FAKULTAS
ILMU
KOMPUTER

Web Design
Using HTML5 and CSS3

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Outline

- HTML5
- CSS3
- Responsive Web Design
- Django Static Files (CSS, JavaScript, Images, etc)

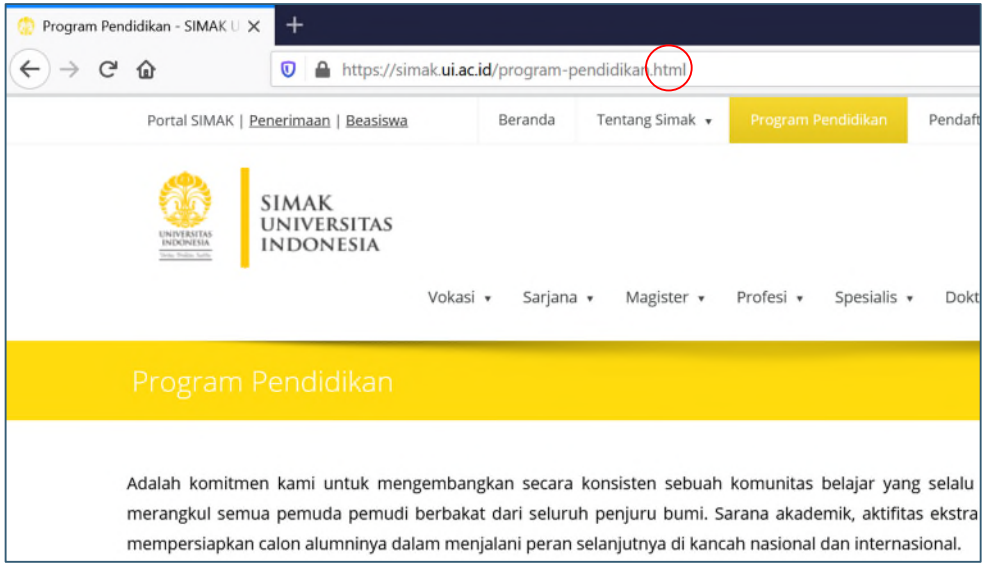
HTML5

Apakah HTML (Hypertext Markup Language) adalah bahasa pemrograman?

Evolution of HTML

1993	HTML 1.0 - Developed by Tim Berners Lee to link the document
1995	HTML 2.0 - Developed by Internet Engineering Task Force RFC to include stylized text and tables
1996	CSS1
1997	HTML 3.2 - Developed by W3C and included browser specific feature
1997	HTML 4.0 - A move back to normalizing the pages across platforms
1998	CSS2
1999	HTML 4.01 - Introduced different document types
2012	HTML 5 - Back to HTML plus multimedia and semantic tags

HTML
Page Structure

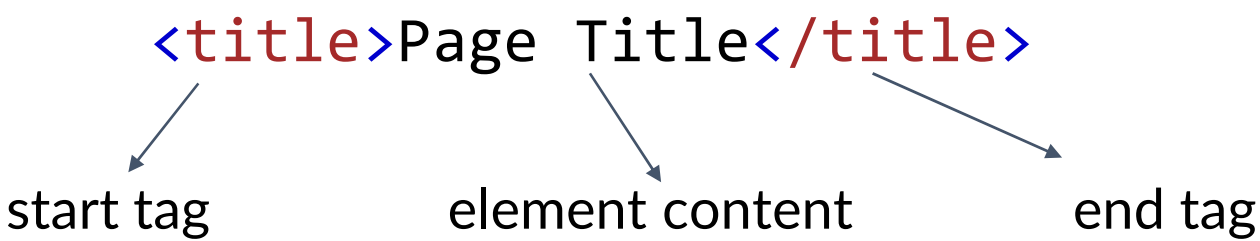



```
<html>
  <head>
    <title>Page title</title>
  </head>
  <body>
    <h1>This is a heading</h1>
    <p>This is a paragraph.</p>
    <p>This is another paragraph.</p>
  </body>
</html>
```

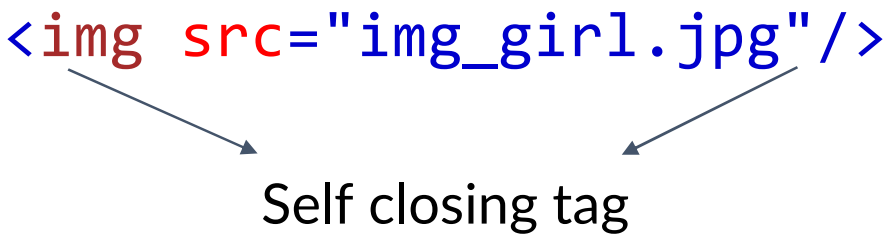
HTML Page Example


```
<!DOCTYPE html>
<html>
    <head>
        <title>Judul Halaman</title>
    </head>
    <body>
        <h1>Judul Artikel</h1>
        <p>Paragraf pertama.</p>
    </body>
</html>
```

HTML Elements



empty element



HTML Attributes

- Attributes provide additional information about elements. Attributes are always specified in the start tag.
- Attributes usually come in name/value pairs like: name="value"
- Example:

```
<img src="img_girl.jpg" width="500" height="600"/>
```

HTML and Browser

	MAC				WIN								
	FIREFOX	OPERA	CHROME	SAFARI	FIREFOX	OPERA	CHROME	SAFARI	IE				
	11	11.62	18	5.1	11	11.61	18	5.1	6	7	8	9	
Canvas	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	90%
Canvas Text	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	89%
SVG	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	88%
SVG Clipping Paths	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	88%
SVG Inline	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	54%
SMIL	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	69%
WebGL	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	61%
Audio	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	88%
Video	✔	✔	✔	✔	✔	✔	✔	✔	✘	✘	✘	✔	88%

HTML5

HTML5 is the latest specification of the HTML language, with objectives primarily include:

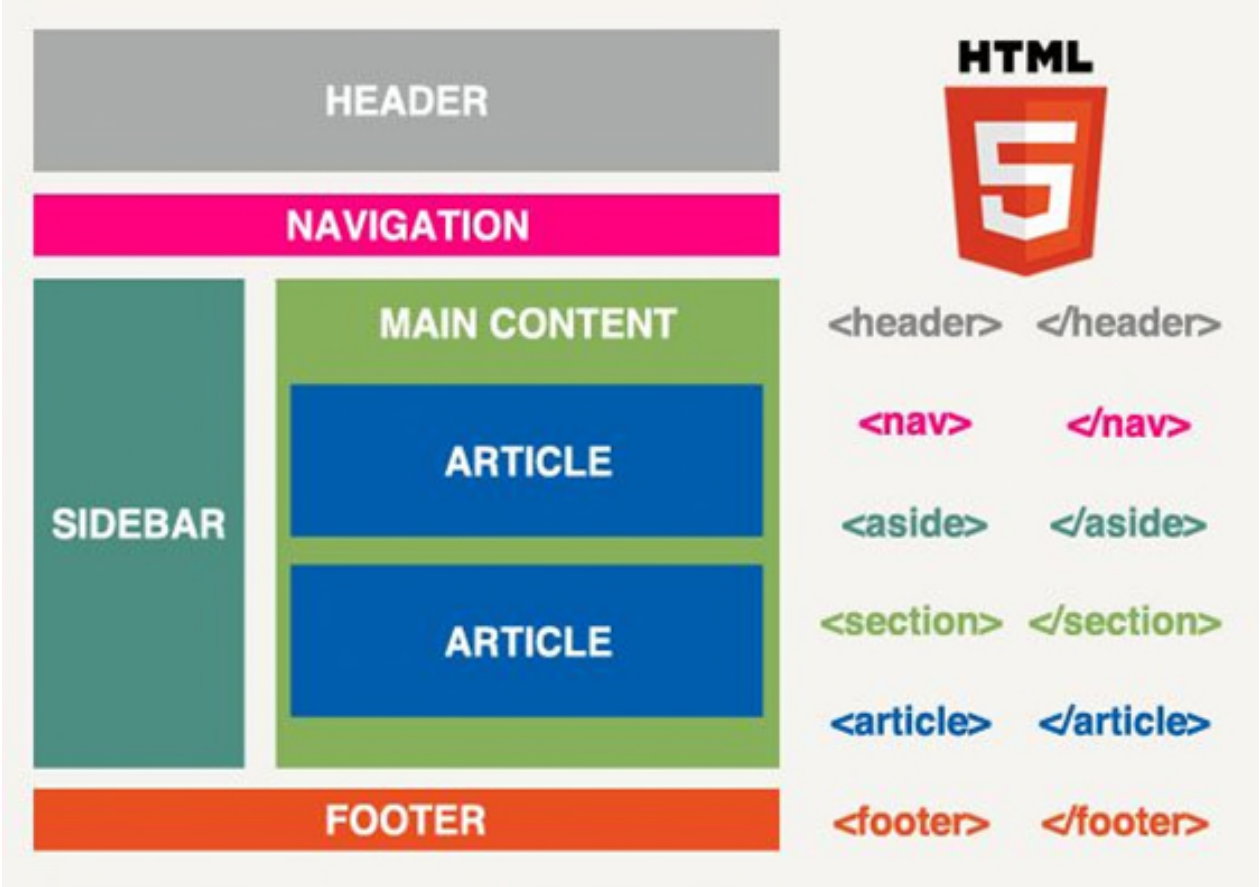
- Encouraging semantic (meaningful) markup
- Separating design from content
- Promoting accessibility and design responsiveness
- Reducing the overlap between HTML, CSS, and JavaScript
- Supporting rich media experiences while eliminating the need for plugins such as Flash or Java

Read more: https://html.com/html5/#ixzz77q499mnd

HTML5

- New semantic elements like <nav>, <header>, <footer>, <article>, <section>
- New attributes of form elements like datalist, keygen, output
- New input types: datetime, number, email, month, url, color, etc.
- New input attributes: required, placeholder, autofocus
- New graphic elements: <svg> and <canvas>
- New multimedia elements: <audio> and <video>

HTML5


HEADER
NAVIGATION
SIDEBAR
MAIN CONTENT
ARTICLE
ARTICLE
FOOTER
HTML
<header> </header>
<nav> </nav>
<aside> </aside>
<section> </section>
<article> </article>
<footer> </footer>

HTML + CSS

HTML + CSS

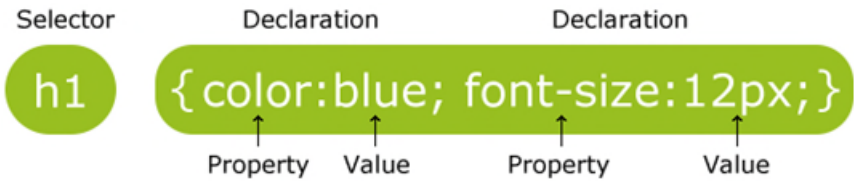
HTML

CSS3

CSS (Cascading Style Sheets)

- CSS is a language that describes the style of an HTML document.
- CSS describes how selected HTML elements should be displayed.

CSS Syntax




```
h1 {
        color:blue;
        font-size:12px;
}
```

How to apply CSS

- Inline style: inline tag of html
- Internal style sheet: inside html
- External style sheet: separated file

Tips:

For better maintenance, use:
external style sheet

CSS Selectors

- The HTML element can be selected by:
  - Element Selector (without leading # or .)
  - Class Selector (with leading .)
  - ID Selector (with leading #)

selector.css

```
h1 {
    color:blue;
    text-align:center;
}

h2, h3 {
    color:red;
    text-align:center;
}

p {
    background-color:pink;
}

.utama {
    background-color:yellow;
}

#p1 {
    background-color:aqua;
}
```

css_selector.html

```
<!DOCTYPE html>
<html>
    <head>
        <title>Judul Halaman</title>
        <link href="selector.css" rel="stylesheet" type="text/css">
    </head>
    <body>
        <h1>Elemen h1</h1>
        <h2>Elemen h2</h2>
        <h3>Elemen h3</h3>
        <p id="p1" class="utama">Paragraf satu.</p>
        <p id="p2">Paragraf dua.</p>
        <p id="p3" class="utama">Paragraf tiga.</p>
    </body>
</html>
```

CSS3 Flexbox

- CSS3 is the latest standard in CSS and it is backward compatible
- Flexbox is a (new) layout mode in CSS3
  - https://www.w3schools.com/css/css3_flexbox.asp
  - https://css-tricks.com/snippets/css/a-guide-to-flexbox/

Try:

- https://www.w3schools.com/css/tryit.asp?filename=trycss3_column-count
- https://www.w3schools.com/css/tryit.asp?filename=trycss3_flexbox_wrap-reverse

Where is the “Cascading” part?

If there are two rules still in conflict at a given weight, the algorithm will continue to “cascade down” and check attribute priorities until it finds one that wins.

Priorities (highest order wins)

1. Origin & Importance
2. Selector Specificity
3. Order of Appearance
4. Initial & Inherited Properties (default values)

1. Origin & importance

1. **Author**: CSS comes from front-end developer.

2. **User**: The user of browser can manually set the style for their browser, such as its font style, color, etc. Lets try!

3. **User-Agent**: The browser serves default style. Different browser provides different style

2. Selector Specificity (Selectors)

- CSS selectors can belong to one of the following order. The highest order wins.
    1. Inline styles (anything inside a style tag)
    2. ID selectors
    3. Classes selector
    4. Element selector

Selector Specificity (Selectors)

```
...
<h1 class="class1" style="color: red;" id="title1">HTML5 Example Page</h1>
...
```

```
style.css
h1 {
    color: blue;
}
#title1 {
    color: aqua;
}
.class1 {
    color: cadetblue;
}
```

Apa warna tulisan
“HTML5 Example Page”?

3. Source Order

If you've got 2 stylesheets linked in the head of your HTML document, the second stylesheet will override rules in the first stylesheet.

First CSS loaded

```
<html>
  <head>
    <link href="file.css"
     rel="stylesheet"
     type="text/css">

    <style type=”text/css”>
      table {
             color: red;
      }
    </style>
  </head>
</html>
```

Second CSS loaded. If there are same element selectors named "table", then the Second CSS will override the style.

4. Initial & inherited properties

- In the following example, the <p> tag will render with a monospace font & red text, since its parent node contains those styles.
- The tag will render with yellow background, inherited from style from its parent (the style for <body> tag)
- The “inherit” property will automatically use the value from its parent. When the parent change its style, their child inherit all changed style.
- For non-inherited properties, each element has a set of initial values.

```
<html>
  <head>
    <style type=text/css>
      div {
        background-color: initial;
        color: inherit;
      }
      body {
        background-color: yellow;
      }
    </style>
  </head>
  <body>
    <div style="font-family: monospace; color: red;">
      <p>inheritance can be super useful!</p>
    </div>
  </body>
</html>
```

Framework to Help You Design Better

Prettification: Using a CSS Framework

- Design is hard, and doubly so now that we have to deal with mobile, tablets, and so forth.
- That's why many programmers are turning to CSS frameworks to solve some of those problems for them.
- There are lots of frameworks out there, but one of the earliest and most popular is Twitter's Bootstrap.

Responsive Design using Bootstrap

- Framework for building responsive, mobile-first sites, with the BootstrapCDN and a template starter page.
- Bootstrap also provides several animated and interactive elements built by JavaScript.

Learning Source:

- https://getbootstrap.com/docs/5.2/getting-started/introduction/

How to use Bootstrap?

1. Copy the Bootstrap source link to your HTML code or download Bootstrap and add the Bootstrap folder to your CSS Folder.
2. Find the Bootstrap style on the documentation.
3. Put the Bootstrap class to your code.

Example: 1. Copy the Bootstrap source link to your HTML code

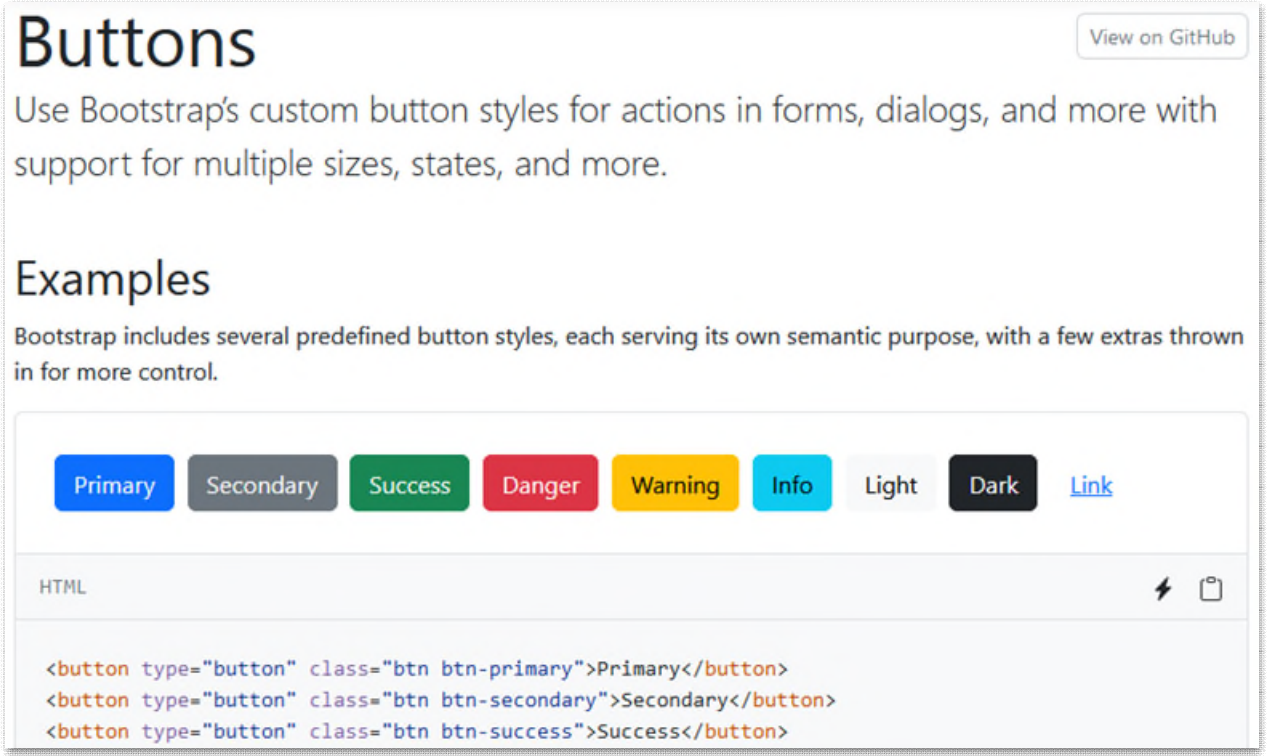
https://getbootstrap.com/docs/5.2/getting-started/introduction/

Include Bootstrap's CSS and JS. Place the `<link>` tag in the `<head>` for our CSS, and the `<script>` tag for our JavaScript bundle (including Popper for positioning dropdowns, poppers, and tooltips) before the closing `</body>`. Learn more about our CDN links.

```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Bootstrap demo</title>
    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.0/dist/css/bootstrap.min.css" re
  </head>
  <body>
    <h1>Hello, world!</h1>
    <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.0/dist/js/bootstrap.bundle.min.
  </body>
</html>
```

Example: 2. Find the Bootstrap style on the documentation

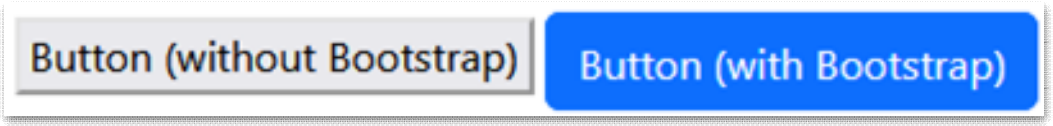
https://getbootstrap.com/docs/5.2/components/buttons/



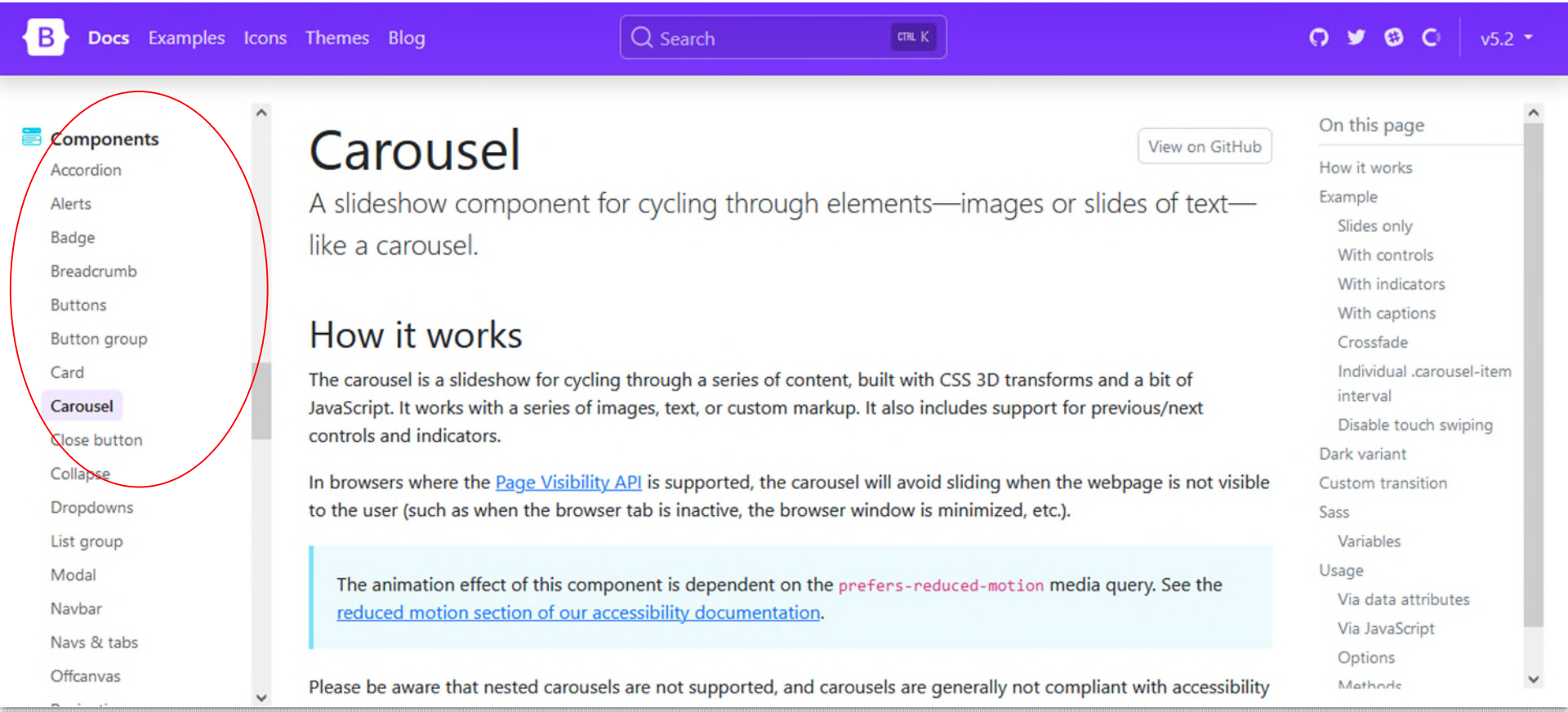
Example: 3. Put the Bootstrap class to your code

```
<!doctype html>
<html lang="en">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Bootstrap demo</title>
    <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">
  </head>
  <body>
    <button>
                                        Button (without Bootstrap)
                    </button>
    <button type="button" class="btn btn-primary">
                                        Button (with Bootstrap)
                    </button>
  </body>
</html>
```

Example



https://getbootstrap.com/docs/5.2/components/carousel/



Django Static Files

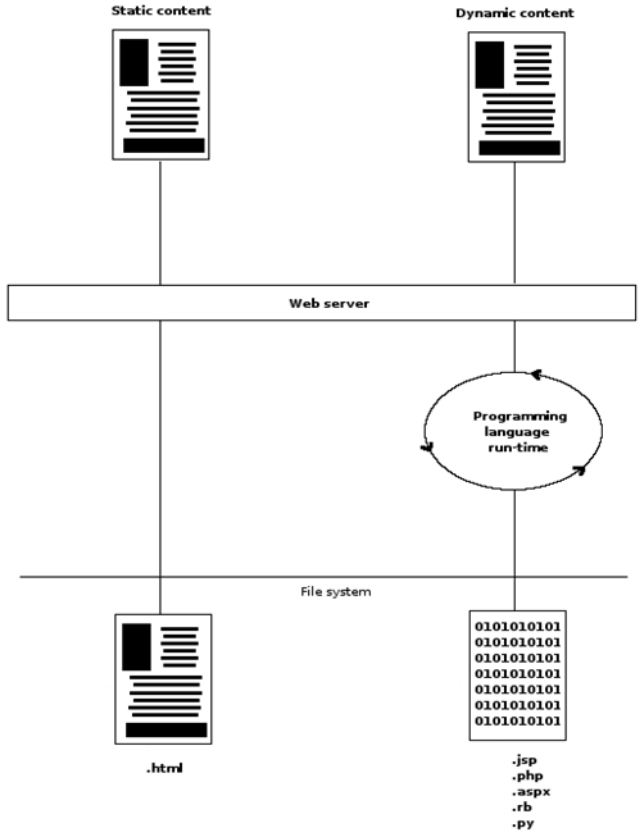
Managing Static Files

- Websites generally need to serve additional files such as images, JavaScript, or CSS. Django refers to these files as “static files”.
- Django provides **`django.contrib.staticfiles`** to help you manage them.

https://docs.djangoproject.com/en/4.1/howto/static-files/

Static files are handled differently

- Actually it is the dynamic files (or program files) which are handled specifically.
- They are differentiated to improve web server performance and also security.



Benefits of Static Files

- **They are static**: These files don’t change until the developer replace them with a new one. Thus, the server just fetches them from the disk, taking a minimum amount of time.
- **Static files are easier to cache**: They don’t change and are not modified by the server. That makes the performance faster.
- **Static files are energy efficient**: Static files are fetched from the disk when required. They require no processing which saves the processing overhead and website response becomes fast.

Static Files in Django

Django, and indeed any web server, needs to know two things to deal with static files:

- How to tell when a URL request is for a static file, as opposed to for some HTML that's going to be served via a view function
- Where to find the static file the user wants

Read https://docs.djangoproject.com/en/4.1/ref/contrib/staticfiles/

Static Files in Django

- In other words, static files are a mapping from URLs to files on disk. Static files should not be part of your repository.
- Django lets us define a URL "prefix" to say that any URLs which start with that prefix should be treated as requests for static files. By default, the prefix is /static/. It was defined in settings.py.

Configuring Static Files

1. Make sure that **`django.contrib.staticfiles`** is included in your **`INSTALLED_APPS`**.
2. In your settings file, define **`STATIC_URL`**, for example:
   ```
   STATIC_URL = '/static/'
   ```
3. In your templates, use the **`static`** template tag to build the URL for the given relative path using the configured **`STATICFILES_STORAGE`**.
   ```
   {% load static %}
   <img src="{% static 'my_app/example.jpg' %}" alt="My image">
   ```

4. Store your static files in a folder called **`static`** in your app. For example **`my_app/static/my_app/example.jpg`**. Or you can simply command **`collectstatic`**

References

- Django Documentation:
  - https://docs.djangoproject.com/en/4.1/howto/static-files/
  - https://docs.djangoproject.com/en/4.1/ref/contrib/staticfiles/
- CSS3 Flexbox:
  - https://css-tricks.com/snippets/css/a-guide-to-flexbox/
  - https://www.w3schools.com/css/css3_flexbox.asp
  - https://www.w3schools.com/css/tryit.asp?filename=trycss3_column-count
  - https://www.w3schools.com/css/tryit.asp?filename=trycss3_flexbox_wrap-reverse
- Bootstrap:
  - https://getbootstrap.com/docs/5.2/getting-started/introduction/
  - https://getbootstrap.com/docs/5.2/components/buttons/
  - https://getbootstrap.com/docs/5.2/components/carousel/
- https://html.com/html5/#ixzz77q499mnd