

Lab 4

FlexBox & Responsive Design

Software Studio

DataLab, CS, NTHU

2021 spring

Outline

- What is Bootstrap
 - introduction
 - How to use
- Bootstrap Examples
 - Typography
 - Container
 - Layout
 - Grid System
 - Responsive Utilities
 - Navbar
- Reference

What is bootstrap

- One of the most popular front-end framework.
 - Developing responsive, mobile-first websites.
- Many things you can do with bootstrap.
 - Quickly create different kinds of layouts.
 - Quickly create different variation of navigation bars.
 - Quickly create different types of buttons.
 - Etc...

How to use

- Add these code below into your html files.

```
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
```

Text / Typography / text color

h1 Bootstrap heading with text primary (2.5rem = 40px)

h2 Bootstrap heading with text warning (2rem = 32px)

h3 Bootstrap heading text secondary (1.75rem = 28px)

h4 Bootstrap heading text dark (1.5rem = 24px)

h5 Bootstrap heading text success (1.25rem = 20px)

h6 Bootstrap heading text info (1rem = 16px)

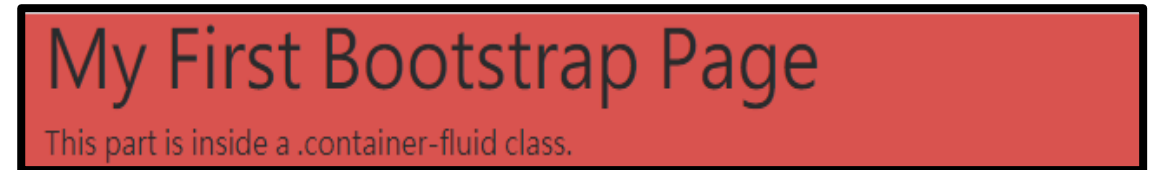
- class="text-primary"
- class="text-warning"
- class="text-secondary"
- class="text-dark"
- class="text-success"
- class="text-info"

Container

- To wrap site contents in a container.
 - Always 100%: please use **container-fluid**.



```
<div class="container bg-danger">  
  <h1>My First Bootstrap Page</h1>  
  <p>This part is inside a .container class.</p>  
</div>
```



```
<div class="container-fluid bg-danger">  
  <h1>My First Bootstrap Page</h1>  
  <p>This part is inside a .container-fluid class.</p>  
</div>
```

Layout - Sizing



- For width: `class="w-25"`, `class="w-50"`, `class="w-75"`, `class="w-100"`
- For height: `class="h-25"`, `class="h-50"`, `class="h-75"`, `class="h-100"`

Layout - Spacing

- For adding Margin / Padding.
 - Margin/padding: m, p.
 - Side: t, l, b, r, x, y.
 - Size: auto, 0, 1, ..., 5 (* 0.25rem).



```
<div class="container">
  <div class="d-flex flex-row text-white bg-secondary">
    <div class='p-2 m-2 bg-info'>Flex item 1</div>
    <div class='p-2 m-2 bg-warning'>Flex item 2</div>
    <div class='p-2 m-2 bg-primary'>Flex item 3</div>
  </div>
</div>
```


Layout - Spacing

- Auto Margin:
 - ml-auto: Put items on the right.
 - mr-auto: Put items on the left.

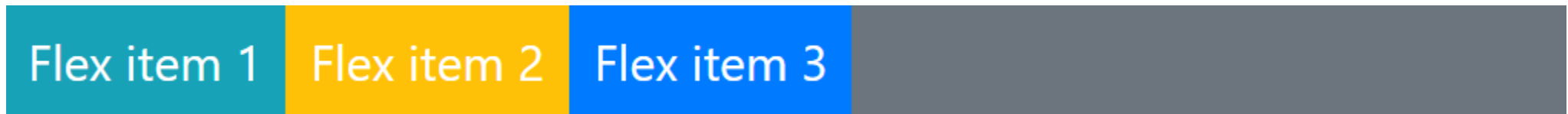


```
<div class="container">
  <div class="d-flex flex-row text-white bg-secondary ">
    <div class="p-2 m-2 bg-info">Flex item 1</div>
    <div class="p-2 m-2 bg-warning">Flex item 2</div>
    <div class="p-2 ml-auto my-2 bg-primary">Flex item 3</div>
  </div>
</div>
```

Put Flex item3 to the right by using ml-auto.

Layout - Flex

- Control the layout between components.
- Everything outside container and inside flex items is rendered as usual.
- Add **d-flex** in your code in order to apply flex.



```
<div class="container">
  <div class="d-flex text-white bg-secondary">
    <div class="p-2 bg-info">Flex item 1</div>
    <div class="p-2 bg-warning">Flex item 2</div>
    <div class="p-2 bg-primary">Flex item 3</div>
  </div>
</div>
```

Flex items

Layout - Flex

- Row vs Column:



```
<div class="container">
  <div class="d-flex flex-row text-white bg-secondary">
    <div class="p-2 bg-info">Flex item 1</div>
    <div class="p-2 bg-warning">Flex item 2</div>
    <div class="p-2 bg-primary">Flex item 3</div>
  </div>
</div>
```



```
<div class="container">
  <div class="d-flex flex-column text-white bg-secondary">
    <div class="p-2 bg-info">Flex item 1</div>
    <div class="p-2 bg-warning">Flex item 2</div>
    <div class="p-2 bg-primary">Flex item 3</div>
  </div>
</div>
```

Layout - Flex

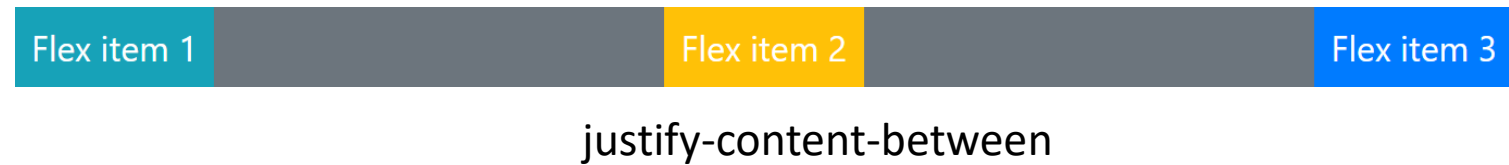
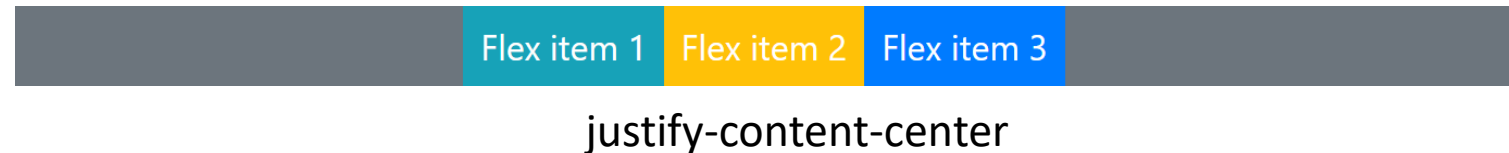
- Reverse:



```
<div class="container">  
  <div class="d-flex flex-row-reverse text-white bg-secondary">  
    <div class="p-2 bg-info">Flex item 1</div>  
    <div class="p-2 bg-warning">Flex item 2</div>  
    <div class="p-2 bg-primary">Flex item 3</div>  
  </div>  
</div>
```

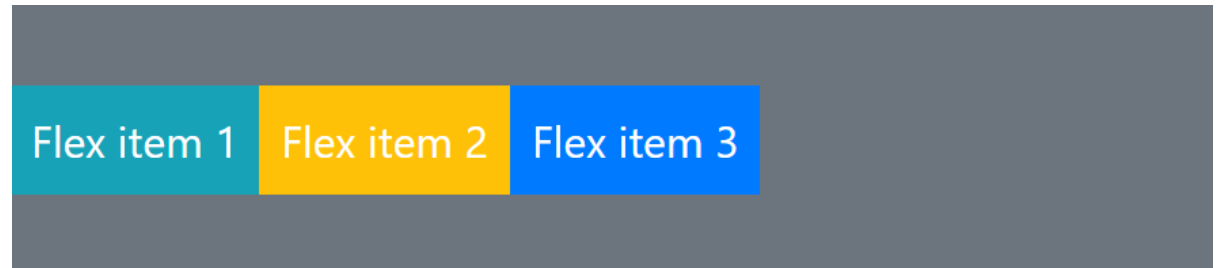
Layout - Flex

- Use the **justify-content-*** classes to change the alignment of flex items.
 - justify-content-start.
 - justify-content-end.
 - justify-content-around.
 - justify-content-center.
 - justify-content-between.



Layout - Flex

- Use the **align-items-*** to control the **vertical alignment of single rows** of flex items.
 - align-items-start.
 - align-items-end.
 - align-items-center.
 - align-items-baseline.
 - align-items-stretch.



```
<div class="container" style="height: 100px">  
  <div class="d-flex flex-row align-items-center text-white bg-secondary h-100">  
    <div class="p-2 bg-info">Flex item 1</div>  
    <div class="p-2 bg-warning">Flex item 2</div>  
    <div class="p-2 bg-primary">Flex item 3</div>  
  </div>  
</div>
```

Align-items-center

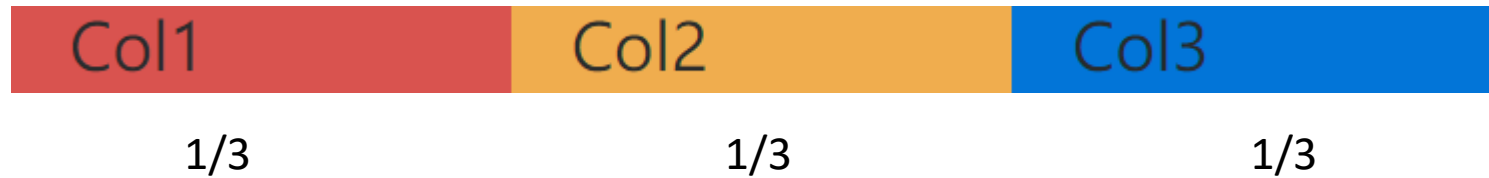
Grid System

- Grid system allows up to 12 columns in a container.

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1
span 4				span 4				span 4			
span 4				span 8							
span 6						span 6					
span 12											

Grid System

- Get 3 equal size of the columns:



```
<div class="container">
  <div class="row">
    <div class="col bg-danger">Col1</div>
    <div class="col bg-warning">Col2</div>
    <div class="col bg-primary">Col3</div>
  </div>
</div>
```


Grid System

- Group the columns together to create different size of columns.



```
<div class="container">
  <div class="row">
    <div class="col-8 bg-danger">Col1</div>
    <div class="col-2 bg-warning">Col2</div>
    <div class="col-2 bg-primary">Col3</div>
  </div>
</div>
```

Responsive Utilities

- Based on the width of the device.

Class	Default (xs)	sm	md	lg	xl
Width	<576px	>=576px	>=768px	>=992px	>=1200px
Devices	Portrait phones	Landscape phones	Portrait tablets	Landscape tablets, desktops	Desktops

Responsive Utilities

Flex item 1

Flex item 2

Flex item 3

If the width of the device is $\geq 576\text{px}$

Flex item 1

Flex item 2

Flex item 3

otherwise

```
<div class="container">
  <div class="row text-white">
    <div class="col-12 col-sm-8 bg-info">Flex item 1</div>
    <div class="col-12 col-sm-2 bg-warning">Flex item 2</div>
    <div class="col-12 col-sm-2 bg-primary">Flex item 3</div>
  </div>
</div>
```

Responsive Utilities

- Layout classes can have responsive variants.

```
mx-sm-auto_ /* sm and up */  
mx-md-auto  /* md and up */  
mx-lg-auto  /* lg and up */  
    mx-xl-auto /* xl */
```

Navbar

- Navbar can be followed by a responsive class:
 - Ex. **class="navbar-expand-xl | lg | md | sm"**
- Add links inside the navbar by using **** with **class="navbar-nav"**

Navbar

Navbar Example Link 1 Link 2

```
<nav class="navbar navbar-expand-sm bg-secondary navbar-light">
  <!-- Links -->
  <ul class="navbar-nav">
    <li>
      <a class="navbar-brand" href="#">Navbar Example</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Link 1</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Link 2</a>
    </li>
  </ul>
</nav>
```

Reference

- [Software Studio: Bootstrap in NTHU](#)
- [W3school bootstrap tutorial](#)
- [Bootstrap website](#)