Pagination

Pagination

© luv2code LLC

Pagination

- Pagination is useful for handling large amounts of data

© luv2code LLC

Pagination

- Pagination is useful for handling large amounts of data
- Show the users a small subset of data: "page" of data

© luv2code LLC

Pagination

- Pagination is useful for handling large amounts of data
- Show the users a small subset of data: "page" of data
- The user can click links to view other pages

© luv2code LLC

Pagination Concepts

© luv2code LLC

Pagination Concepts

Query database for
a list of products

© luv2code LLC

Pagination Concepts

© luv2code LLC

Pagination Concepts

© luv2code LLC

Pagination Concepts

© luv2code LLC

Pagination Concepts

© luv2code LLC

Pagination Concepts

Only provide a "count" of total number of elements.

for example: 102,890

"Page" of data

Page size = 5

Only show the user a page of data at a time

© luv2code LLC

Pagination

© luv2code LLC

Pagination

- We will need pagination support on the back-end: Spring Boot

© luv2code LLC

Pagination

- We will need pagination support on the back-end: Spring Boot
- Also need pagination support on the front-end: Angular

© luv2code LLC

Pagination

© luv2code LLC

Pagination

- Our Spring Boot backend uses Spring Data REST

© luv2code LLC

Pagination

- Our Spring Boot backend uses Spring Data REST
- **Spring Data REST** provides pagination support out of the box ... yes!!!

© luv2code LLC

Pagination

- Our Spring Boot backend uses Spring Data REST
- **Spring Data REST** provides pagination support out of the box ... yes!!!

www.luv2code.com/spring-data-rest-pagination

© luv2code LLC

Spring Data REST - Parameters

© luv2code LLC

Spring Data REST - Parameters

- By default, Spring Data REST returns: 20 elements

© luv2code LLC

Spring Data REST - Parameters

- By default, Spring Data REST returns: 20 elements
- We can customize this by passing in parameters

© luv2code LLC

Spring Data REST - Parameters

- By default, Spring Data REST returns: 20 elements
- We can customize this by passing in parameters

Parameter	Purpose

© luv2code LLC

Spring Data REST - Parameters

- By default, Spring Data REST returns: 20 elements
- We can customize this by passing in parameters

Parameter	Purpose
`page`	The page number to access. **0-based** ... defaults to 0.

© luv2code LLC

Spring Data REST - Parameters

- By default, Spring Data REST returns: 20 elements
- We can customize this by passing in parameters

Parameter	Purpose
`page`	The page number to access. **0-based** ... defaults to 0.
`size`	The size of the page to return (items per page). Defaults to 20

© luv2code LLC

Spring Data REST - Pagination Examples

© luv2code LLC

Spring Data REST - Pagination Examples

- Get the first page, with page size of 10

```
http://localhost:8080/api/products?page=0&size=10
```


© luv2code LLC

Spring Data REST - Pagination Examples

- Get the first page, with page size of 10

```
http://localhost:8080/api/products?page=0&size=10
```

Remember:
Pages are 0-based
First page is at position 0

© luv2code LLC

Spring Data REST - Pagination Examples

- Get the first page, with page size of 10

```
http://localhost:8080/api/products?page=0&size=10
```

Remember:
Pages are 0-based
First page is at position 0

- Get the second page, with page size of 10

```
http://localhost:8080/api/products?page=1&size=10
```


© luv2code LLC

Spring Data REST - Pagination Examples

- Get the first page, with page size of 10

```
http://localhost:8080/api/products?page=0&size=10
```

Remember:
Pages are 0-based
First page is at position 0

- Get the second page, with page size of 10

```
http://localhost:8080/api/products?page=1&size=10
```

Second page is at position 1

© luv2code LLC

Spring Data REST - Response Meta Data

© luv2code LLC

Spring Data REST - Response Meta Data

- The response meta data has valuable information

© luv2code LLC

Spring Data REST - Response Meta Data

- The response meta data has valuable information

```
<< array of products >>
...
"page" : {
  "size" : 10,
  "totalElements" : 200,
  "totalPages" : 20,
  "number" : 0
}
```


© luv2code LLC

Spring Data REST - Response Meta Data

- The response meta data has valuable information

```
<< array of products >>
...
"page" : {
  "size" : 10,
  "totalElements" : 200,
  "totalPages" : 20,
  "number" : 0
}
```

Size of this page

© luv2code LLC

Spring Data REST - Response Meta Data

- The response meta data has valuable information

```
<< array of products >>
...
"page" : {
  "size" : 10,
  "totalElements" : 200,
  "totalPages" : 20,
  "number" : 0
}
```

Size of this page

Grand total of ALL elements in the database.
But we are NOT returning all of the elements.
Just the "count" for informational purposes only.

© luv2code LLC

Spring Data REST - Response Meta Data

- The response meta data has valuable information

```
<< array of products >>
...
"page" : {
  "size" : 10,
  "totalElements" : 200,
  "totalPages" : 20,
  "number" : 0
}
```

Size of this page

Grand total of ALL elements in the database.
But we are NOT returning all of the elements.
Just the "count" for informational purposes only.

Total pages available

© luv2code LLC

Spring Data REST - Response Meta Data

- The response meta data has valuable information

```
<< array of products >>
...
"page" : {
  "size" : 10,
  "totalElements" : 200,
  "totalPages" : 20,
  "number" : 0
}
```

Size of this page

Grand total of ALL elements in the database.
But we are NOT returning all of the elements.
Just the "count" for informational purposes only.

Total pages available

Current page number

© luv2code LLC

Pagination with Angular

© luv2code LLC

Pagination with Angular

- There are many pagination solutions available for Angular

© luv2code LLC

Pagination with Angular

- There are many pagination solutions available for Angular
- We will make use of a popular component framework: **ng-bootstrap**

© luv2code LLC

Pagination with Angular

- There are many pagination solutions available for Angular
- We will make use of a popular component framework: **ng-bootstrap**

https://ng-bootstrap.github.io/

© luv2code LLC

Components in ng-bootstrap

https://ng-bootstrap.github.io/

© luv2code LLC

Components in ng-bootstrap

https://ng-bootstrap.github.io/

Components

- Accordion
- Alert
- Buttons
- Carousel
- Collapse
- **Datepicker**
- Dropdown
- Modal
- Nav
- Pagination
- Popover
- Progressbar
- Rating
- Table
- Tabset
- Timepicker
- Toast
- Tooltip
- Typeahead

© luv2code LLC

Components in ng-bootstrap

https://ng-bootstrap.github.io/

Components

- Accordion
- Alert
- Buttons
- Carousel
- Collapse
- **Datepicker**
- Dropdown
- Modal
- Nav
- Pagination
- Popover
- Progressbar
- Rating
- Table
- Tabset
- Timepicker
- Toast
- Tooltip
- Typeahead

Simple datepicker

Nov 2022

Mo	Tu	We	Th	Fr	Sa	Su
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

© luv2code LLC

Components in ng-bootstrap

https://ng-bootstrap.github.io/

Components

- Accordion
- Alert
- Buttons
- Carousel
- Collapse
- **Datepicker**
- Dropdown
- Modal
- Nav
- Pagination
- Popover
- Progressbar
- Rating
- Table
- Tabset
- Timepicker
- Toast
- Tooltip
- Typeahead

Simple datepicker

Nov 2022

Mo	Tu	We	Th	Fr	Sa	Su
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Progress bars with custom labels

</> Code StackBlitz

25

2 of 4

50%

Completed!

© luv2code LLC

Components in ng-bootstrap

https://ng-bootstrap.github.io/

Components

- Accordion
- Alert
- Buttons
- Carousel
- Collapse
- **Datepicker**
- Dropdown
- Modal
- Nav
- Pagination
- Popover
- Progressbar
- Rating
- Table
- Tabset
- Timepicker
- Toast
- Tooltip
- Typeahead

Simple datepicker

Nov 2022

Mo	Tu	We	Th	Fr	Sa	Su
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Progress bars with custom labels

</> Code StackBlitz

25

2 of 4

50%

Completed!

Basic pagination

Default pagination:

« 1 2 3 4 5 6 7 »

No direction links:

1 2 3 4 5 6 7

With boundary links:

«« « 1 2 3 4 5 6 7 » »»

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

Parameter	Purpose

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

Parameter	Purpose
`page`	The page number to access. 1-based ... defaults to 1

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

Parameter	Purpose
`page`	The page number to access. 1-based ... defaults to 1
`pageSize`	The size of the page (items per page). Defaults to 10

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

Parameter	Purpose
`page`	The page number to access. 1-based ... defaults to 1
`pageSize`	The size of the page (items per page). Defaults to 10
`collectionSize`	The total number of items

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

Parameter	Purpose
`page`	The page number to access. 1-based ... defaults to 1
`pageSize`	The size of the page (items per page). Defaults to 10
`collectionSize`	The total number of items
`pageChange`	Event handler for page change events

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

- Basic example of pagination component

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

- Basic example of pagination component

```
<ngb-pagination [(page)]="thePageNumber"
                [pageSize]="thePageSize"
                [collectionSize]="theTotalElements"
                (pageChange)="listProducts()">
</ngb-pagination>
```

Component will generate links for pagination

© luv2code LLC

Pagination component

https://ng-bootstrap.github.io/

- Basic example of pagination component

```
<ngb-pagination [(page)]="thePageNumber"
                [pageSize]="thePageSize"
                [collectionSize]="theTotalElements"
                (pageChange)="listProducts()">
</ngb-pagination>
```

We will create code to combine this for our project

Component will generate links for pagination

© luv2code LLC