



Lesson #3

Links, Images

Introduction to Web Development

Prof. Nayeon Kim

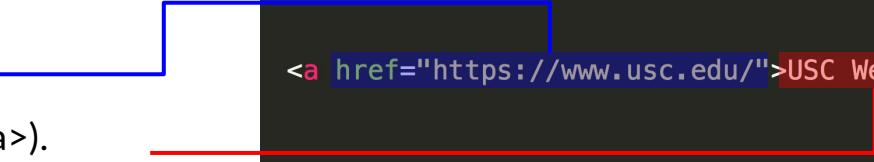
Afghan Pathways Program | Viterbi School of Engineering

Links

Create hyperlinks.

Each URL consists of:

1. Destination (href attribute),
2. Name (text between <a> and).



```
<a href="https://www.usc.edu/">USC Website</a>
```

Result:



USC Website

Links

Create hyperlinks.

Each URL consists of:

1. Destination (href attribute),
2. Name (text between <a> and).

Result:

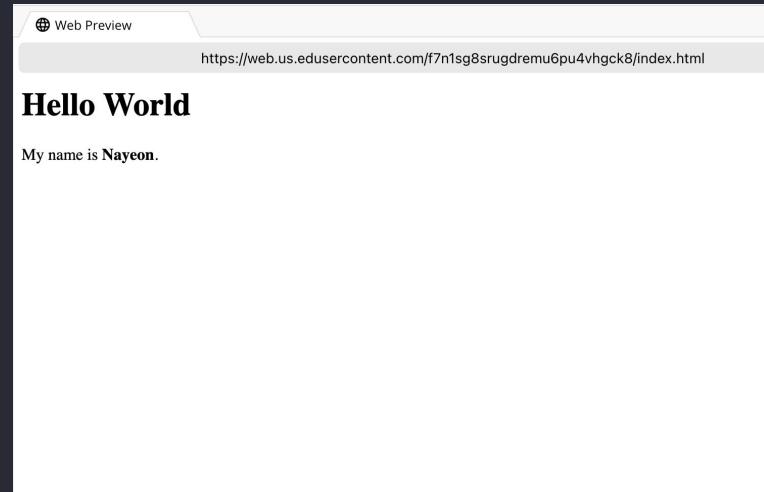
The [University of Southern California](https://www.usc.edu/) is a private research university located in Los Angeles, California.

USC Website

The [University of Southern California](https://www.usc.edu/) is a private research university located in Los Angeles, California.

```
<h1>Hello World</h1>
```

```
<p>My name is <strong>Nayeon</strong>. </p>
```



```
<img>
```

attribute

attribute

```

```

Web Safe Image Formats

1. Graphics Interchange Format (GIF)

- ✓ Supports animation.
- ✗ Low resolution & image quality.

2. Joint Photographic Experts Group (JPEG / JPG)

- ✓ Small file size.
- ✗ Lossy format, not suitable for text or crisp edges.

3. Portable Network Graphics (PNG)

- ✓ Supports transparency.
- ✗ Large file size when used for photographs.

4. Scalable Vector Graphics (SVG)

- ✓ Scalable for different screen sizes.
- ✗ No support for complex images / photographs.



Image Tags

Define images in a document.

Each image consists of:

1. Source (`src` attribute),
2. Alternate text (`alt` attribute).

```

```

```

```

Image Tags

Define images in a document.

Each image consists of:

1. Source (`src` attribute),
2. Alternate text (`alt` attribute).

Absolute Path (hosted on a different server)

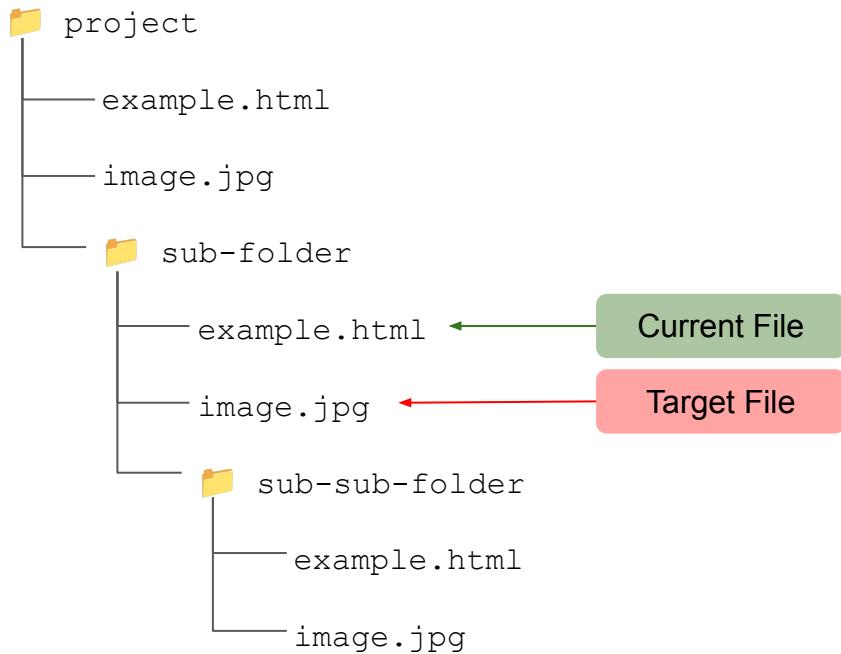
vs.

Local Path (hosted on the same server)

```
  

```

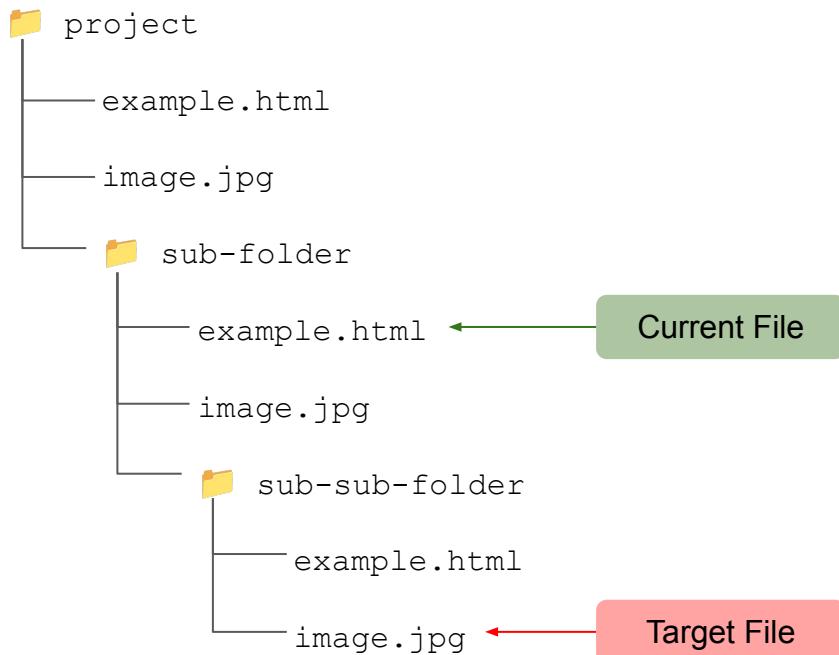
Relative File Paths



```

```

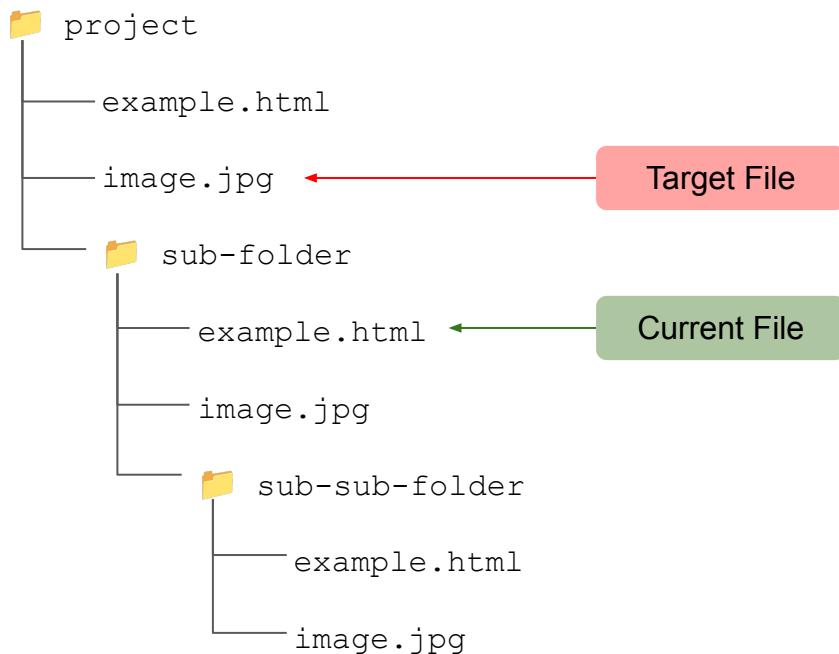
Relative File Paths



```
  

```

Relative File Paths



```

```

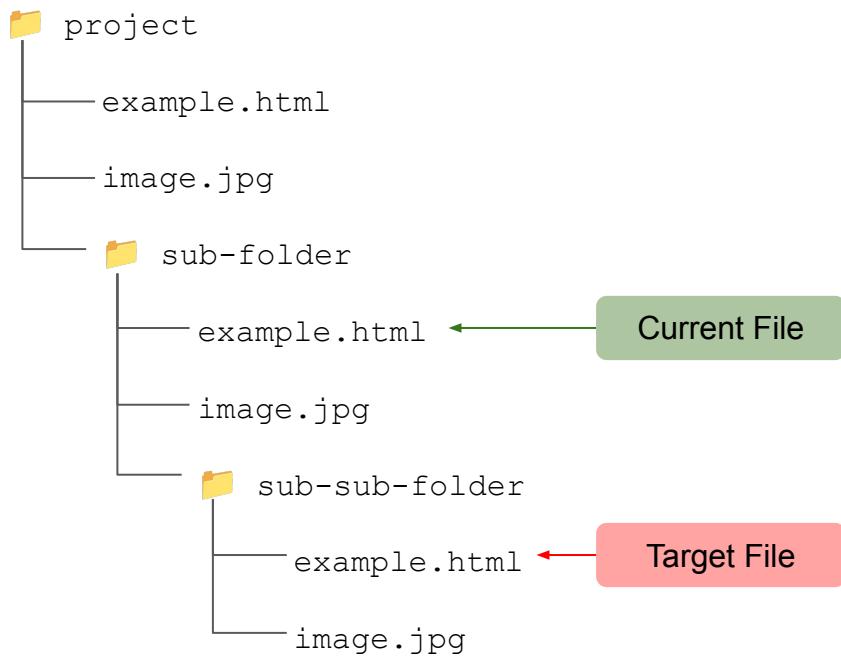
```

```

```

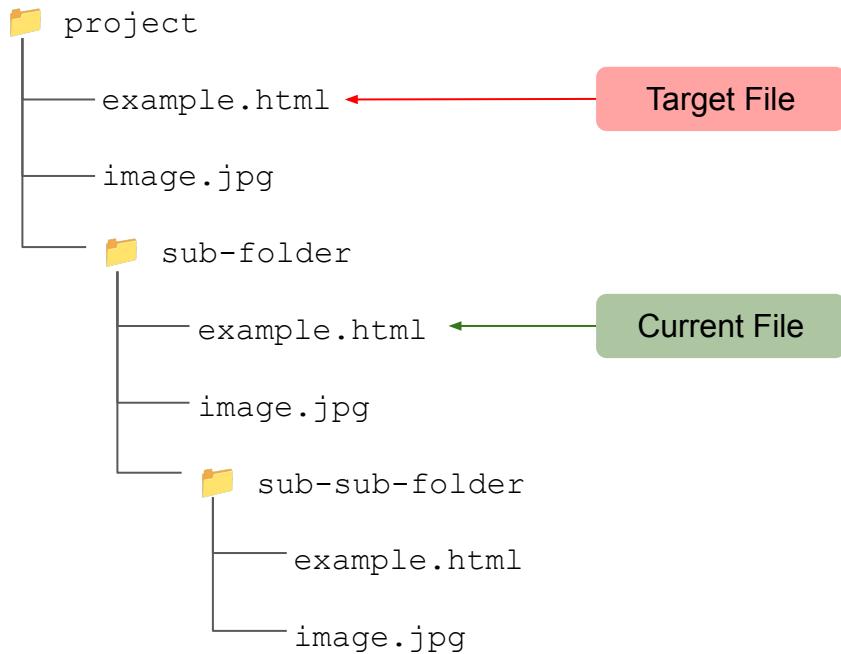
```

Relative File Paths



```
  
  
  
<a href="sub-sub-folder/example.html">Link to another page</a>
```

Relative File Paths



```






<a href="sub-sub-folder/example.html">Link to another page</a>

<a href="../example.html">Link to another page</a>
```

List of HTML tags

- There are many HTML tags that do different things. See below for a list of all HTML tags:
 - <https://developer.mozilla.org/en-US/docs/Web/HTML/Element>
 - <https://www.w3schools.com/tags/>

Semantic Tags

“Typical Website” Layout

1. Header - <header>

The diagram illustrates a typical website layout structure. At the top is a yellow header bar containing the word "Header". Below the header is a pink navigation bar with links for HOME, OUR TEAM, PROJECTS, and CONTACT, along with a search bar and a "Go!" button. The main content area has a grey background. It features a section titled "Article heading" with a sub-section titled "subsection". Below these are two paragraphs of placeholder text. To the right of the main content is a sidebar with a teal background, titled "Related", which contains a bulleted list of five items, each with a blue link.

Header

HOME OUR TEAM PROJECTS CONTACT Search query Go!

Article heading

subsection

Donec ut libero sed accu vehicula ultricies a non tortor. Lorem ipsum dolor sit amet, consectetur adipisicing elit. Aenean ut gravida lorem. Ut turpis felis, pulvinar a semper sed, adipiscing id dolor.

Pellentesque auctor nisi id magna consequat sagittis. Curabitur dapibus, enim sit amet elit pharetra tincidunt feugiat nisl imperdiet. Ut convallis libero in urna ultrices accumsan. Donec sed odio eros.

Another subsection

Donec viverra mi quis quam pulvinar at malesuada arcu rhoncus. Cum sollici tatoque penatibus et manis dis parturient montes, nascetur ridiculus mus. In rutrum accumsan ultricies. Mauris vitae nisi at sem facilisis semper ac in est.

Vivamus fermentum semper porta. Nunc diam velit, adipiscing ut tristique vitae sagittis vel odio. Maecenas convallis ullamcorper ultricies. Curabitur ornare, ligula semper consequetut sagittis, nisi diam iaculis velit, is fringille sem nunc vel mi.

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Related

- [Oh I do like to be beside the seaside](#)
- [Oh I do like to be beside the sea](#)
- [Although in the North of England](#)
- [It never stops raining](#)
- [Oh well...](#)

“Typical Website” Layout

1. Header - <header>
2. Navigation Bar - <nav>

The image shows a typical website layout with the following components:

- Header:** At the top, it features the word "Header" in a bold, italicized font.
- Navigation Bar:** Below the header is a yellow navigation bar containing links for "HOME", "OUR TEAM", "PROJECTS", and "CONTACT". There is also a search bar labeled "Search query" and a "Go!" button.
- Main Content Area:** The central area contains an "Article heading" followed by two sections of text: "subsection" and "Another subsection".
- Sidebar:** On the right side, there is a pink sidebar titled "Related" which lists five items, each preceded by a blue circular bullet point.
- Footer:** At the bottom, there is a small white footer section containing the text "©Copyright 2050 by nobody. All rights reversed."

“Typical Website” Layout

1. Header - <header>
2. Navigation Bar - <nav>
3. Main Content - <main>

Header

HOME OUR TEAM PROJECTS CONTACT Search query Go!

Article heading

Consectetur adipiscing elit. Donec a diam lectus. Suspendisse congue ligula as quam viverra nec consectetur ant hendrerit. Donec et mollis dolor. Praesent et diam eget libero egestas mattis sit amet vitae augue. Nam tincidunt congue enim, ut porta lorem lacina consetetur.

subsection

Donec ut libero sed accu vehicula ultricies a non tortor. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean ut gravida lorem. Ut turpis felis, puvinar a semper sed, adipiscing id dolor.

Pellentesque auctor nisi id magna consequat sagittis. Curabitur dapibus, enim sit amet elit pharetra tincidunt feugiat nisl imperdiet. Ut convallis libero in urna ultrices accumsan. Donec sed odio eros.

Another subsection

Donec viverra mi quis quam puvinar at malesuada arcu rhoncus. Cum sociis natoque penatibus et manis dis parturient montes, nascetur ridiculus mus. In rutrum accumsan ultricies. Mauris vitae nisi at sem facilisis semper ac in est.

Vivamus fermentum semper porta. Nunc diam velit, adipiscing ut tristique vitae sagittis vel odio. Maecenas convallis ullamcorper ultricies. Curabitur ornare, ligula semper consetetur sagittis, nisi diam iaculis velit, is fringilla sem nunc vel mi.

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Related

- Oh I do like to be beside the seaside
- Oh I do like to be beside the sea
- Although in the North of England
- It never stops raining
- Oh well...

“Typical Website” Layout

1. Header - <header>
2. Navigation Bar - <nav>
3. Main Content - <main>
4. Sidebar - <aside> (usually inside <main>)

Header

HOME OUR TEAM PROJECTS CONTACT Search query Go!

Article heading

Consectetur adipiscing elit. Donec a diam lectus. Suspendisse congue ligula as quam viverra nec consectetur ant hendrerit. Donec et mollis dolor. Praesent et diam eget libero egestas mattis sit amet vitae augue. Nam tincidunt congue enim, ut porta lorem lacina consetetur.

subsection

Donec ut libero sed accu vehicula ultricies a non tortor. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean ut gravida lorem. Ut turpis felis, pulvinar a semper sed, adipiscing id dolor.

Pellentesque auctor nisi id magna consequat sagittis. Curabitur dapibus, enim sit amet elit pharetra tincidunt feugiat nisl imperdiet. Ut convallis libero in urna ultrices accumsan. Donec sed odio eros.

Another subsection

Donec viverra mi quis quam pulvinar at malesuada arcu rhoncus. Cum sociis natoque penatibus et manis dis parturient montes, nascetur ridiculus mus. In rutrum accumsan ultricies. Mauris vitae nisi at sem facilisis semper ac in est.

Vivamus fermentum semper porta. Nunc diam velit, adipiscing ut tristique vitae sagittis vel odio. Maecenas convallis ullamcorper ultricies. Curabitur ornare, ligula semper consetetur sagittis, nisi diam iaculis velit, is fringilla sem nunc vel mi.

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“Typical Website” Layout

1. Header - <header>
2. Navigation Bar - <nav>
3. Main Content - <main>
4. Sidebar - <aside>
5. Footer - <footer>

The diagram shows a website layout with the following structure:

- Header:** The top navigation bar containing links to HOME, OUR TEAM, PROJECTS, and CONTACT, along with a search bar and a "Go!" button.
- Main Content:** The central area featuring an **Article heading** (with a subtitle **subsection**) and some placeholder text. Below the heading is another section titled **Another subsection** with its own text.
- Sidebar:** A vertical sidebar on the right side with a heading **Related** and a list of five items, each preceded by a blue circular bullet point.
- Footer:** The bottom section containing a yellow box with the copyright notice: "©Copyright 2050 by nobody. All rights reversed."

USC Homepage Layout

1. Header

The screenshot shows the official website of the University of Southern California (USC). The header features the USC logo and navigation links for students, alumni, parents, faculty, employees, and sports. A search bar and links for popular links and site map are also present. The main content area includes a large banner image of a library, a headline about research, and several news snippets. On the right side, there's a sidebar with links for exploring USC, campaign news, events calendar, USC news, journalists, maps, and visiting.

University of Southern California

students alumni parents faculty employees sports

popular links site map

about administration admission academics research patient care community arts global initiatives

An innovative push for research

A USC Libraries initiative couples curators with scholars in three pilot areas: history of L.A. and the West, Holocaust and genocide studies, and LGBTQI history.

AI helps researcher deliver HIV info to homeless youth

Incoming scholar's path to USC includes an escape from Syria

Associate Professor Eric Rice needed a better way to identify peer-to-peer educators, so he teamed up with engineering Professor Millind Tambe to develop artificial intelligence that picks out the peer leaders based on the extent of their social networks.

Read the full story at USC News

Drinking coffee — regular or decaf — could lead to longer life

Born in Boston but raised largely in Damascus, Lana Broid has big ideas and a special calling inspired by what she's experienced firsthand. She'll arrive on the University Park Campus next month with a future in biological research in mind.

Read the full story at USC News

Read the full story at USC News

JOIN US IN TOKYO!
USC GLOBAL CONFERENCE 2017

Explore USC

Campaign for USC

Events Calendar

USC News

For Journalists

USC Maps

Visit USC

Currently at USC

At 10:06 am on Sunday, July 16, 2017, it's 73° and mostly clear in Los Angeles.

Summer classes are in session. If you're taking a summer class, check its [session code](#), since start and end dates vary.

To Report an Emergency

Call the USC Department of Public Safety
University Park Campus:
213-740-4321
Health Sciences Campus:
323-442-1000

TommyCam

USC Photo Gallery

Campus Locations

USC is a [smoke-free](#) environment.

University Park Campus (Map)
University of Southern California
Los Angeles, CA 90089
213-740-2311

Health Sciences Campus (Map)
University of Southern California
Los Angeles, CA 90033
323-442-2000

[Visit USC](#)

[Careers at USC](#)

[Office Directory](#)

[Campus Safety](#)

USC Homepage Layout

1. Header

2. Main content

The screenshot shows the official website of the University of Southern California (USC). At the top, there's a dark red header bar with links for "students", "alumni", "parents", "faculty", "employees", "sports", "popular links", and a search bar labeled "Search USC". Below the header is the USC logo and the text "University of Southern California". A horizontal navigation menu includes links for "about", "administration", "admission", "academics", "research", "patient care", "community", "arts", and "global initiatives". The main content area features a large banner image of a library interior with people studying. Overlaid on the banner is the text "An innovative push for research" and a brief description about a USC Libraries initiative. Below the banner are several news cards with headlines like "USC helps researcher deliver HIV info to homeless youth", "Incoming scholar's path to USC includes an escape from Syria", and "Drinking coffee... regular or decaf... could lead to longer life". On the right side, there's a sidebar with links for "Explore USC", "Campaign for USC", "Events Calendar", "USC News", "For Journalists", "USC Maps", and "Visit USC".

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- ▶ [Visa USC](#)
- ▶ [Careers at USC](#)
- ▶ [Office Directory](#)
- ▶ [Campus Safety](#)



USC Homepage Layout

1. Header
2. Main content
3. Footer

The screenshot shows the official website of the University of Southern California (USC). The top navigation bar includes links for students, alumni, parents, faculty, employees, sports, popular links, and a search bar. The main content features a large banner image of a library interior with people studying at tables. Below the banner is a red box containing the headline "An innovative push for research". A sub-headline explains that it's a USC Libraries initiative involving scholars in history, Holocaust studies, and LGBTQ history. To the right of the banner are three smaller news cards: one about AI helping researchers deliver HIV info to homeless youth, another about incoming scholars from Syria, and a third about coffee consumption. On the far right is a sidebar with links to various USC resources.

The footer section of the USC website includes a "Currently at USC" box showing the weather (73°) and a "Summer classes are in session" note. It also features links to "TommyCam" and "USC Photo Gallery". The "Campus Locations" box lists the University Park Campus (smoke-free) and the Health Sciences Campus (also smoke-free), both in Los Angeles, CA. It provides contact information for each. The footer also includes links for reporting emergencies, visiting USC, careers, office directory, and campus safety. Social media icons for Facebook, Instagram, Twitter, and LinkedIn are located at the bottom right.

USC Homepage Layout

1. Header
2. Main content
3. Footer
4. Banner

The screenshot displays the official website of the University of Southern California (USC). The top navigation bar includes links for students, alumni, parents, faculty, employees, sports, popular links, and a search bar. Below the header, a large banner image shows a library interior with people working at tables. A text overlay on the banner reads: "An innovative push for research. A USC Libraries initiative couples curators with scholars in three pilot areas: history of L.A. and the West, Holocaust and genocide studies, and LGBTQ history." The main content area features four news stories in a grid:

- AI helps researcher deliver HIV info to homeless youth**: Associate Professor Eric Rabe needed a better way to identify peer-to-peer educators, so he teamed up with engineering Professor Milind Tambe to develop artificial intelligence that picks out the peer leaders based on the extent of their social networks.
- Incoming scholar's path to USC includes an escape from Syria**: Born in Boston but raised largely in Damascus, Lana Bahl has big ideas and a special calling inspired by what she's experienced firsthand. She'll arrive on the University Park Campus next month with a future in biological research in mind.
- Drinking coffee — regular or decaf — could lead to longer life**: Here's another reason to start the day with a cup of joe: A new study finds people who drink coffee appear to live longer. "If you like to drink coffee, drink up! If you're not a coffee drinker, then you need to consider if you should start," says V. Wendy Setiawan of the Keck School of Medicine of USC, senior author of the study.
- Read the full story at USC News**
- Read the full story at USC News**
- Read the full story at USC News**

On the right side, there is a sidebar with links to "JOIN US IN TOKYO! USC GLOBAL CONFERENCE 2017", "Explore USC", "Campaign for USC", "Events Calendar", "USC News", "For Journalists", "USC Maps", and "Visit USC". At the bottom, there are sections for "Currently at USC" (showing a night view of a campus plaza), "Campus Locations" (listing University Park and Health Sciences campuses with maps and contact information), and "To Report an Emergency" (with links to TommyCam, USC Photo Gallery, and emergency services). Social media icons for Facebook, Instagram, Twitter, YouTube, and LinkedIn are also present.

USC Homepage Layout

1. Header
2. Main content
3. Footer
4. Banner
5. Content Columns

students alumni parents faculty employees sports [popular links](#) [Search USC](#)  University of Southern California

about administration admission academics research patient care community arts global initiatives



An innovative push for research
A USC Libraries initiative couples curators with scholars in three pilot areas: history of L.A. and the West, Holocaust and genocide studies, and LGBTQ history.



Read the full story at [USC News](#) Read the full story at [USC News](#) Read the full story at [USC News](#)

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TommyCam [USC Photo Gallery](#)



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[Facebook](#) [Instagram](#) [Twitter](#) [LinkedIn](#)
[YouTube](#) [iTunes](#)

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HTML Layout tags in detail:

- <main> is for content *unique to this page*. Use <main> only *once* per page, and put it directly inside <body>. Ideally this shouldn't be nested within other elements.
- <article> encloses a block of related content that makes sense on its own without the rest of the page (e.g., a single blog post).
- <section> is similar to <article>, but it is more for grouping together a single part of the page that constitutes one single piece of functionality (e.g., a mini map, or a set of article headlines and summaries), or a theme. It's considered best practice to begin each section with a heading; also note that you can break <article>s up into different <section>s, or <section>s up into different <article>s, depending on the context.
- <aside> contains content that is not directly related to the main content but can provide additional information indirectly related to it (glossary entries, author biography, related links, etc.).
- <header> represents a group of introductory content. If it is a child of <body> it defines the global header of a webpage, but if it's a child of an <article> or <section> it defines a specific header for that section (try not to confuse this with titles and headings).
- <nav> contains the main navigation functionality for the page. Secondary links, etc., would not go in the navigation.
- <footer> represents a group of end content for a page.

CSS

Inside a HTML file

- **HTML** (Hyper Text Markup Language) - used to **structure** the content of the page
- **CSS** (Cascading Stylesheet) - used to control the **look and feel** of the page
- Web **browsers** like Chrome, Safari, etc open the HTML file and render it as it is coded



Web Technologies



HyperText Markup Language (HTML)

Creates elements on the page.

Tells browsers *what* to display.

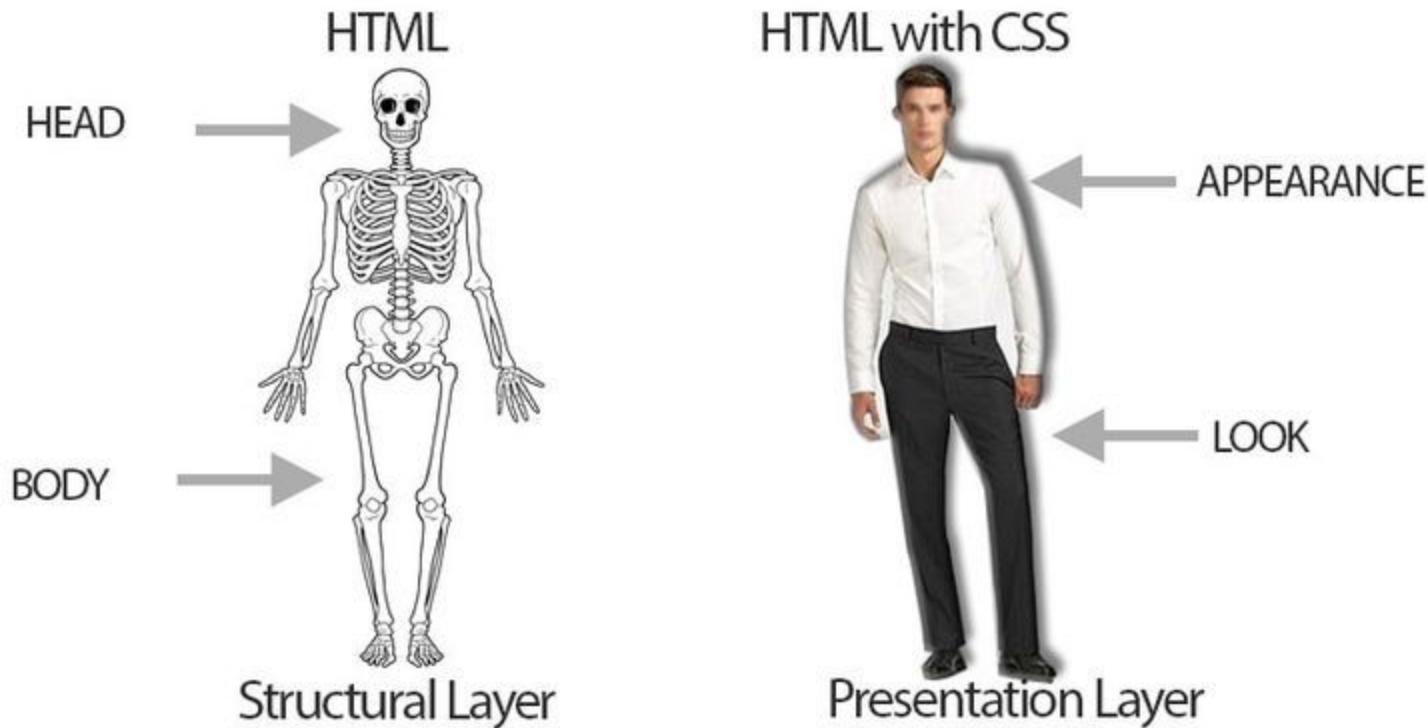


Cascading Style Sheets (CSS)

Defines element properties.

Tells browsers *how* to display elements.

Web Technologies



CSS Anatomy

Components:

1. CSS Selector
2. CSS Property
3. CSS Value

A diagram illustrating the components of a CSS rule. On the left, three numbered labels point to specific parts of a CSS rule on the right. A red line points from '1. CSS Selector' to the selector 'p'. A blue line points from '2. CSS Property' to the property 'background-color'. A green line points from '3. CSS Value' to the value 'lightblue'. The CSS rule itself is shown as: `p { background-color: lightblue; }`. The selector 'p' is highlighted with a red box. The property 'background-color' is highlighted with a blue box. The value 'lightblue' is highlighted with a green box.

```
p {  
  background-color: lightblue;  
}
```

CSS is a **rule based** language. We will be creating lots of rules for HTML tags to follow

How CSS works

Result

```
I am not throwin' away my shot  
  
Hey yo, I'm just like my country  
  
I'm young scrappy and hungry  
  
I am not throwin' away my shot
```

```
1  <!DOCTYPE html>  
2  <html>  
3  <head>  
4      <title>A HTML Page</title>  
5      <style>  
6          p {  
7              color: red;  
8          }  
9          p strong {  
10              background-color: yellow;  
11          }  
12      </style>  
13  </head>  
14  <body>  
15      <p>I am not throwin' away my <strong>shot</strong></p>  
16      <p>Hey yo, I'm just like my country</p>  
17      <p>I'm young scrappy and hungry</p>  
18      <p>I am not throwin' away my <strong>shot</strong></p>  
19  </body>  
20  </html>
```

HTML Validators

- Sometimes the browser will show the right things but your HTML code could be incorrect.
- Use a validator like https://validator.w3.org/#validate_by_input to copy paste your code and check for correctness.