
COMP 431/531: Web Development

Lecture 4: CSS and Bootstrap

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<https://www.clear.rice.edu/comp431>



Announcements & Reminders

- Homework #1 due today at 11:59pm
classroom hw1 repo: <https://classroom.github.com/a/gsvZWWoo>
- No class on Tuesday, September 9th (Career Fair)
- Homework #2 is due Thursday, September 11th at 11:59pm
classroom hw2 repo: <https://classroom.github.com/a/NeQeDxJk>



What ***IS*** CSS?

- Cascading Style Sheets (CSS) are the description of the **style** of a webpage
 - Logically separated from the html **content** of the page
 - Dedicated CSS style files allow for easy reuse across pages
- Latex documents are very similar, for those that have used Latex at Rice for assignments



Writing a Scientific Paper: Content

```
32
33 \title{Olivar: Variant-aware, push-button primer and probe design for SARS-CoV-2}
34
35 %%% Use the \authfn to add symbols for additional footnotes, if any. 1 is reserved for
correspondence emails; then continuing with 2 etc for contributions.
36 \author[1,\authfn{2}]{Nicolae Sapoval}
37 \author[1,\authfn{2}]{R. A. Leo Elworth}
38 \author[1]{Yilei Fu}
39 \author[1]{Yunxi Liu}
40 \author[1]{Bryce Kille}
41 \author[2]{Jamie Purcell}
42 \author[3]{Holly Hammond}
43 \author[3]{Mathew Frieman}
44 \author[1,\authfn{1}]{Todd J. Treangen}
45
46 \affil[1]{Computer Science Department, Rice University, Houston, TX 77005, USA}
47 \affil[2]{\textcolor{blue}{[ADD AFFILITATION]}}
48 \affil[3]{Department of Microbiology and Immunology, University of Maryland School of
Medicine, Baltimore, MD 21201, USA}
49
50 %%% Author Notes
51 \authnote{\authfn{2}}These authors contributed equally to this work.}
52 \authnote{\authfn{1}}Corresponding author, email: treangen@rice.edu}
```


Writing a Scientific Paper: Style

- After writing up 100% of the **content**, the journal you publish in provides you 100% of the **style**.
 - Note: **style** and **content** can be **completely logically separated**

14 `\journal{gigascience}`

- Once the **content** is fully written, and you add the file specifying all the **style** of how a journal likes for their articles to appear, you get...
 - Content + Style =





TECHNICAL NOTE

OliVar: Variant-aware, push-button primer and probe design for SARS-CoV-2

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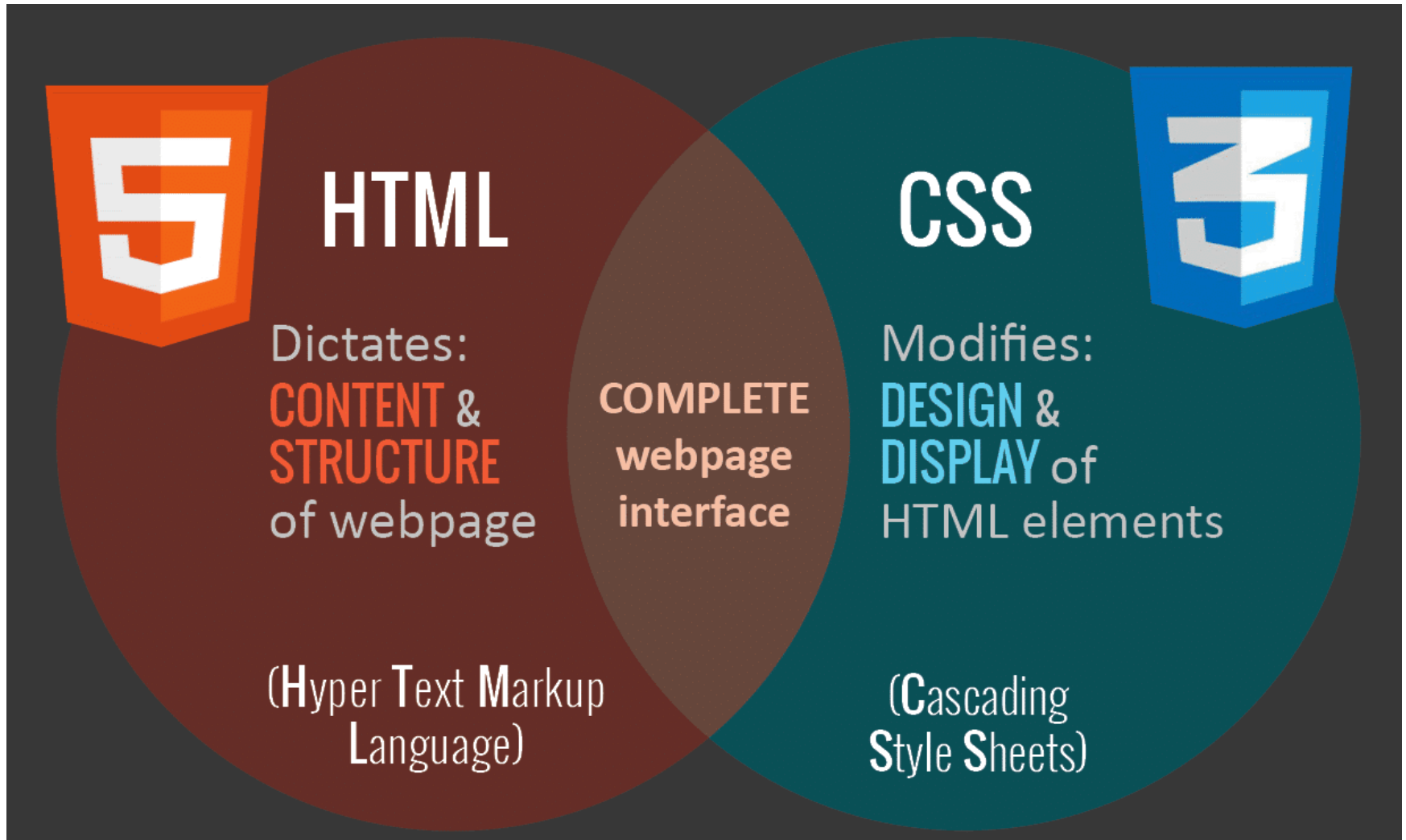
³Department of Microbiology and Immunology, University of Maryland School of Medicine, Baltimore, MD 21201, USA

[†]These authors contributed equally to this work.

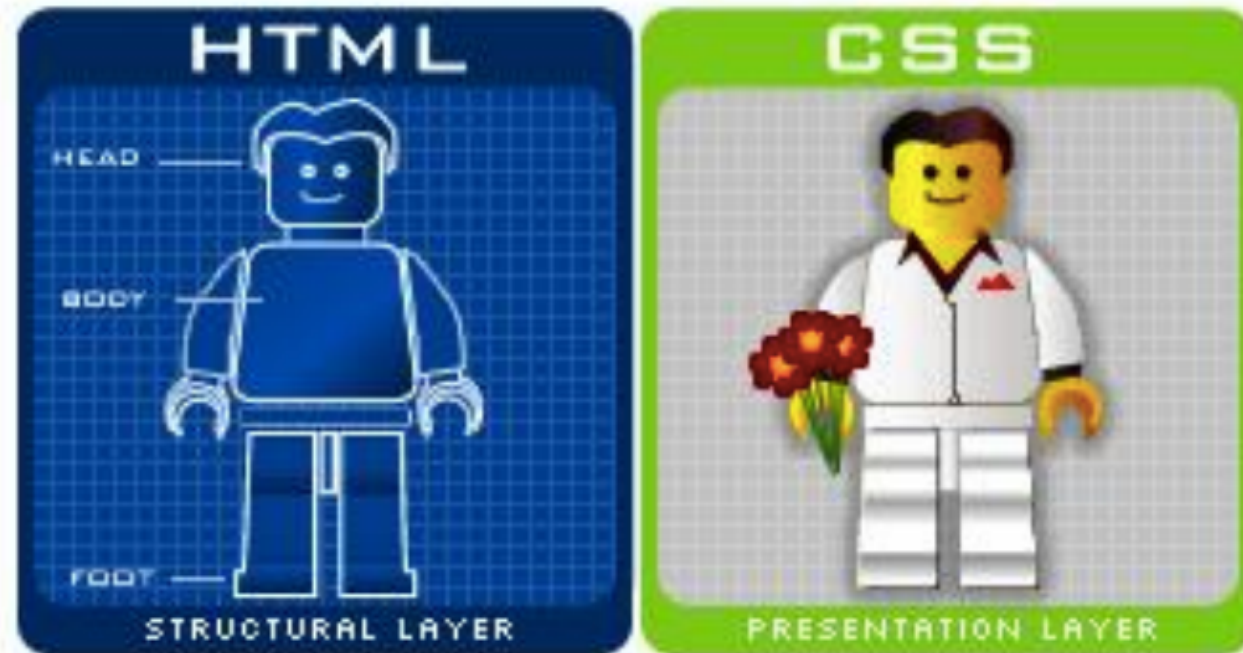
*Corresponding author, email: treangen@rice.edu

Abstract

Web Development Operates Similarly



Web Development Operates Similarly



HTML is the blueprint and CSS is the coloring on top.

<http://slides.com/brianlam/html5-and-css3--2/>

Responsive Framework



Cascading Style Sheets

- Separation of style (presentation) and content
 - Example: switching between desktop and mobile
- Parallel development with content
 - Styling and control (JavaScript) development can occur in parallel
- Reuse of style sheets
 - Style once and present everywhere
- Cascading means one follows another
 - There's an order of precedence



SCSS vs SASS vs CSS

- CSS is a subset of SCSS (sassy)
- SCSS includes support for mixins
- SASS relies on indentation

```
@mixin reset-list {  
  margin: 0;  
  padding: 0;  
  list-style: none;  
}  
  
@mixin horizontal-list {  
  @include reset-list;  
  
  li {  
    display: inline-block;  
    margin: {  
      left: -2px;  
      right: 2em;  
    }  
  }  
}  
  
nav ul {  
  @include horizontal-list;  
}
```

```
nav ul {  
  margin: 0;  
  padding: 0;  
  list-style: none;  
}  
  
nav ul li {  
  display: inline-block;  
  margin-left: -2px;  
  margin-right: 2em;  
}
```

<https://sass-lang.com/documentation/at-rules/mixin>



Where does CSS go?

- Style can be inline

```
<span style="font-family: verdana; font-size: 14pt">the font face</span>
```

- Style can be defined internally

```
<style>
#red {
    color: red;
}
```

- Style can be defined externally (best)

```
<link rel="stylesheet" href="mystyles.css">
```

- Demo: <https://jsfiddle.net/chilleo/87zLnd1x/9/>



Display

```
tempor incididunt ut labore et dolore magna aliqua.  
</p>  
<p style="color: blue; display:inline">Ut enim ad  
minim veniam, quis nostrud exercitation ullamco
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est

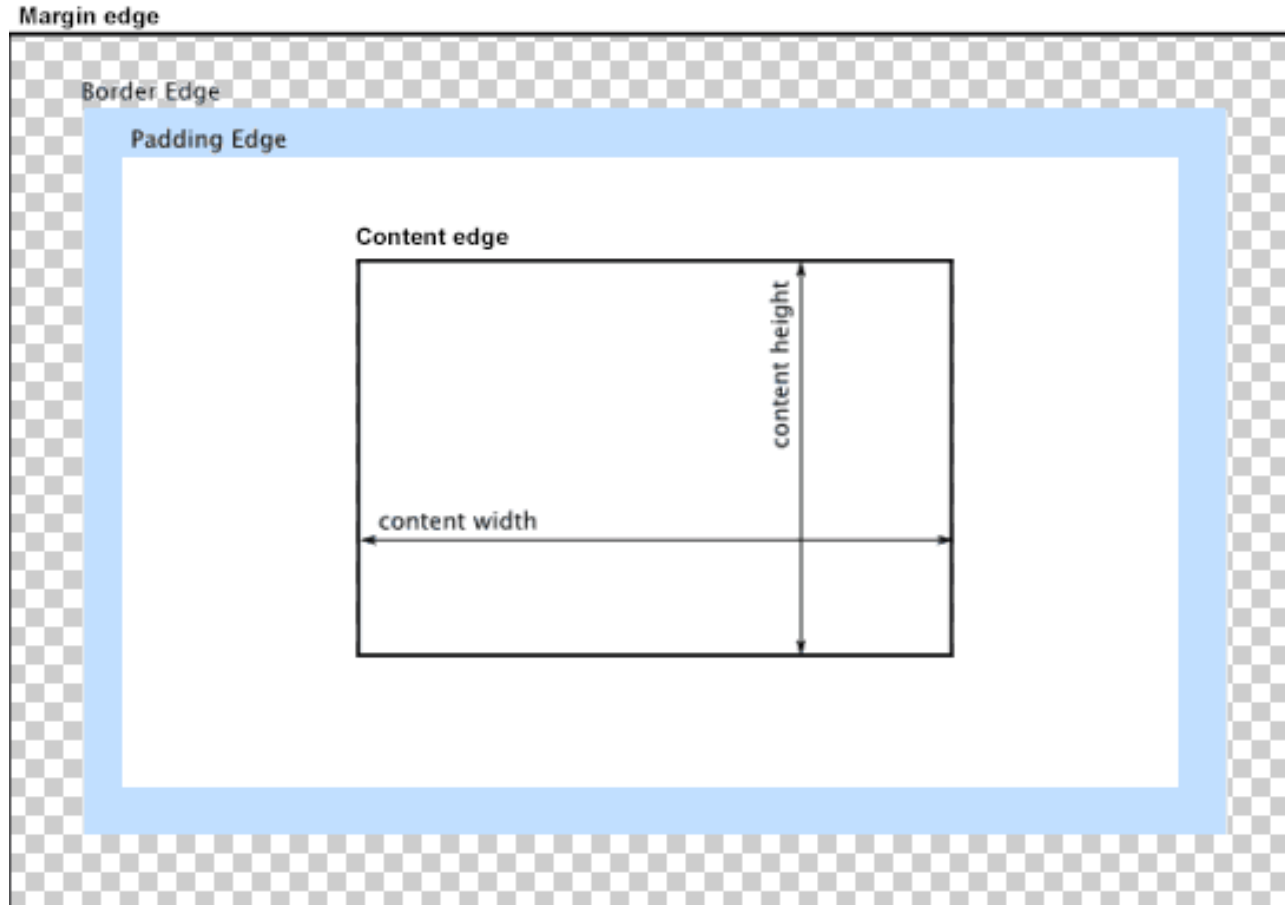
```
<span style="border: 1pt dashed red">  
<span style="visibility:hidden">Ut enim ad minim  
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt  
ut labore et dolore magna aliqua.
```



```
reprehenderit in pariatur.  
  
  
<p>Excepteur sint occaecat cupidatat non proident,
```



CSS Basic Box Model



Source: https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_Box_Model/Introduction_to_the_CSS_box_model



Non-Inline CCS: Selector Rules

- Tag

```
body {  
    background-color: #FFFFFF;  
}
```

- Class

```
.linkInverted {  
    color: #FFFF00;  
}
```

Demo: https://www.w3schools.com/cssref/sel_class.asp

- Id

```
#riceLogo {  
    width: 6em;  
    margin-top: -1em;  
    margin-bottom: -1em;  
}
```

Demo: https://www.w3schools.com/cssref/sel_id.asp



CSS Precedence Order

Priority	CSS Source Type	Description
1	Importance	The 'important' annotation overwrites the previous priority types
2	Inline	A style applied to an HTML element via HTML 'style' attribute
3	Media Type	A property definition applies to all media types, unless a media specific CSS defined
4	User defined	Most browsers have the accessibility feature: a user defined CSS
5	Selector specificity	A specific contextual selector (#heading p) overwrites generic definition
6	Rule order	Last rule declaration has a higher priority
7	Parent inheritance	If a property is not specified, it is inherited from a parent element
8	CSS property definition in HTML document	CSS rule or CSS inline style overwrites a default browser value
9	Browser default	The lowest priority: browser default value is determined by W3C initial value specifications



CSS: nth-child

If you wanted to style every other paragraph with an `aqua` background

```
p:nth-child(even) {  
  background-color: aqua;  
}
```



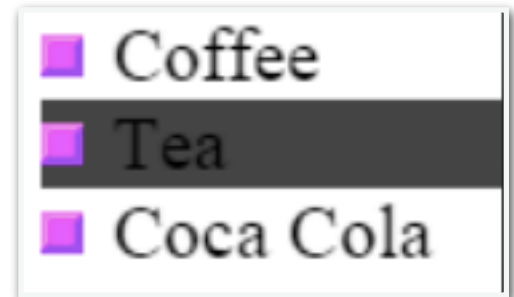
Selector Rule Combinations

- div, p
 - Select all <div> and all <p>
- div p
 - Select all <p> directly within a <div>
- div > p
 - Select all <p> with an eventual parent of <div>
- Additional Demos:
 - https://www.w3schools.com/css/css_combinators.asp



Example: Styled Unordered List

```
ul li:hover {  
    background-color: #444444;  
}  
  
ul li {  
    background-image: url(sqpurple.gif);  
    background-repeat: no-repeat;  
    background-position: 0px center;  
    padding-left: 15px;  
}
```

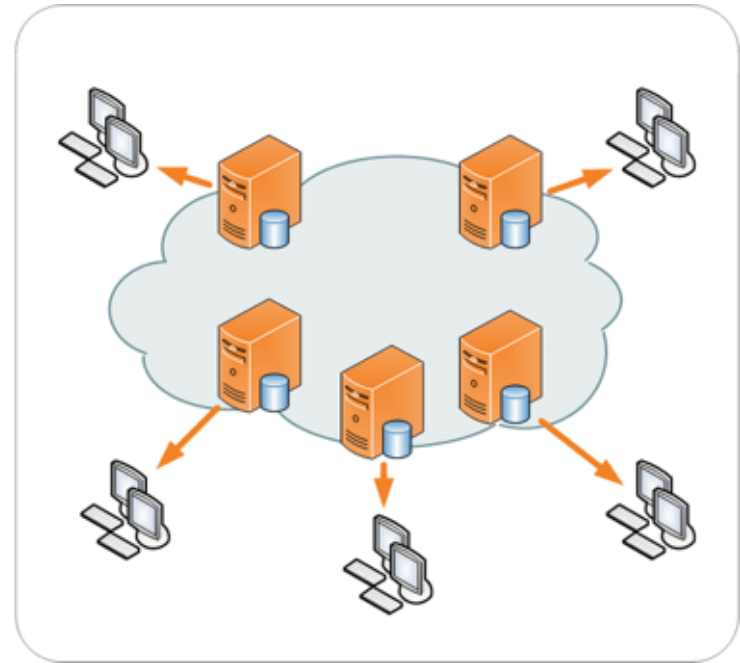
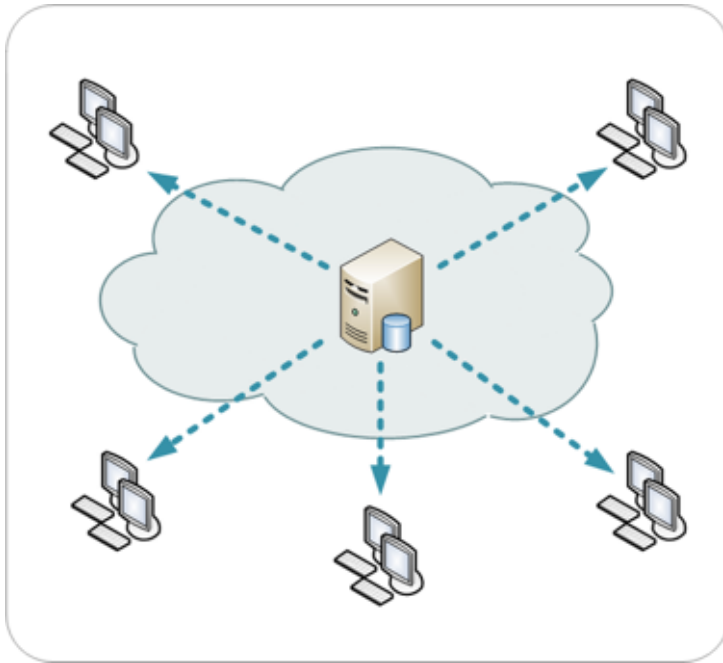


Bootstrap

- What is Bootstrap?
 - Available tools continue to grow to help web developers with all aspects of web development
 - Bootstrap is a *framework* to help developers with *front-end* development
 - Note: If a tool gets a dedicated header on w3schools, it **MUST** be important!
- Bootstrap includes features to help make pages "responsive" and add new tags with helpful features for developers.
- Can use by including it from a CDN
 - What is a CDN?



Content Delivery Network



Installing Bootstrap

BootstrapCDN

Skip the download with [BootstrapCDN](#) to deliver cached version of Bootstrap's compiled CSS and JS to your project.

```
<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipn  
<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js" integrity="sha384-JjSmVgyd0p3pXB1rRibZUAYoIIy60rQ6Vrj1
```

If you're using our compiled JavaScript, don't forget to include CDN versions of jQuery and Popper.js before it.

```
<script src="https://code.jquery.com/jquery-3.3.1.slim.min.js" integrity="sha384-q8i/X+965Dz00rT7abK41JStQIAqVgRVzpbzo5smXKp4YfRvH+8abtTE1F  
<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.7/umd/popper.min.js" integrity="sha384-U02eT0CpHqdSJQ6hJty5KVphtPhzWj9WC
```

<https://getbootstrap.com/docs/5.3/getting-started/download/>

Demo also available at: https://www.w3schools.com/bootstrap5/bootstrap_get_started.php



Using Bootstrap


```
<input type="text" placeholder="Username">
<br>
<input type="button" value="Click Me!">

<br><br>

<div class="row">
  <div class="col-xs-6 col-md-3">
    <div class="input-group">
      <span class="input-group-addon glyphicon glyphicon-camera">
      </span>
      <input type="text" class="form-control" placeholder="Username">
    </div>
    <br><input type="button" class="btn btn-primary" value="Click Me!">
  </div>
</div>
```

Username

Click Me!

 Username

Click Me!

<http://www.w3schools.com/bootstrap>



Bootstrap Small Demo

- Demo creating a Bootstrap enabled jsfiddle page and a couple miscellaneous features that Bootstrap gives you.
 - jsfiddle: <https://jsfiddle.net/chilleo/f4rzktqh/17/>
- Recommend looking around at some of the cooler features that w3schools demos, such as:
 - [scrollspy](#)
 - https://www.w3schools.com/bootstrap4/bootstrap_scrollspy.asp
 - [carousel](#)
 - https://www.w3schools.com/bootstrap4/bootstrap_carousel.asp

