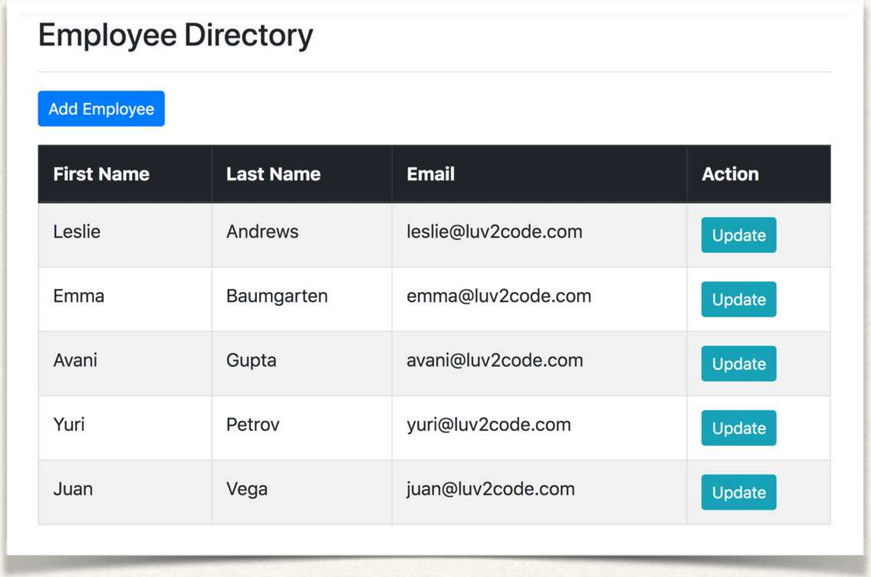
First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update
Emma	Baumgarten	emma@luv2code.com	Update
Avani	Gupta	avani@luv2code.com	Update
Yuri	Petrov	yuri@luv2code.com	Update
Juan	Vega	juan@luv2code.com	Update

Update Employee

Step-By-Step

Update Employee

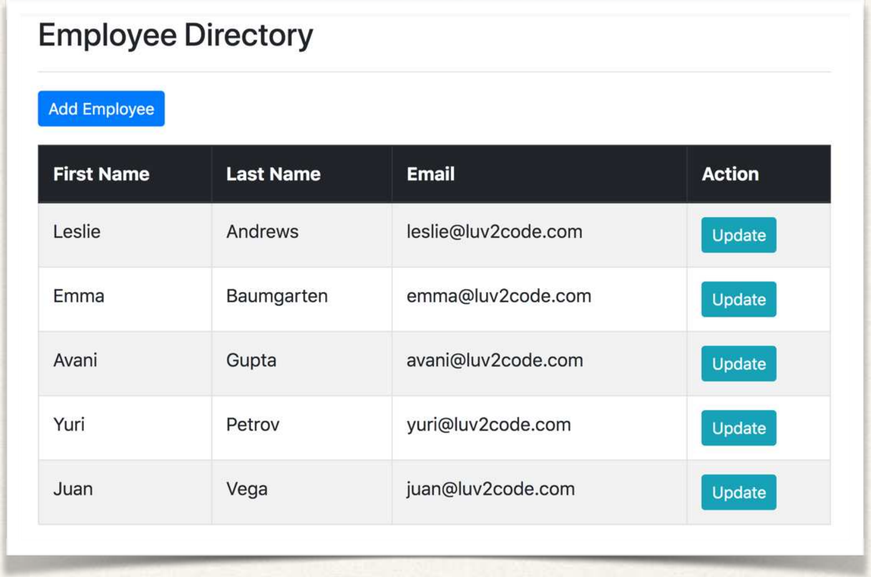
Step-By-Step



Update Employee

Step-By-Step

1. "Update" button

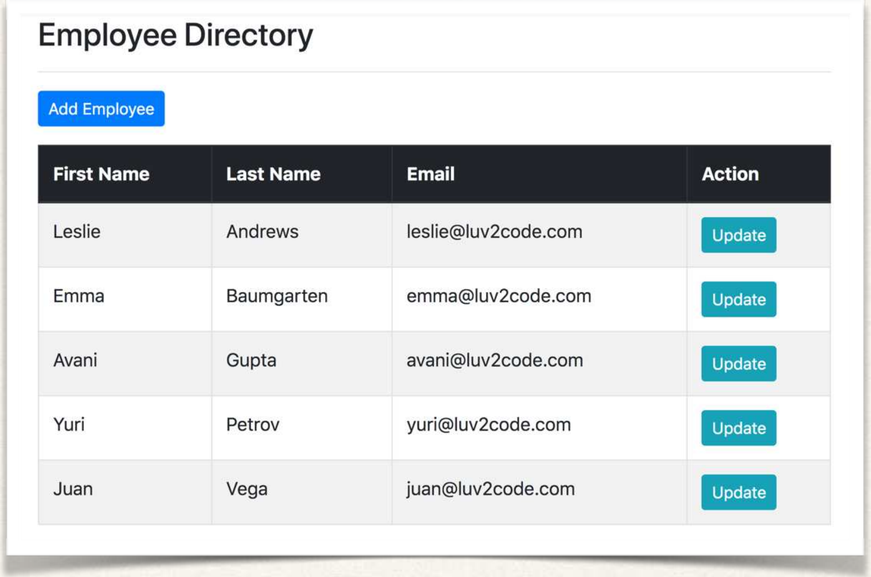


Update Employee

Step-By-Step

1. "Update" button

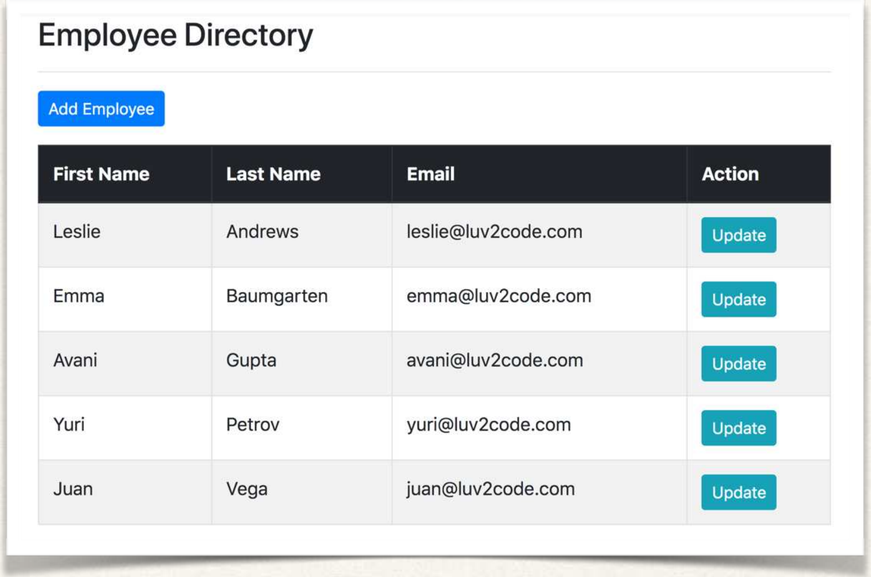
2. Pre-populate the form



Update Employee

Step-By-Step

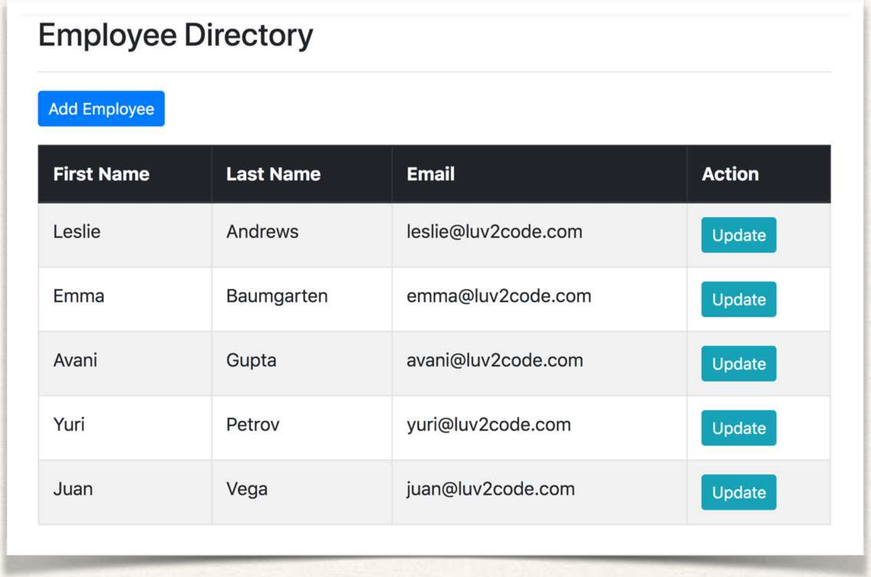
1. "Update" button
2. Pre-populate the form
3. Process form data

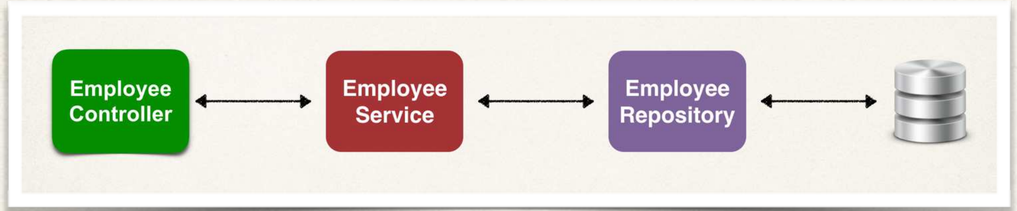


Update Employee

Step-By-Step

1. "Update" button
2. Pre-populate the form
3. Process form data





Step 1: "Update" Button

Step 1: "Update" Button

Employee Directory

Add Employee

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update
Emma	Baumgarten	emma@luv2code.com	Update
Avani	Gupta	avani@luv2code.com	Update
Yuri	Petrov	yuri@luv2code.com	Update
Juan	Vega	juan@luv2code.com	Update

Step 1: "Update" Button

Employee Directory

Add Employee

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update
Emma	Baumgarten	emma@luv2code.com	Update
Avani	Gupta	avani@luv2code.com	Update
Yuri	Petrov	yuri@luv2code.com	Update
Juan	Vega	juan@luv2code.com	Update

Each row has an **Update** link

- current employee id embedded in link

When **clicked**

- will load the employee from database
- prepopulate the form

Step 1: "Update" button

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update
Emma	Baumgarten	emma@luv2code.com	Update

Step 1: "Update" button

- **Update** button includes employee id

Step 1: "Update" button

- **Update** button includes employee id

```
<tr th:each="tempEmployee : ${employees}">
  ...
```

Step 1: "Update" button

- **Update** button includes employee id

```
<tr th:each="tempEmployee : ${employees}">
  …
  <td>

    <a th:href="@{/employees/showFormForUpdate(employeeId=${tempEmployee.id})}"
       class="btn btn-info btn-sm">
      Update
    </a>

  </td>

</tr>
```

Step 1: "Update" button

- **Update** button includes employee id

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update
Emma	Baumgarten	emma@luv2code.com	Update

```
<tr th:each="tempEmployee : ${employees}">
  …
  <td>

    <a th:href="@{/employees/showFormForUpdate(employeeId=${tempEmployee.id})}"
       class="btn btn-info btn-sm">
      Update
    </a>

  </td>

</tr>
```

Appends to URL

?employeeId=xxx

Step 2: Pre-populate Form

Step 2: Pre-populate Form

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
   …
```

Step 2: Pre-populate Form

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/showFormForUpdate")
  public String showFormForUpdate(@RequestParam("employeeId") int theId,
                                  Model theModel) {
```

Step 2: Pre-populate Form

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/showFormForUpdate")
  public String showFormForUpdate(@RequestParam("employeeId") int theId,
                                  Model theModel) {
```

```
<a th:href="@{/employees/showFormForUpdate(employeeId=${tempEmployee.id})}"
```

Step 2: Pre-populate Form

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/showFormForUpdate")
  public String showFormForUpdate(@RequestParam("employeeId") int theId,
                                  Model theModel) {

    // get the employee from the service
    Employee theEmployee = employeeService.findById(theId);
```

```
<a th:href="@{/employees/showFormForUpdate(employeeId=${tempEmployee.id})}"
```

Step 2: Pre-populate Form

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/showFormForUpdate")
  public String showFormForUpdate(@RequestParam("employeeId") int theId,
                                  Model theModel) {

    // get the employee from the service
    Employee theEmployee = employeeService.findById(theId);

    // set employee as a model attribute to pre-populate the form
    theModel.addAttribute("employee", theEmployee);
```

```
<a th:href="@{/employees/showFormForUpdate(employeeId=${tempEmployee.id})}"
```

Step 2: Pre-populate Form

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/showFormForUpdate")
  public String showFormForUpdate(@RequestParam("employeeId") int theId,
                                  Model theModel) {

    // get the employee from the service
    Employee theEmployee = employeeService.findById(theId);

    // set employee as a model attribute to pre-populate the form
    theModel.addAttribute("employee", theEmployee);

    // send over to our form
    return "employees/employee-form";
  }

}
```

```
<a th:href="@{/employees/showFormForUpdate(employeeId=${tempEmployee.id})}"
```

Step 2: Pre-populate Form

Step 2: Pre-populate Form

```
<form action="#" th:action="@{/employees/save}"
         th:object="${employee}" method="POST">

  <!-- Add hidden form field to handle update -->
  <input type="hidden" th:field="*{id}" />

  <input type="text" th:field="*{firstName}"
      class="form-control mb-4 col-4" placeholder="First name">

  <input type="text" th:field="*{lastName}"
      class="form-control mb-4 col-4" placeholder="Last name">

  <input type="text" th:field="*{email}"
      class="form-control mb-4 col-4" placeholder="Email">

  <button type="submit" class="btn btn-info col-2">Save</button>

</form>
```

Step 2: Pre-populate Form

1

When form is **loaded**, will call:

employee.getFirstName()
...
employee.getLastName

```
<form action="#" th:action="@{/employees/save}"
         th:object="${employee}" method="POST">

  <!-- Add hidden form field to handle update -->
  <input type="hidden" th:field="*{id}" />

  <input type="text" th:field="*{firstName}"
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  <button type="submit" class="btn btn-info col-2">Save</button>

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<form action="#" th:action="@{/employees/save}"
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      class="form-control mb-4 col-4" placeholder="Last name">

  <input type="text" th:field="*{email}"
      class="form-control mb-4 col-4" placeholder="Email">

  <button type="submit" class="btn btn-info col-2">Save</button>

</form>
```

1

When form is **loaded**, will call:

employee.getFirstName()
...
employee.getLastName

This is how form is pre-populated
Thanks to calls to getters

Step 2: Pre-populate Form

```
<form action="#" th:action="@{/employees/save}"
          th:object="${employee}" method="POST">

  <!-- Add hidden form field to handle update -->
  <input type="hidden" th:field="*{id}" />

  <input type="text" th:field="*{firstName}"
      class="form-control mb-4 col-4" placeholder="First name">

  <input type="text" th:field="*{lastName}"
      class="form-control mb-4 col-4" placeholder="Last name">

  <input type="text" th:field="*{email}"
      class="form-control mb-4 col-4" placeholder="Email">

  <button type="submit" class="btn btn-info col-2">Save</button>

</form>
```

Step 2: Pre-populate Form

```
<form action="#" th:action="@{/employees/save}"
        th:object="${employee}" method="POST">

  <!-- Add hidden form field to handle update -->
  <input type="hidden" th:field="*{id}" />

  <input type="text" th:field="*{firstName}"
      class="form-control mb-4 col-4" placeholder="First name">

  <input type="text" th:field="*{lastName}"
      class="form-control mb-4 col-4" placeholder="Last name">

  <input type="text" th:field="*{email}"
      class="form-control mb-4 col-4" placeholder="Email">

  <button type="submit" class="btn btn-info col-2">Save</button>

</form>
```

Hidden form field required for updates

Step 2: Pre-populate Form

```
<form action="#" th:action="@{/employees/save}"
        th:object="${employee}" method="POST">

  <!-- Add hidden form field to handle update -->
  <input type="hidden" th:field="*{id}" />

  <input type="text" th:field="*{firstName}"
      class="form-control mb-4 col-4" placeholder="First name">

  <input type="text" th:field="*{lastName}"
      class="form-control mb-4 col-4" placeho

  <input type="text" th:field="*{email}"
      class="form-control mb-4 col-4" placeho

  <button type="submit" class="btn btn-info c

</form>
```

Hidden form field required for updates

This binds to the model attribute

Tells your app which employee to update

Step 3: Process form data to save employee

Step 3: Process form data to save employee

- No need for new code … we can reuse our existing code

Step 3: Process form data to save employee

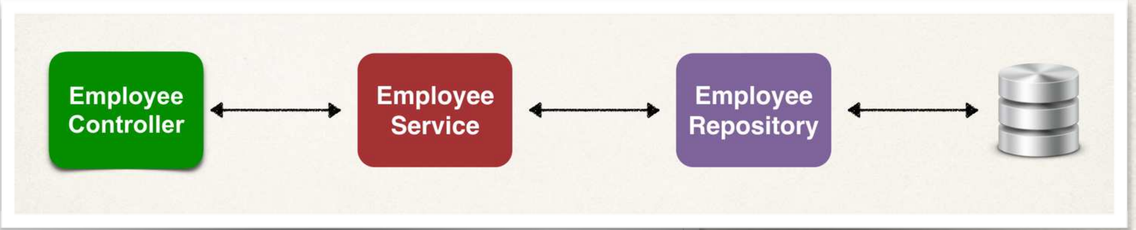
- No need for new code … we can reuse our existing code
- Works the same for add or update :-)

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
   …

   @PostMapping("/save")
   public String saveEmployee(@ModelAttribute("employee") Employee theEmployee) {

      // save the employee
      employeeService.save(theEmployee);

      // use a redirect to prevent duplicate submissions
      return "redirect:/employees/list";
   }
   …
}
```



Thymeleaf - Delete Employee

Delete Employee - DEMO

Delete Employee - DEMO

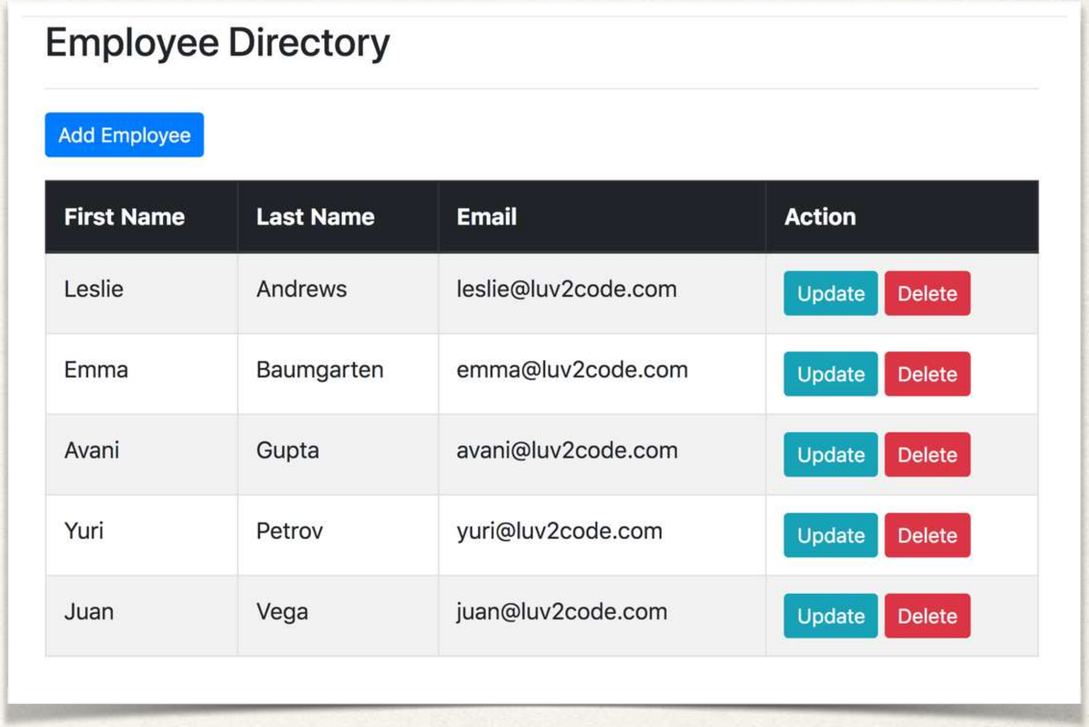
Employee Directory

Add Employee

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete
Emma	Baumgarten	emma@luv2code.com	Update Delete
Avani	Gupta	avani@luv2code.com	Update Delete
Yuri	Petrov	yuri@luv2code.com	Update Delete
Juan	Vega	juan@luv2code.com	Update Delete

Delete Employee

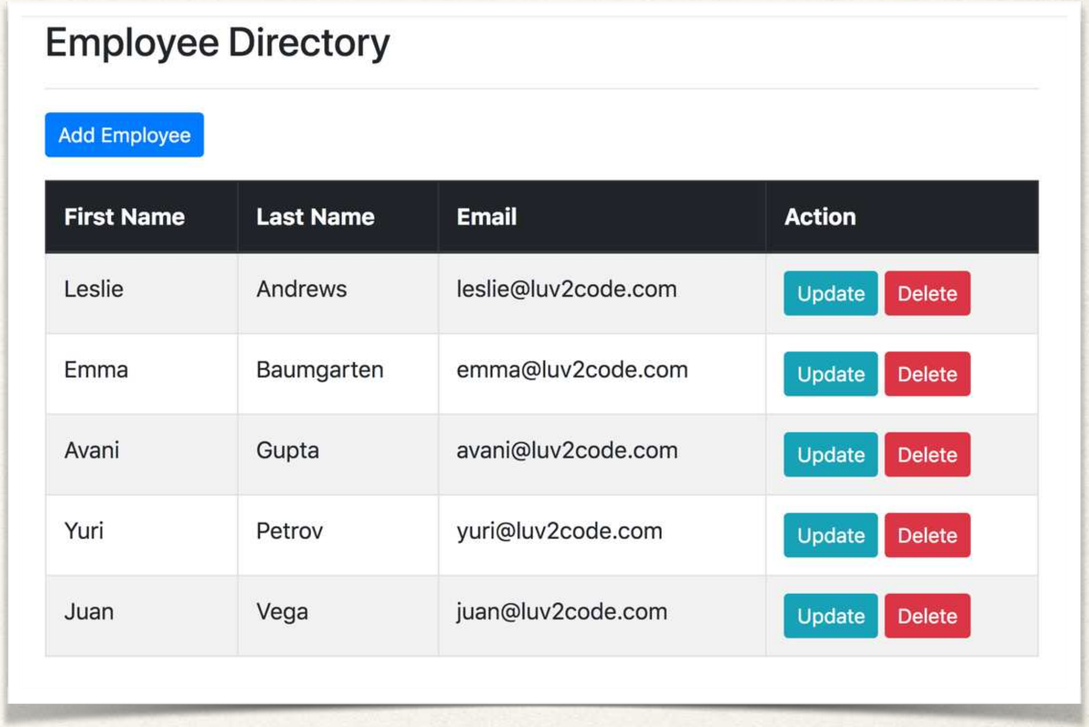
Step-By-Step



Delete Employee

Step-By-Step

1. Add “Delete” button/link on page

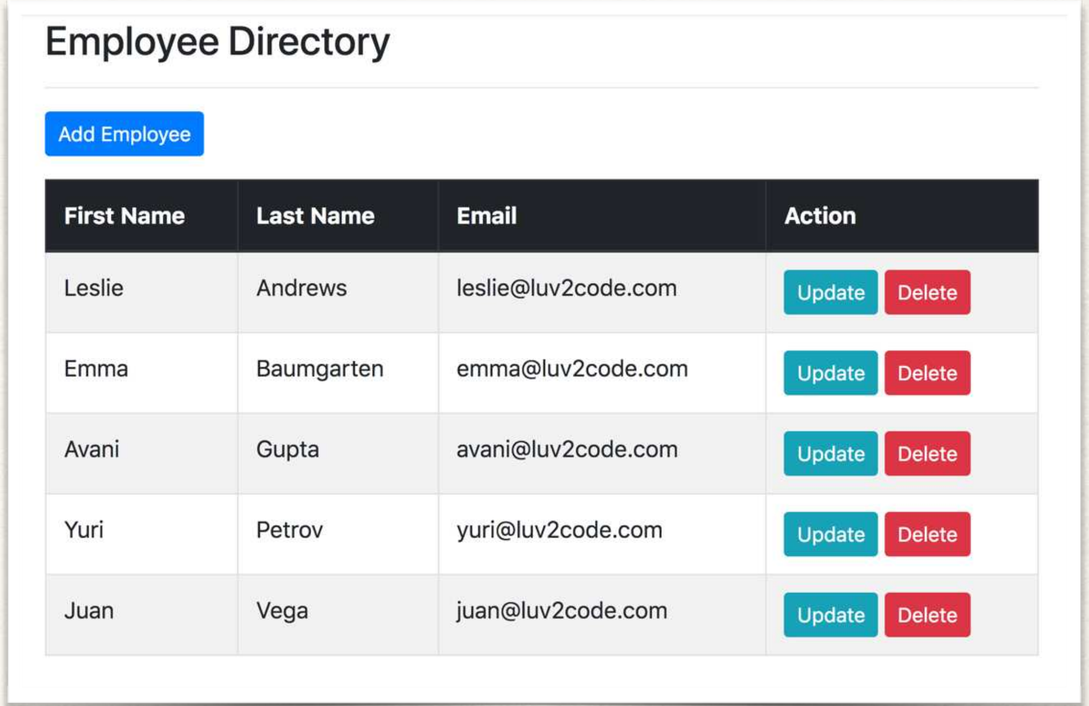


Delete Employee

Step-By-Step

1. Add “Delete” button/link on page

2. Add controller code for “Delete”

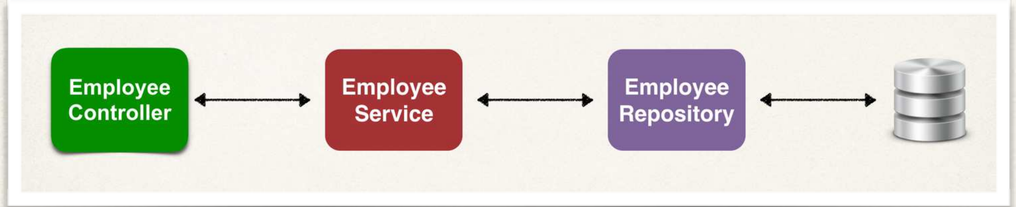


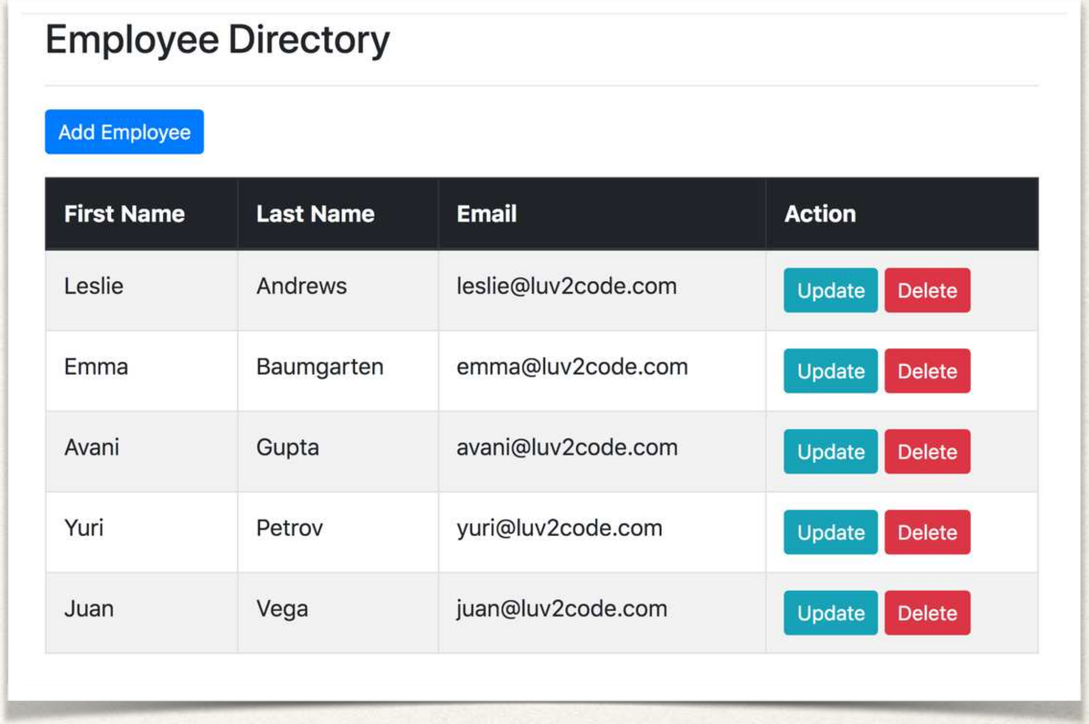
Delete Employee

Step-By-Step

1. Add “Delete” button/link on page

2. Add controller code for “Delete”





Step 1: "Delete" button

Employee Directory

Add Employee

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete
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Avani	Gupta	avani@luv2code.com	Update Delete
Yuri	Petrov	yuri@luv2code.com	Update Delete
Juan	Vega	juan@luv2code.com	Update Delete

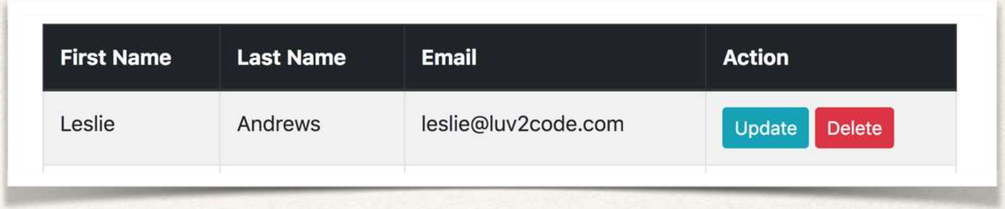
Each row has a **Delete** button/link

- current employee id embedded in link

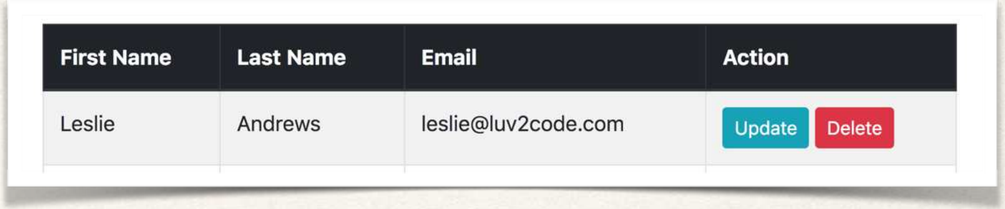
When **clicked**

- prompt user
- will delete the employee from database

Step 1: "Delete" button



Step 1: "Delete" button



- **Delete** button includes employee id

Step 1: "Delete" button

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete

- **Delete** button includes employee id

```
<tr th:each="tempEmployee : ${employees}">
  ...
```

Step 1: "Delete" button

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete

- **Delete** button includes employee id

```
<tr th:each="tempEmployee : ${employees}">
  …
  <td>

    <a th:href="@{/employees/delete(employeeId=${tempEmployee.id})}"
       class="btn btn-danger btn-sm"
       onclick="if (!(confirm('Are you sure you want to delete this employee?'))) return false">
      Delete
    </a>

 </td>

</tr>
```

Step 1: "Delete" button

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete

- **Delete** button includes employee id

Appends to URL

?employeeId=xxx

```
<tr th:each="tempEmployee : ${employees}">
  …
  <td>

    <a th:href="@{/employees/delete(employeeId=${tempEmployee.id})}"
       class="btn btn-danger btn-sm"
       onclick="if (!(confirm('Are you sure you want to delete this employee?'))) return false">
      Delete
    </a>

 </td>

</tr>
```

Step 1: "Delete" button

First Name	Last Name	Email	Action
Leslie	Andrews	leslie@luv2code.com	Update Delete

- **Delete** button includes employee id

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<tr th:each="tempEmployee : ${employees}">
  …
  <td>

    <a th:href="@{/employees/delete(employeeId=${tempEmployee.id})}"
       class="btn btn-danger btn-sm"
       onclick="if (!(confirm('Are you sure you want to delete this employee?'))) return false">
      Delete
    </a>

 </td>

</tr>
```

Appends to URL

?employeeId=xxx

JavaScript to prompt user before deleting

Step 2: Add controller code for delete

Step 2: Add controller code for delete

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …
```

Step 2: Add controller code for delete

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/delete")
  public String delete(@RequestParam("employeeId") int theId) {
```

Step 2: Add controller code for delete

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/delete")
  public String delete(@RequestParam("employeeId") int theId) {
```

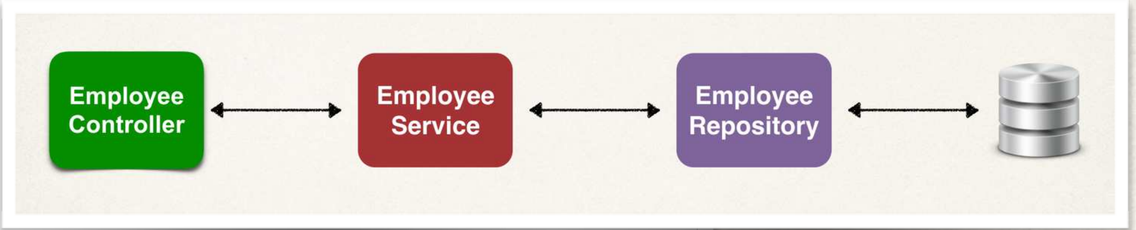
```
<a th:href="@{/employees/delete(employeeId=${tempEmployee.id})}"
```

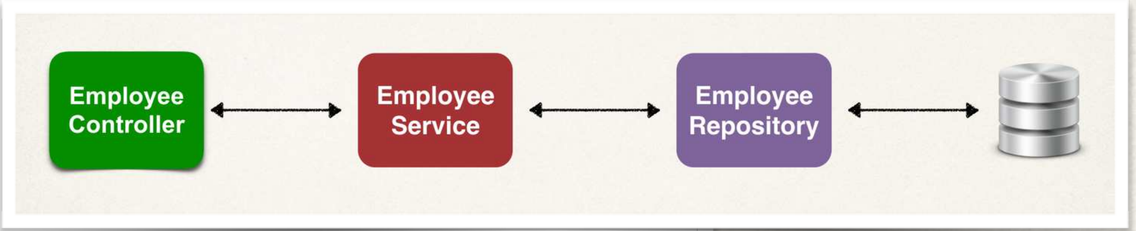
Step 2: Add controller code for delete

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/delete")
  public String delete(@RequestParam("employeeId") int theId) {

    // delete the employee
    employeeService.deleteById(theId);
```



Step 2: Add controller code for delete

```
@Controller
@RequestMapping("/employees")
public class EmployeeController {
  …

  @GetMapping("/delete")
  public String delete(@RequestParam("employeeId") int theId) {

    // delete the employee
    employeeService.deleteById(theId);

    // redirect to /employees/list
    return "redirect:/employees/list";
  }
  …
}
```