

# CSS Framework

*Bootstrap 4*



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# Lesson Objectives

- Understand CSS Framework and its benefits
- Understand basic concepts of Bootstrap 4
- Able to create layout using Bootstrap 4
- Able to use Commonet Components of Bootstrap 4 to create complex web app

## Section 1

# CSS Framework

# What is CSS Framework

- Code library that abstracts common web designs and makes the designs **easier** for a developer to **implement** in their web apps.
- **Collection of CSS style-sheets** that are already made and ready to use

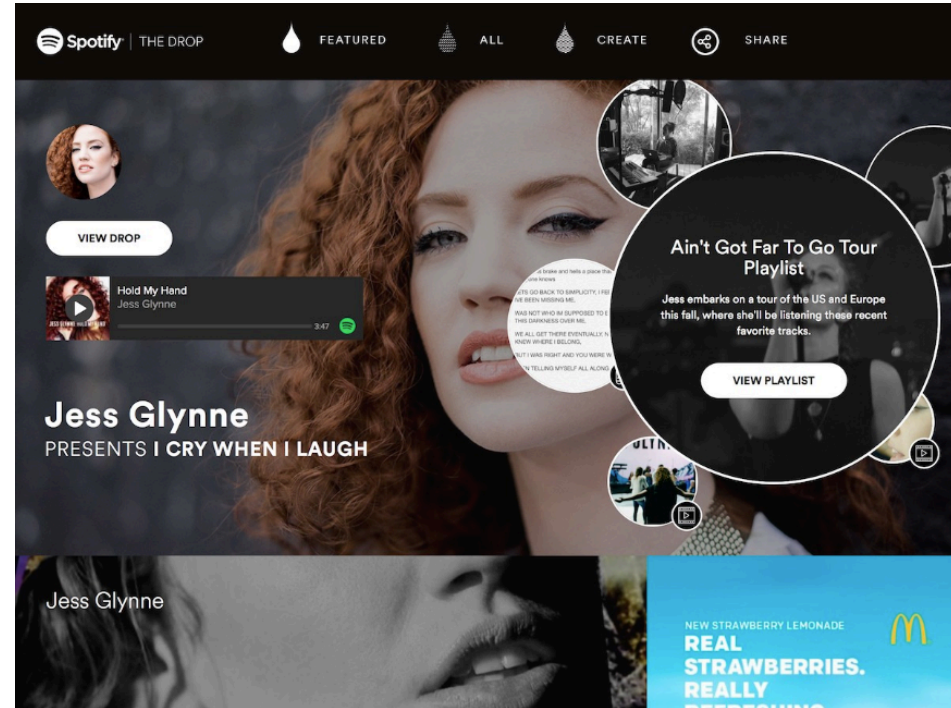


# What CSS Framework offer ?

- Reset default CSS style
- Layout System (Grid) and Responsive Web Design
- Web Typography
- Set of Icons
- Stylings for common element such as Buttons, Forms
- UI Components such as Dropdown, Navs

# Why use CSS Framework ?

- **Reuse** CSS instead of create new to speed-up development process
- Enable **cross-browser** support
- Enforces **good design-principles**
- Clean and consistent layout
- More productive, clean and maintainable



# Popular CSS Framework





- CSS Framework is a collection of pre-made CSS Styles
- CSS Framework provide consistent UI, CSS structures
- When you use a CSS Framework you also use its Design Practices
- Popular CSS Framework such as Bootstrap, Bulma, Foundation, Tailwind

## Section 2

# Bootstrap Overview

# What is Bootstrap?

- Bootstrap is a free front-end framework for faster and easier web development.
- Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins.
- Bootstrap also gives you the ability to easily create responsive designs

# Advantages of Bootstrap

- **Easy to use**
- **Responsive features**
- **Mobile-first approach**
- **Browser compatibility**

- Created at Twitter in mid-2010
- Over 20 releases, 4 major releases
- Version 2 add responsive support
- Version 3 complete rewrite of v2 and add more responsive
- Version 4 (current version) complete rewrite of v3 using flexbox

- There are 3 ways to start using Bootstrap 4 on your own web site:
  - Include Bootstrap 4 from a CDN
  - Download Bootstrap 4 from [getbootstrap.com](https://getbootstrap.com)

- **Bootstrap 4 CDN:** MaxCDN provides CDN support for Bootstrap's CSS and JavaScript. You must also include jQuery

```
<!-- Latest compiled and minified CSS -->
<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css">

<!-- jQuery library -->
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>

<!-- Popper JS -->
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>

<!-- Latest compiled JavaScript -->
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.0/js/bootstrap.min.js"></script>
```

## ➤ **Advantage of using the Bootstrap 4 CDN:**

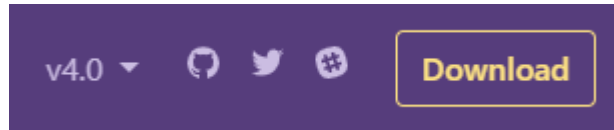
- Easy to setup
- No Need to download locally

## ➤ **jQuery and Popper?**

- Required for JavaScript components (like modals, tooltips, popovers etc)
- However, if you just use the CSS part of Bootstrap, you don't need them



- **Download Bootstrap 4:** Download ready-to-use compiled code for Bootstrap v4.5.0 to easily drop into your project, which includes:
- Compiled and minified CSS bundles
  - Compiled and minified JavaScript plugins



- Bootstrap is one of the most popular CSS Framework
- Bootstrap originally created at Twitter hence the name Twitter Bootstrap
- Top benefits of Bootstrap:
  - **Easy to use**
  - **Responsive features**
  - **Mobile-first approach**
  - **Browser compatibility**

## Section 3

# Responsive and Mobile First Design

# Responsive Design

- Design a website such that it can support multiple devices
- Support means it has to display cleanly, easy to follow for **users**
- **Bootstrap** support Responsive under the hood: xs, md, lg...



# Mobile First Design

## Mobile First Web Design



```
// Extra small devices (portrait phones, less than 576px)
// No media query for `xs` since this is the default in Bootstrap

// Small devices (landscape phones, 576px and up)
@media (min-width: 576px) { ... }

// Medium devices (tablets, 768px and up)
@media (min-width: 768px) { ... }

// Large devices (desktops, 992px and up)
@media (min-width: 992px) { ... }

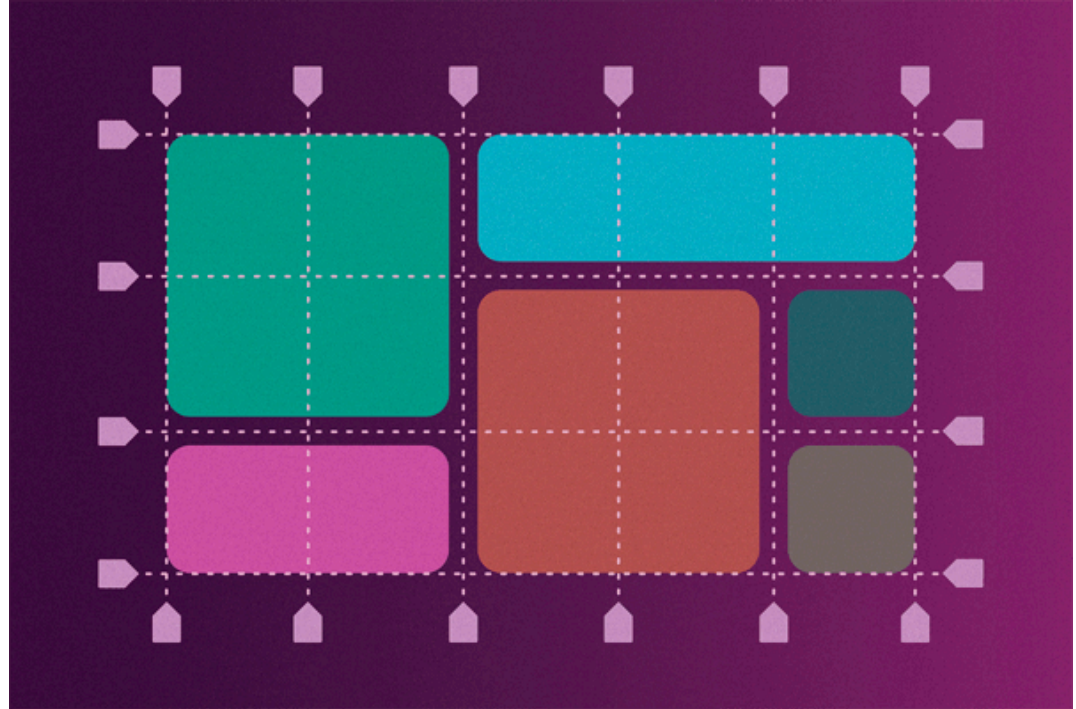
// Extra large devices (large desktops, 1200px and up)
@media (min-width: 1200px) { ... }
```

## Section 4

# Layout

# What is Layout ?

- Layout is where to place items into a web site
- And the spacing between them
- CSS 3 has Flexbox, Grid is used to create Layout





- Important in Web design
- Help to create a frame for our web page



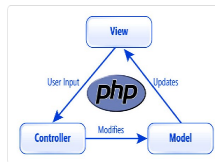
[Trang chủ](#) [Giới thiệu](#) [Kho Tài Liệu](#) [Công cụ hỗ trợ](#) [Kiến thức](#) [Khuyến mãi](#)

## Series Video Xây Dựng PHP MVC Framework Từ A Đến Z

Cập nhật lúc 29/03/2017 | 73 | Thiết kế web

PHP Framework là một bộ thư viện được tổ chức theo một mô hình sẵn và tích hợp nhiều thư viện sẵn giúp lập trình viên tiết kiệm thời gian, đồng thời giải quyết vấn đề tạo ra chuẩn chung cho các lập trình viên khi làm việc nhóm (team work).  
Hiện tại, trên thế...

[Xem chi tiết](#)



## Series Video Học Bootstrap 3 – Tiếng Việt

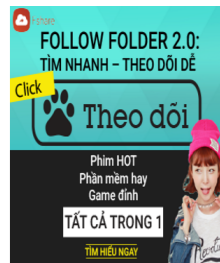
Cập nhật lúc 03/01/2017 | 784 | Thiết kế web

Thời gian vừa qua tôi có sưu tầm được một bộ video học Bootstrap 3 Tiếng Việt do 1 bạn chia sẻ trên mạng. Nay tôi xin phép chia sẻ bộ video hữu ích này cho bạn nào chưa biết. Series video học Bootstrap 3 Tiếng Việt này rất phù hợp cho bạn nào mới...

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## Tổng Hợp Hơn 7GB Video Học Lập Trình Web



### DỊCH VỤ KHUYẾN DÙNG



### TÀI LIỆU XEM NHIỀU NHẤT



Hơn 8GB Video Học WordPress Toàn Tập

Publish: 10/10/2015, 46662 Views

Tài Liệu Chuẩn Trại Học

- Syntax:

```
<div class="container">  
  <!-- Content here -->  
</div>
```

```
<div class="container-fluid">  
  ...  
</div>
```

- Use `.container-fluid` for a full width container, spanning the entire width of the viewport

- **Bootstrap 4 Grid System:** Bootstrap's grid system is built with flexbox and allows up to 12 columns across the page.

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											

## ➤ How it works

- Bootstrap's grid system uses a series of containers, rows, and columns to layout and align content.
- It's built with flexbox and is fully responsive.

One of three columns

One of three columns

One of three columns

```
<div class="container">
  <div class="row">
    <div class="col-sm">
      One of three columns
    </div>
    <div class="col-sm">
      One of three columns
    </div>
    <div class="col-sm">
      One of three columns
    </div>
  </div>
</div>
```

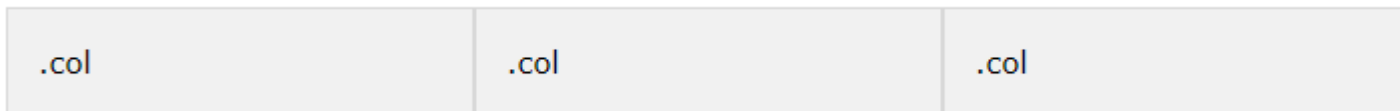
- **Grid Classes:** The Bootstrap 4 grid system has five classes
- .col- (extra small devices - screen width less than 576px)
  - .col-sm- (small devices - screen width equal to or greater than 576px)
  - .col-md- (medium devices - screen width equal to or greater than 768px)
  - .col-lg- (large devices - screen width equal to or greater than 992px)
  - .col-xl- (xlarge devices - screen width equal to or greater than 1200px)

## ➤ Basic Structure of a Bootstrap 4 Grid

```
<!-- Control the column width, and how they should appear on different devices -->
<div class="row">
  <div class="col-*-*"></div>
  <div class="col-*-*"></div>
</div>
<div class="row">
  <div class="col-*-*"></div>
  <div class="col-*-*"></div>
  <div class="col-*-*"></div>
</div>

<!-- Or let Bootstrap automatically handle the layout -->
<div class="row">
  <div class="col"></div>
  <div class="col"></div>
  <div class="col"></div>
</div>
```

- **Three Equal Columns:** The following example shows how to create three equal-width columns, on all devices and screen widths



```
<div class="row">
  <div class="col">.col</div>
  <div class="col">.col</div>
  <div class="col">.col</div>
</div>
```

## ➤ Responsive Columns

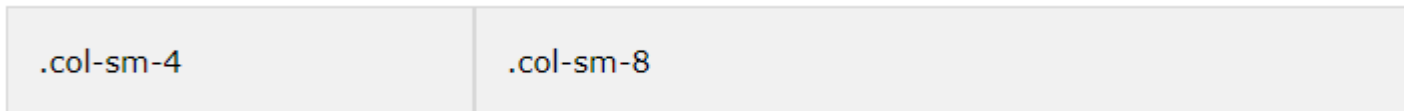
- The following example shows how to create four equal-width columns starting at tablets and scaling to extra large desktops.
- On mobile phones or screens that are less than 576px wide, the columns will automatically stack on top of each other



```
<div class="row">
  <div class="col-sm-3">.col-sm-3</div>
  <div class="col-sm-3">.col-sm-3</div>
  <div class="col-sm-3">.col-sm-3</div>
  <div class="col-sm-3">.col-sm-3</div>
</div>
```



- **Two Unequal Responsive Columns:** The following example shows how to get two various-width columns starting at tablets and scaling to large extra desktops



```
<div class="row">  
  <div class="col-sm-4">.col-sm-4</div>  
  <div class="col-sm-8">.col-sm-8</div>  
</div>
```

- Use `.container` and `.container-fluid` to create frame for you web page
- Create complex layout with **Grid System**
- **Grid System** consists of **row** where each row is composed of 12 **columns**
- Use class prefix `.col`, `.col-sm-`, `.col-md-`, `.col-lg-`, `.col-xl-` to create responsive web app

## Section 5

# Typography

- All HTML headings, `<h1>` through `<h6>`, are available

Heading	Example
<code>&lt;h1&gt;&lt;/h1&gt;</code>	<b>h1. Bootstrap heading</b>
<code>&lt;h2&gt;&lt;/h2&gt;</code>	<b>h2. Bootstrap heading</b>
<code>&lt;h3&gt;&lt;/h3&gt;</code>	<b>h3. Bootstrap heading</b>
<code>&lt;h4&gt;&lt;/h4&gt;</code>	<b>h4. Bootstrap heading</b>
<code>&lt;h5&gt;&lt;/h5&gt;</code>	<b>h5. Bootstrap heading</b>
<code>&lt;h6&gt;&lt;/h6&gt;</code>	<b>h6. Bootstrap heading</b>

- Classes **.h1** through **.h6** are also available

**h1. Bootstrap heading**

**h2. Bootstrap heading**

**h3. Bootstrap heading**

**h4. Bootstrap heading**

**h5. Bootstrap heading**

**h6. Bootstrap heading**

```
<p class="h1">h1. Bootstrap heading</p>
<p class="h2">h2. Bootstrap heading</p>
<p class="h3">h3. Bootstrap heading</p>
<p class="h4">h4. Bootstrap heading</p>
<p class="h5">h5. Bootstrap heading</p>
<p class="h6">h6. Bootstrap heading</p>
```

Copy

- Easily realign text to components with text alignment classes

Left aligned text on all viewport sizes.

Center aligned text on all viewport sizes.

Right aligned text on all viewport sizes.

Left aligned text on viewports sized SM (small) or wider.

Left aligned text on viewports sized MD (medium) or wider.

Left aligned text on viewports sized LG (large) or wider.

Left aligned text on viewports sized XL (extra-large) or wider.

```
<p class="text-left">Left aligned text on all viewport sizes.</p>
<p class="text-center">Center aligned text on all viewport sizes.</p>
<p class="text-right">Right aligned text on all viewport sizes.</p>

<p class="text-sm-left">Left aligned text on viewports sized SM (small) or wider.
<p class="text-md-left">Left aligned text on viewports sized MD (medium) or wider
<p class="text-lg-left">Left aligned text on viewports sized LG (large) or wider.
<p class="text-xl-left">Left aligned text on viewports sized XL (extra-large) or
```

Copy

- Transform text in components with text capitalization classes

lowercased text.

UPPERCASED TEXT.

CapiTaliZed Text.

```
<p class="text-lowercase">Lowercased text.</p>  
<p class="text-uppercase">Uppercased text.</p>  
<p class="text-capitalize">CapiTaliZed text.</p>
```

Copy

- **Unstyled:** Remove the default **list-style** and left margin on list items

```
<ul class="list-unstyled">
  <li>Lorem ipsum dolor sit amet</li>
  <li>Consectetur adipiscing elit</li>
  <li>Integer molestie lorem at massa</li>
  <li>Facilisis in pretium nisl aliquet</li>
  <li>Nulla volutpat aliquam velit
    <ul>
      <li>Phasellus iaculis neque</li>
      <li>Purus sodales ultricies</li>
      <li>Vestibulum laoreet porttitor sem</li>
      <li>Ac tristique libero volutpat at</li>
    </ul>
  </li>
  <li>Faucibus porta lacus fringilla vel</li>
  <li>Aenean sit amet erat nunc</li>
  <li>Eget porttitor lorem</li>
</ul>
```

Lorem ipsum dolor sit amet  
Consectetur adipiscing elit  
Integer molestie lorem at massa  
Facilisis in pretium nisl aliquet  
Nulla volutpat aliquam velit

- Phasellus iaculis neque
- Purus sodales ultricies
- Vestibulum laoreet porttitor sem
- Ac tristique libero volutpat at

Faucibus porta lacus fringilla vel  
Aenean sit amet erat nunc  
Eget porttitor lorem



- **Inline:** Remove a list's bullets and apply some light **margin** with a combination of two classes, **.list-inline** and **.list-inline-item**

Lorem ipsum Phasellus iaculis Nulla volutpat

```
<ul class="list-inline">
  <li class="list-inline-item">Lorem ipsum</li>
  <li class="list-inline-item">Phasellus iaculis</li>
  <li class="list-inline-item">Nulla volutpat</li>
</ul>
```

- Bootstrap sets basic global display, typography, and link styles
- Change text alignment, transform, style, weight, and color with our [text utilities](#) and [color utilities](#).

## Section 6

# Common Components

- Navigation Bar
- Breadcrumb
- Table
- Forms
- Buttons
- Images
- Icons
- Dropdown
- Pagination
- Label
- Badges
- Alert
- Progress bar
- List Group

- **Navigation Bar** is a section of a graphical user interface intended to aid visitors in accessing information
- Require a wrapping `.navbar` with `.navbar-expand{-sm|-md|-lg|-xl}`

Navbar Home Link Dropdown ▼ Disabled

- Indicate the current page's location within a navigational hierarchy that automatically adds separators via CSS.

Home

[Home](#) / Library

[Home](#) / [Library](#) / Data

- **Table** represents tabular data
- **Bootstrap 4** support for table by adding `.table` class to any `<table>` element

#	First	Last	Handle
1	Mark	Otto	@mdo
2	Jacob	Thornton	@fat
3	Larry the Bird		@twitter

- **Bootstrap** provides several form control styles, layout options, and custom components for creating a wide variety of forms.

Email address

We'll never share your email with anyone else.

Password

☐ Check me out

Submit



- **Form controls:** Textual form controls—like `<input>`s, `<select>`s, and `<textarea>`s—are styled with the `.form-control`
- Default checkboxes and radios are improved upon with the help of `.form-check`

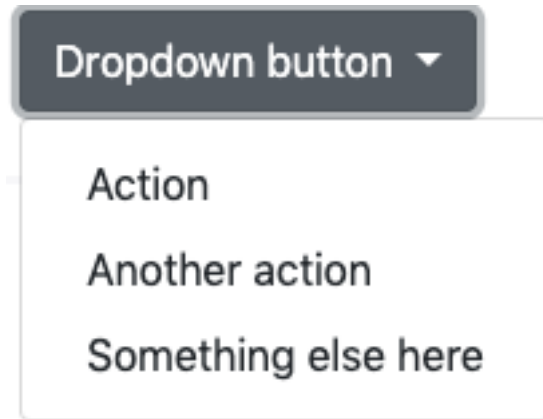
- **Bootstrap** includes several predefined button styles, each serving its own semantic purpose
- Add `.btn-lg` or `.btn-sm` for additional sizes
- Make buttons look inactive by adding the disabled `boolean` attribute to any `<button>` element



- Images in Bootstrap are made responsive with `.img-fluid` (`max-width: 100%;` and `height: auto;`)



- Dropdowns are toggleable, contextual overlays for displaying lists of links and more
- JavaScript is **required** for Dropdown



- Wrap the dropdown's toggle (your button or link) and the dropdown menu within **.dropdown**
- Add **.dropdown-item** to each item and **.dropdown-menu** to the menu

```
<div class="dropdown">
  <button class="btn btn-secondary dropdown-toggle" type="button" id="dropdownMenu1">
    Dropdown button
  </button>
  <div class="dropdown-menu" aria-labelledby="dropdownMenuButton">
    <a class="dropdown-item" href="#">Action</a>
    <a class="dropdown-item" href="#">Another action</a>
    <a class="dropdown-item" href="#">Something else here</a>
  </div>
</div>
```

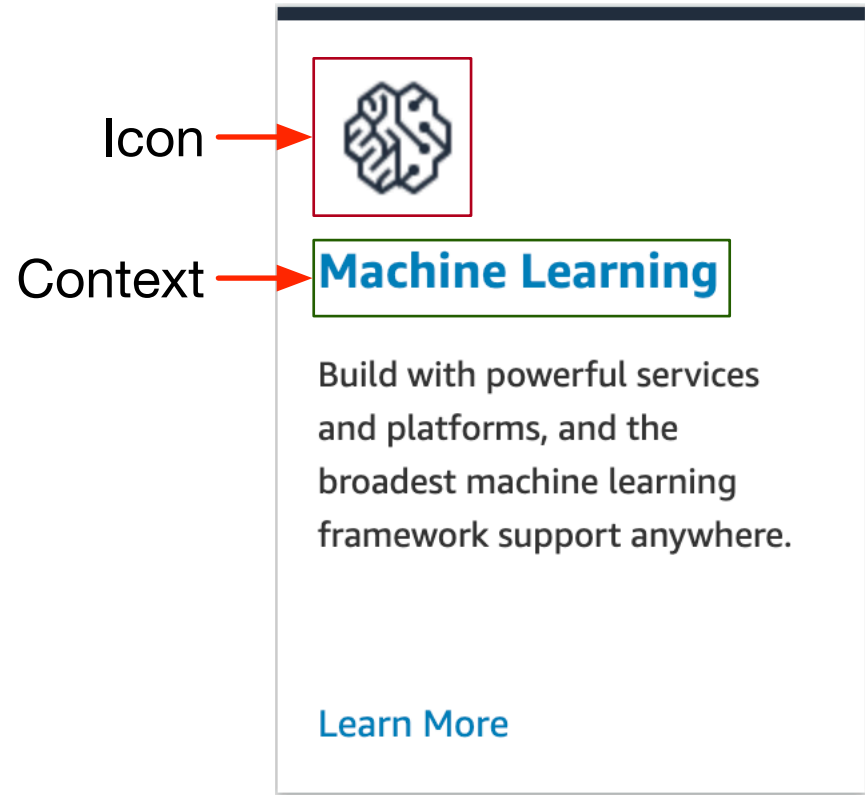
Copy

- **Bootstrap** provides many UI Components that help you to developer faster and easier
- To use a component you must specify correct Bootstrap syntax with corresponding class
- Most Components only need HTML and CSS
- For Dropdown you must add JavaScript

## Section 7

# Icons

- Icons provide graphical information to user
- Help users to quickly understand the context





# How to add Icons ?


- Two common ways to add Icons:
  1. Using Bootstrap Icons
  2. Using Font-Awesome

# Using Bootstrap Icons

- Download bundle zip:
  - <https://github.com/twbs/icons/releases/latest/>
- Usage:

File name      Icon name

```
<svg class="bi" width="32" height="32" fill="currentColor">  
  <use xlink:href="bootstrap-icons.svg#heart-fill"/>  
</svg>  
<svg class="bi" width="32" height="32" fill="currentColor">  
  <use xlink:href="bootstrap-icons.svg#toggles"/>  
</svg>  
<svg class="bi" width="32" height="32" fill="currentColor">  
  <use xlink:href="bootstrap-icons.svg#shop"/>  
</svg>
```



- Download Font Awesome and add to web site
- Usage:

## heartbeat

Solid Style (fas)



f21e

```
<i class="fas fa-heartbeat"></i>
```



Copy and paste to HTML

- Icons provide graphical information for users
- Icons help user to quickly understand the context
- Icons often implemented with Custom Font or SVG

## Section 8

# Utility Classes

- Help developer to quickly create UI
- Provide many frequently used feature such as:
  - Create Spacing
  - Enable Flex
  - Create Borders
  - Create Shadows
  - Sizing items

- Assign responsive-friendly margin or padding values to an element or a subset of its sides with shorthand classes.
- Syntax:
  - `{property}{sides}-{size}` for xs
  - `{property}{sides}-{breakpoint}-{size}` for sm, md, lg, and xl
- Where *property* is one of:
  - m - for classes that set margin
  - p - for classes that set padding

- Side is one of:
  - **t** - for classes that set margin-top or padding-top
  - **b** - for classes that set margin-bottom or padding-bottom
  - **l** - for classes that set margin-left or padding-left
  - **r** - for classes that set margin-right or padding-right
  - **x** - for classes that set both \*-left and \*-right
  - **y** - for classes that set both \*-top and \*-bottom
  - **blank** - for classes that set a margin or padding on all 4 sides of the element



- Where *size* is one of:
  - 0 - for classes that eliminate the margin or padding by setting it to 0
  - 1 - (by default) for classes that set the margin or padding to  $\$spacer * .25$
  - 2 - (by default) for classes that set the margin or padding to  $\$spacer * .5$
  - 3 - (by default) for classes that set the margin or padding to  $\$spacer$
  - 4 - (by default) for classes that set the margin or padding to  $\$spacer * 1.5$
  - 5 - (by default) for classes that set the margin or padding to  $\$spacer * 3$
  - auto - for classes that set the margin to auto

- Examples:

```
.mt-0 {  
  margin-top: 0 !important;  
}  
  
.ml-1 {  
  margin-left: ($spacer * .25) !important;  
}  
  
.px-2 {  
  padding-left: ($spacer * .5) !important;  
  padding-right: ($spacer * .5) !important;  
}  
  
.p-3 {  
  padding: $spacer !important;  
}
```

- Enable flex behaviors:
  - Responsive variations also exist for `.d-flex` and `.d-inline-flex`
- Direction:
  - `flex-row`
  - `flex-row-reverse`
  - `flex-column`
  - `flex-column-reverse`

- Justify content:
  - `.justify-content-start`
  - `.justify-content-end`
  - `.justify-content-center`
  - `.justify-content-between`
  - `.justify-content-around`
- There are also classes for different devices: `xs`, `md`, `lg`, `xl`

- Align items
  - `.align-items-start`
  - `.align-items-end`
  - `.align-items-center`
  - `.align-items-baseline`
  - `.align-items-stretch`
- There are also classes for different devices: `xs`, `md`, `lg`, `xl`

- Use Utility classes to speed-up development process
- Utility classes provide a commonly used features:
  - Spacing
  - Flex
  - Text
  - Borders
  - Shadows

# Thank you

