



香港中文大學
The Chinese University of Hong Kong

BOOTSTRAP FOR CSS

CSCI2720 2022-23 Term 2
Building Web Applications

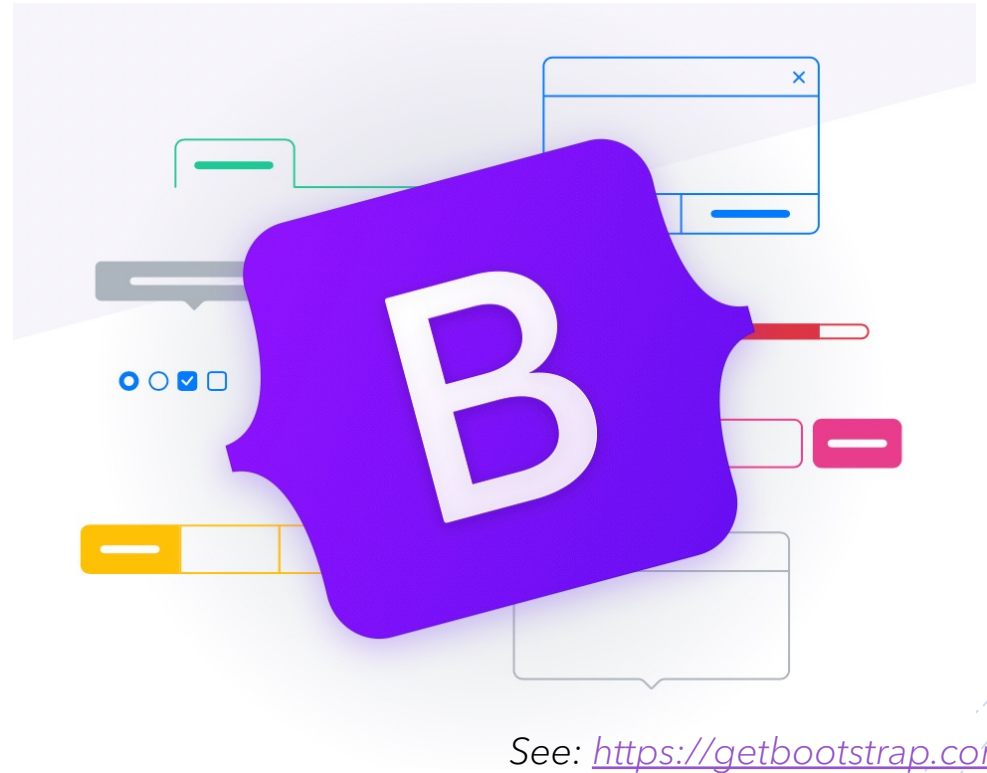
Dr. Chuck-jee Chau
chuckjee@cse.cuhk.edu.hk

OUTLINE

- Why Bootstrap?
- Adding Bootstrap to HTML
- Using classes
- Breakpoints
- Containers and grid system
- Components
- Bootstrap utilities
- Other useful features of Bootstrap
- Customizing Bootstrap
- Bootstrap Icons
- Alternatives to Bootstrap

WHY BOOTSTRAP?

- Bootstrap: a front-end framework
 - Originally by **Twitter** engineers (2011)
- Get started easily!
 - Base styling given with good browser compatibility
 - Consistent and nice-looking components
 - Responsive grid system for layout
- Current version: v5.2.0



ADDING BOOTSTRAP TO HTML

- Quick Start: one line to add to the HTML head

```
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.0/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-gH2yIJqKdNHPEq0n4Mqa/HGKIhSkIHeL5AyhkYV8i59U5AR6csBvApHHNl/vI1Bx" crossorigin="anonymous">
```

- *This is to load the “**minified**” CSS file from the jsDelivr CDN without customization*
 - Feel free to load the relevant JavaScript file if you wish
 - Using *codepen.io*: add the **href** part to CSS settings as *external stylesheet*
- Ensure **responsive viewport**

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```
- See: <https://getbootstrap.com/docs/5.2/getting-started/introduction>

CSS AND BOOTSTRAP

- CSS – **C**ascading **S**tyle **S**heets
 - It allows you to style HTML contents
- Every element in HTML that are presentable has a set of style properties that can be modified via CSS
- Using Bootstrap, you can set simple **class** attributes to HTML elements to style them
 - The relevant CSS styles are applied automatically, without you actually coding in CSS
 - Easy for beginners or mass production
 - Less flexibility for fine control of styles

USING CLASSES

- Almost everything in Bootstrap is applied using the class attribute for HTML elements
 - Multiple classes can be applied separated by space
 - i.e., Never use space in class names!
- Classes are often notated as `.classname` in Bootstrap documentations

```
<ul class="list-inline">  
  <li class="list-inline-item">Item 1</li>  
  <li class="list-inline-item">Item 2</li>  
  <li class="list-inline-item">Item 3</li>  
</ul>
```

Item 1 Item 2 Item 3

BREAKPOINTS

- Responsive layout could show contents differently based on device/screen size
- Bootstrap defines 6 **breakpoints/“grid tiers”** with a class infix to be added to class names
 - `<nav class="navbar navbar-expand-lg">` is a navbar which expands only when screen width reaches “large” breakpoint
- Font sizes are by default responsive after enabling Bootstrap

See: <https://getbootstrap.com/docs/5.2/layout/breakpoints/>

Breakpoint	Class infix	Dimensions
X-Small	None	<576px
Small	sm	≥576px
Medium	md	≥768px
Large	lg	≥992px
Extra large	xl	≥1200px
Extra extra large	xxl	≥1400px

CONTAINERS

- A good idea for layout is to put contents into containers for nice padding
 - Containers are *responsive* on Bootstrap

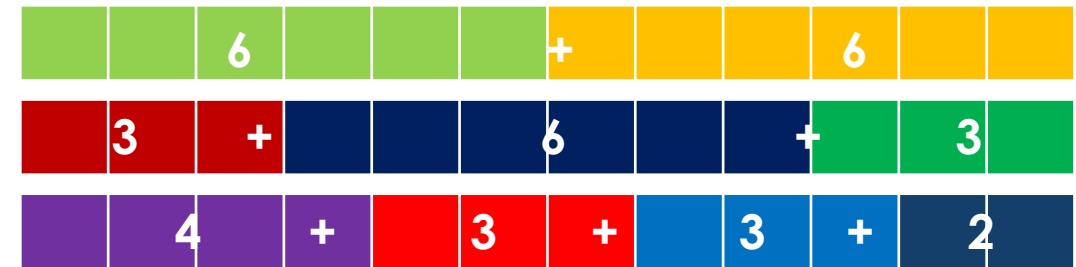
```
<div class="container-sm">100% wide until  
small breakpoint</div>  
<div class="container-md">100% wide until  
medium breakpoint</div>  
<div class="container-lg">100% wide until  
large breakpoint</div>  
<div class="container-xl">100% wide until  
extra large breakpoint</div>  
<div class="container-xxl">100% wide until  
extra extra large breakpoint</div>
```

See: <https://getbootstrap.com/docs/5.2/layout/containers>

	Extra small <576px	Small ≥576px	Medium ≥768px	Large ≥992px	X-Large ≥1200px	XX-Large ≥1400px
.container	100%	540px	720px	960px	1140px	1320px
.container-sm	100%	540px	720px	960px	1140px	1320px
.container-md	100%	100%	720px	960px	1140px	1320px
.container-lg	100%	100%	100%	960px	1140px	1320px
.container-xl	100%	100%	100%	100%	1140px	1320px
.container-xxl	100%	100%	100%	100%	100%	1320px
.container-fluid	100%	100%	100%	100%	100%	100%

BOOTSTRAP GRID SYSTEM

- In Bootstrap, a container is always divided into *12 columns*
- This can be done by introducing a **row** div, and apply **col-*** class to the contents
 - Or further make it responsive to screen size, e.g.
 - Phone in portrait: stacked up (*no columns, auto!*)
 - Phone in landscape: 4+4+4
 - Tablet: 3+6+3
 - Very large screen: 2+8+2
- See: <https://getbootstrap.com/docs/5.2/layout/grid>



```
<div class="container">  
  <div class="row">  
    <section ... class="col-3"></section>  
    <section ... class="col-6"></section>  
    <section ... class="col-3"></section>  
  </div></div>
```

```
<div class="container">  
  <div class="row">  
    <section ... class="col-sm-4 col-md-3 col-xl-2"></section>  
    <section ... class="col-sm-4 col-md-6 col-xl-8"></section>  
    <section ... class="col-sm-4 col-md-3 col-xl-2"></section>  
  </div>  
</div>
```

COMPONENTS

- A large bundle of easy components for adding spice to the page contents
 - Accordion, alerts, badge, breadcrumb, buttons, button group, card, carousel, close button, collapse, dropdowns, list group, modal, navs & tabs, navbar, offcanvas, pagination, placeholders, popovers, progress, scrollspy, spinner, toasts, tooltips
- Most are pure CSS, while some requires JavaScript or the *Popper* library
- See: <https://getbootstrap.com/docs/5.2/components>

"Pill badges" in Bootstrap



BOOTSTRAP UTILITIES

- Some utilities are available for setting borders, colors, spacing, shadows, etc., e.g.
 - **.border-start** shows a border on left
 - **.text-warning** changes text color to yellow (*contextually*)
 - **.bg-success** changes background color to green (*contextually*)
 - **.d-block** changes an element to block-level display
 - **.mx-2** sets a margin on x-directions (left/right) for **\$spacer*0.5**
- A lot of mix-and-match with the help with breakpoints

FORMS IN BOOTSTRAP

- The Bootstrap library allows easy customization on the appearance of form controls
 - e.g., classes for **.form-text**, **.form-label**, etc. with responsive breakpoint settings
 - Fancy floating labels with **.form-floating**
- Some custom components are also available
 - e.g., **.form-switch**, **.form-range**

OTHER USEFUL FEATURES OF BOOTSTRAP

- **CSS Reboot**: fixing compatibility issues among browse
- **Table styling**: easily set up tables of stripped colors or hovering effects
- **Form controls and styles**: improving usability with customization and validation options
- **Ratios**: pseudo-elements to maintain aspect ratio of HTML elements, e.g., **4x3**, **16x9**
- More to be discovered from the detailed documentations and examples!

BOOTSTRAP ICONS

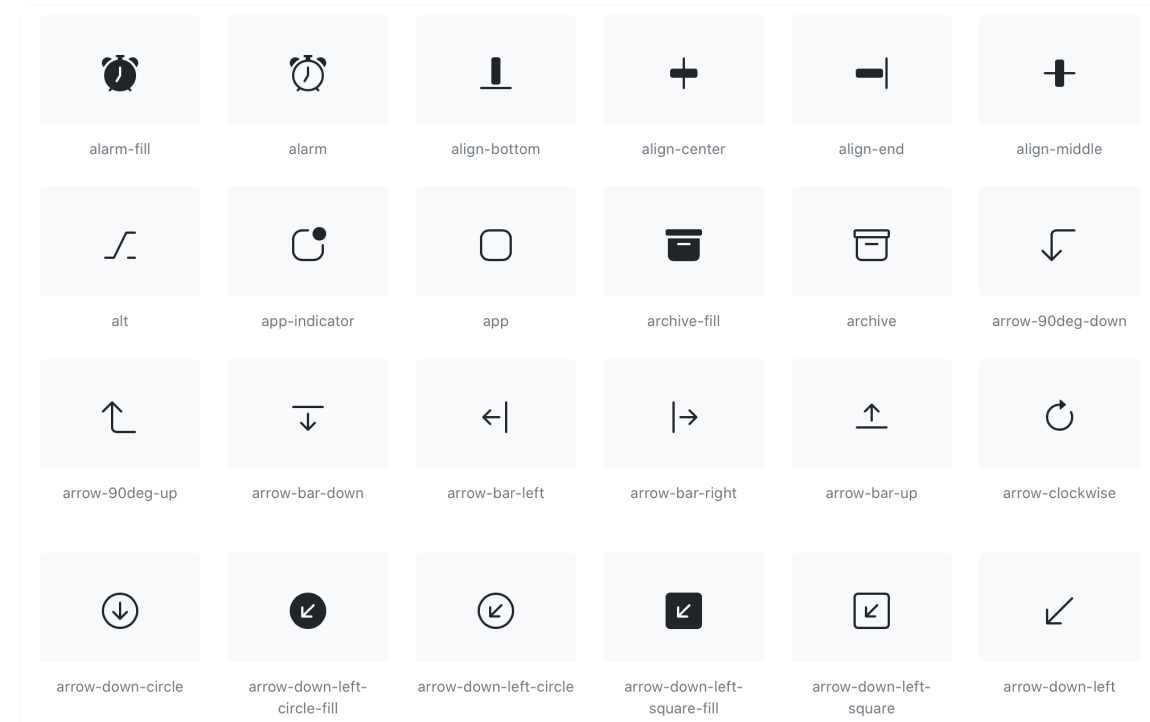
- Another line to include for the icon fonts stylesheet

```
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.9.1/font/bootstrap-icons.css">
```

- Icons can be loaded as svg, img, or font, e.g.

```
<i class="bi bi-file-music"></i> ➔ 
```

- See: <https://icons.getbootstrap.com>
 - More on icons: <https://www.w3schools.com/icons>



ALTERNATIVES TO BOOTSTRAP

- There are other CSS Frameworks which are similar to or better than Bootstrap
 - See: <https://2021.stateofcss.com/en-US/technologies/css-frameworks>
- **Tailwind CSS** <https://tailwindcss.com>
- **Pure CSS** <https://purecss.io>
- **Bulma** <https://bulma.io>
- Many of them are also class-based, and provide easy components
- *It's a very personal choice, or it depends on your colleagues!*



Bootstrap Docs

<https://getbootstrap.com/docs/5.2>

w3schools.com Bootstrap 5
Tutorial

<https://www.w3schools.com/bootstrap5>

READ FURTHER...