

Java MVC Frameworks

Thymeleaf Helpers,
Data Validation



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What are Helpers?



Input with success

Success! You've done it.
Example help text that remains unchanged.

Input with warning

Shucks, check the formatting of that and try again.
Example help text that remains unchanged.

Input with danger

Sorry, that username's taken. Try another?
Example help text that remains unchanged.

How to validate?

sli.do

#java-web

What are Helpers?



Helpers

- Objects that provide built-in functionalities that helps you enhance your view



Thymeleaf



Dates



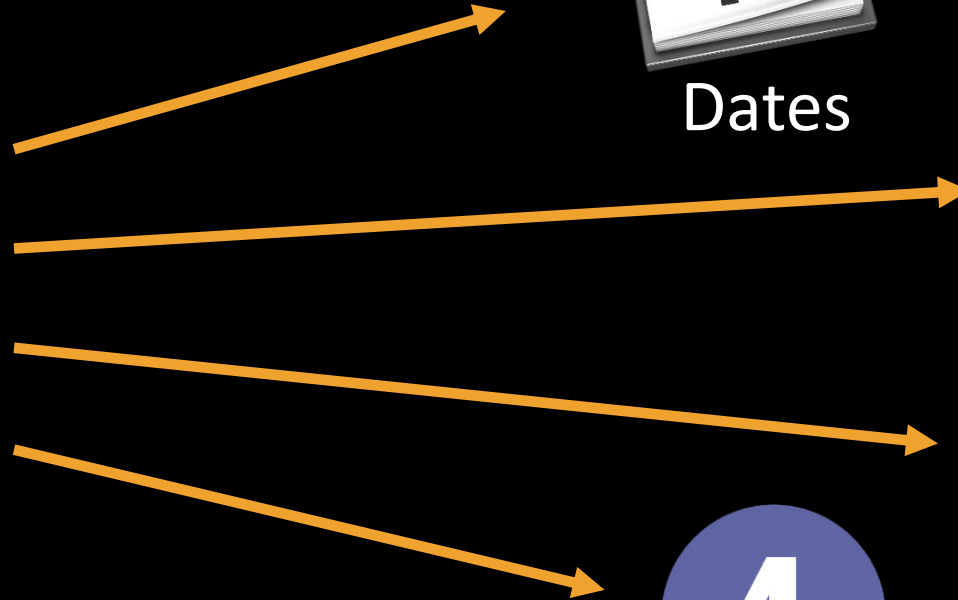
Strings



List



Numbers



Date – Custom Format

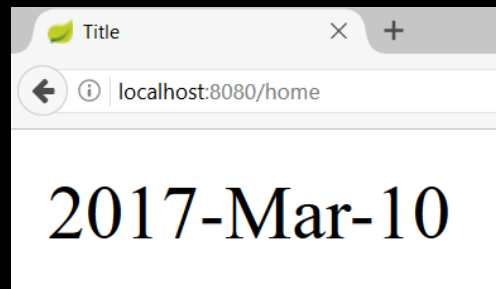
WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model){
    model.addAttribute("myDate", new Date());
    return "whiskey-home";
}
```

Format Date

whiskey-home.html

```
<div th:text="${#dates.format(myDate, 'yyyy-MMM-dd')}"></div>
```



Date – Week Name of Day

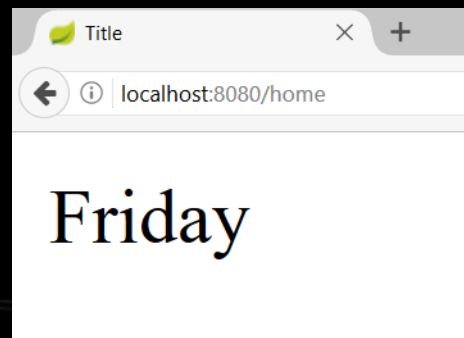
WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model){
    model.addAttribute("myDate", new Date());
    return "whiskey-home";
}
```

Day Name

whiskey-home.html

```
<div th:text="${#dates.dayOfWeekName(myDate)}"></div>
```



Date – List Days

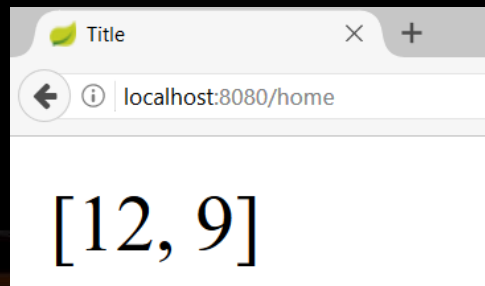
WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model){
    model.addAttribute("myDates", myDates);
    //2016-12-12, 2017-04-09 -> yyyy-MM-dd
    return "whiskey-home";
}
```

List Days

whiskey-home.html

```
<div th:text="${#dates.listDay(myDates)}"></div>
```



Date – Get Current Date

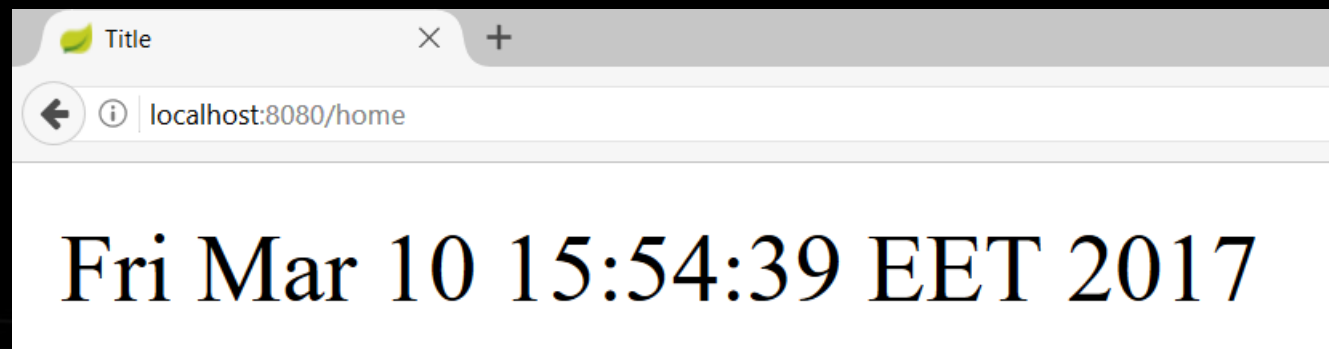
WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage() {
    return "whiskey-home";
}
```

Today's Date

whiskey-home.html

```
<div th:text="${#dates.createNow()}"></div>
```



Strings – Is Empty

WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    String whiskeyNull = null;
    model.addAttribute("whiskey", whiskeyNull);
    return "whiskey-home";
}
```

Null/Empty Check

whiskey-home.html

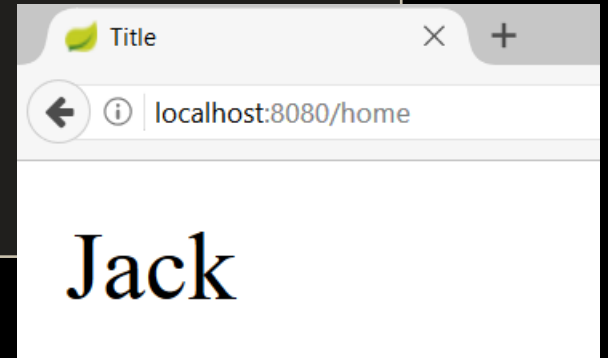
```
<div th:text="${#strings.isEmpty(whiskey)}"></div>
```



Strings – Substring

WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    String whiskey = "Jack Daniels";
    model.addAttribute("whiskey", whiskey);
    return "whiskey-home";
}
```



Substring

whiskey-home.html

```
<div th:text="${#strings.substring(whiskey,0,4)}"></div>
```

Strings – Join

WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    model.addAttribute("whiskeys", whiskeys);
    //Jack Daniels, Jameson
    return "whiskey-home";
}
```



Join

whiskey-home.html

```
<div th:text="${#strings.listJoin(whiskeys, '- ')}"></div>
```

Strings – Capitalize

WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    String whiskey = "jameson";
    model.addAttribute("whiskey", whiskey);
    return "whiskey-home";
}
```



Capitalize

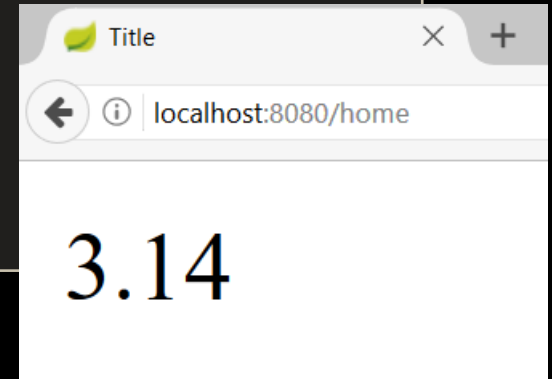
whiskey-home.html

```
<div th:text="${#strings.capitalize(whiskey)}"></div>
```


Numbers - Format

WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    double num = 3.14159;
    model.addAttribute("num", num);
    return "whiskey-home";
}
```



Format

whiskey-home.html

```
<div th:text="${#numbers.formatDecimal(num,1,2)}"></div>
```


Numbers - Sequence

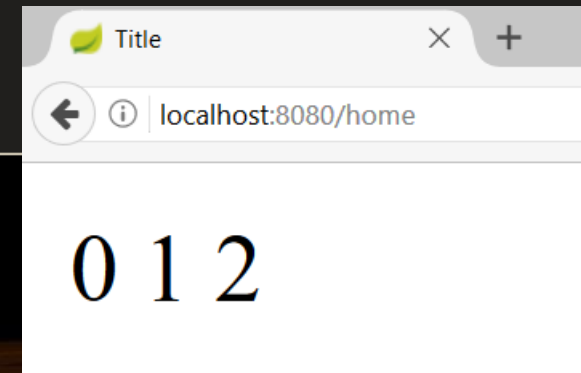
WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    return "whiskey-home";
}
```

Sequence

whiskey-home.html

```
<span th:each="number: ${#numbers.sequence(0,2)}">
    <span th:text="${number}"></span>
</span>
```



Aggregates - Sum

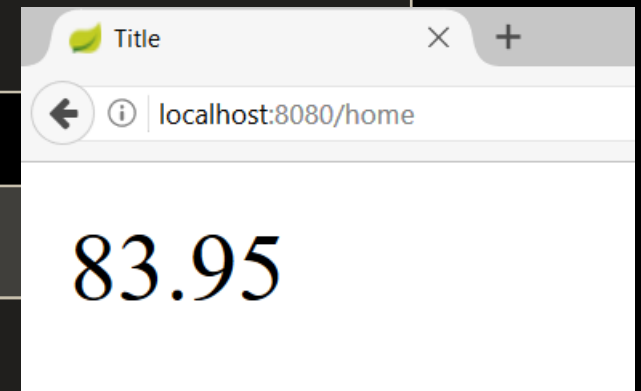
WhiskeyController.java

```
@GetMapping("/home")
public String getHomePage(Model model) {
    double[] whiskeyPrices
        = new double[]{29.23, 21.22, 33.50};
    model.addAttribute("whiskeyPrices", whiskeyPrices);
    return "whiskey-home";
}
```

Sum

whiskey-home.html

```
<div th:text="${#aggregates.sum(whiskeyPrices)}"></div>
```



Thymeleaf in JavaScript

JSController.java

```
@GetMapping("/js")
public String getMapPage(Model model){
    String message = "Hi JS!";
    model.addAttribute("message", message);
    return "page";
}
```

script.js

```
<script th:inline="javascript">
    var message = [[${message}]];
</script>
```

Input with success

Success! You've done it.

Example help text that remains unchanged.

Input with warning

Shucks, check the formatting of that and try again.

Example help text that remains unchanged.

Input with danger

Sorry, that username's taken. Try another?

Example help text that remains unchanged.

How to validate?

Spring Validation Model

SomeModel.java

Not Null

Size

```
public class SomeModel {
```

```
    @NotNull
```

```
    @Size(min = 3, max = 10, message = "Invalid name")
```

```
    private String name;
```

```
}
```

Error
Message

Spring Validation Controller (1)

SomeController.java

@Controller

public class SomeController {

 @GetMapping("/add")

 public String getPage(@ModelAttribute SomeModel someModel) {
 return "add";

 }

}

Sending a model
to the view

Spring Validation Controller (1)

Validate the
model

SomeController.java

```
@PostMapping("/add")
public String add (@Valid @ModelAttribute SomeModel someModel,
BindingResult bindingResult) {
    if(bindingResult.hasErrors())
        return "add";
}

this.someService.save(someModel);

return "redirect:/home";
}
```

Validation Result

Spring Validation Thymeleaf

Get Object

add.html

```
<form method="post" th:object="${someModel}">
  <div class="form-group"
    th:classappend="${#fields.hasErrors('name')}? 'has-danger'">
    <label for="nameId">Name</label>
    <input type="text" th:field="*{name}"/>
    <small id="nameHelp"
      th:each="error : ${#fields.errors('name')}" th:text="${error}"
      Error Message
    </small>
  </div>
</form>
```

Append Class

Access Field

Print Error

Name

Invalid name

List All Errors

add.html

```
<ul th:if="${#fields.hasErrors('*')}">
  <li th:each="err : ${#fields.errors('*')}" th:text="${err}">
    Input is incorrect
  </li>
</ul>
```

- Invalid creator
- Invalid name
- Mutation cannot be null
- Invalid description
- Invalid hours
- You must select capitals

List Errors Outside the Form

add.html

```
<ul th:if="${#fields.hasErrors('${someModel.*}')}">
  <li th:each="err : ${#fields.errors('${someModel.*}')}
    th:text="${err}">
    Input is incorrect
  </li>
</ul>
```

- Invalid creator
- Invalid name
- Mutation cannot be null
- Invalid description
- Invalid hours
- You must select capitals

Custom Annotations (1)

PresentOrFuture.java

```
@Retention(RetentionPolicy.RUNTIME)
@Target(ElementType.FIELD)
@Constraint(validatedBy = PresentOrFutureValidator.class)
public @interface PresentOrFuture {

    String message() default "Invalid Date";

    Class<?>[] groups() default {};

    Class<? extends Payload>[] payload() default {};
}
```

Custom Annotations (2)

add.html

```
public class PresentOrFutureValidator implements  
ConstraintValidator<PresentOrFuture, Date> {  
  
    @Override  
    public boolean isValid(Date date, ConstraintValidatorContext  
constraintValidatorContext) {  
        Date today = new Date();  
        return date.after(today);  
    }  
}
```

Annotation

Field Type

True = No Error;
False = Error

Summary

- **Helpers** – Additional **Object** that provide built-in functionalities for **strings**, **numbers**, **arrays**, **errors** etc.
- **Data Validation** – validate models by using:
 - **Validation Annotations** – constraints(@Size, @NotNull etc)
 - **@Valid** – Validates the model
 - **Binding Result** – returns the validation errors
 - **#fields.errors** – get the errors in Thymeleaf



Java MVC Frameworks – Thymeleaf



Questions?



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