

# **COM5961 PRE-CLASS WORKSHOP:**

## **INTRODUCTION TO HTML, CSS, AND JS**

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Chinese University of Hong Kong

We need a **code editor** to create  
**HTML/CSS/JS files.**

Version 1.47 is now available! Read about the new features and fixes from June.

# Code editing. Redefined.

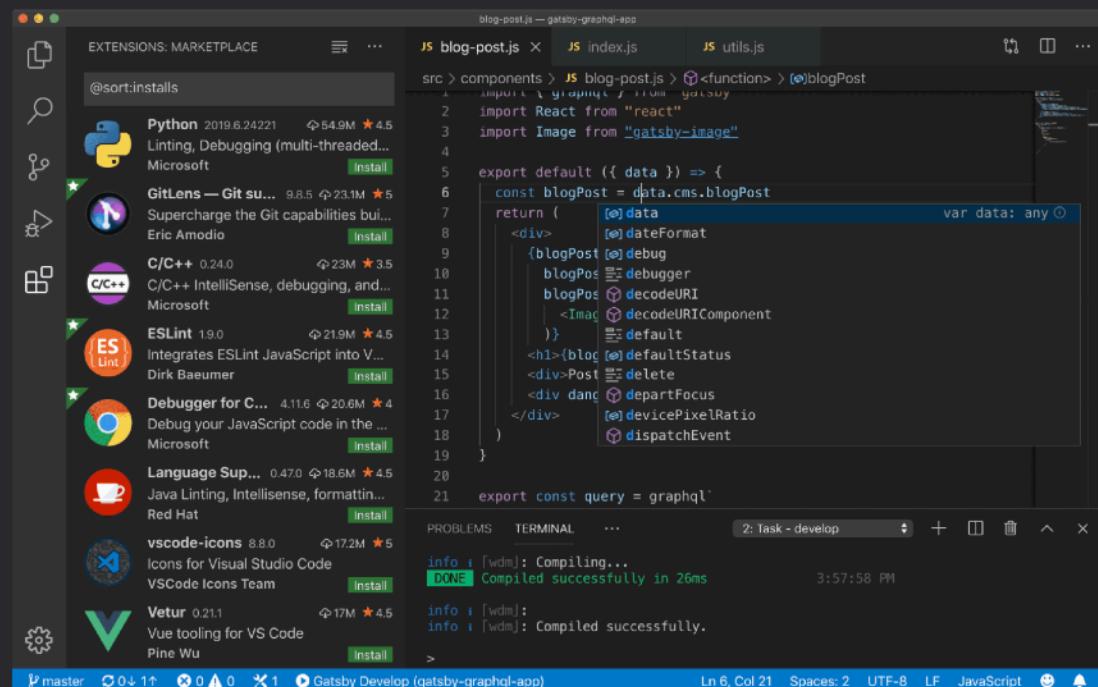
Free. Built on open source. Runs everywhere.

[Download for Mac](#)

Stable Build

[Other platforms and Insiders Edition](#)

By using VS Code, you agree to its  
[license](#) and [privacy statement](#).



<https://code.visualstudio.com/>

**What does HTML stand for?**

**(H)yper (T)ext (M)arkup (L)anguage**

**(M)arkup is a collection of “tags”.**

NOUN

HTML

<html>, <head>, <title>, <meta>, <style>, <script>, <body>, <header>, <footer>, <nav>, <main>, <section>, <aside>, <p>, <br>, <a>, <ol>, <ul>, <li>, <table>, <div>, <form>

Elements  
has  
attributes

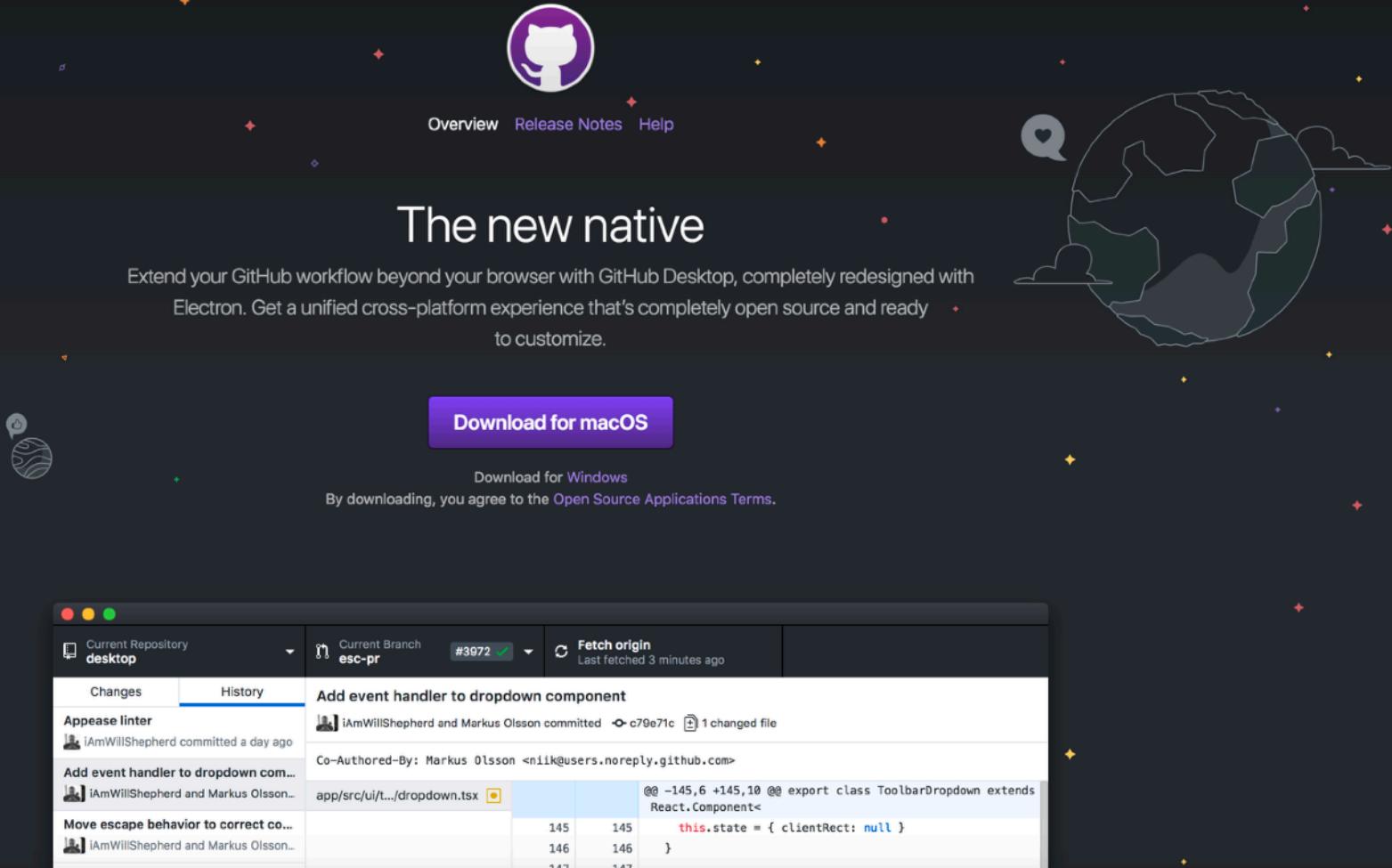
(e.g. color, background-color, position, font-family, font-size, font-style, display, width, margin, border, padding)

**First hands-on exercise:**

**<https://www.wikihow.com/Create-a-Simple-Web-Page-with-HTML> (Step 1 to Step 13)**

**Congratulation. You created your 1st html document  
(example1.html). Now it's time to upload it to your remote  
Github account space.**

# **Free Web Hosting on the Web**



The new native

Extend your GitHub workflow beyond your browser with GitHub Desktop, completely redesigned with Electron. Get a unified cross-platform experience that's completely open source and ready to customize.

Download for macOS

Download for Windows

By downloading, you agree to the [Open Source Applications Terms](#).

Current Repository: desktop

Current Branch: esc-pr #3972

Fetch origin: Last fetched 3 minutes ago

Changes

Add event handler to dropdown component

iAmWillShepherd and Markus Olsson committed c79e71c 1 changed file

Co-Authored-By: Markus Olsson <nnik@users.noreply.github.com>

app/src/ui/t.../dropdown.tsx

	145	145	this.state = { clientRect: null }
	146	146	}
	147	147	

<https://desktop.github.com/>



# Built for developers

GitHub is a development platform inspired by the way you work. From open source to business, you can host and review code, manage projects, and build software alongside 40 million developers.

Username

Email

Password

Make sure it's **at least 15 characters** OR **at least 8 characters including a number and a lowercase letter**. [Learn more](#).

[Sign up for GitHub](#)

By clicking "Sign up for GitHub", you agree to our [Terms of Service](#) and [Privacy Statement](#). We'll occasionally send you account related emails.

<https://github.com/>

1. Sign-up for a **Github** account (the free account)
2. Install **Github Desktop** and create a new repository  
(You can treat the repository as a folder) by creating a new folder associated with it.

Current Repository  
ybsuen.github.io

Current Branch  
**master**

Fetch origin  
Last fetched 11 hours ago

Filter

Add ▾

- Clone Repository...
- Create New Repository...
- Add Existing Repository...**

# NO local changes

There are no uncommitted changes in this repository. Here are some friendly suggestions for what to do next.



Open the repository  
in your external  
editor

Select your editor in  
Preferences

Repository menu or  
⌘ ⌘ A

[Open in Visual Studio Code](#)

View the files of your repository  
in Finder

Repository menu or ⌘ ⌘ F

[Show in Finder](#)

Current Repository  
ybsuen.github.io

Current Branch  
master

Fetch origin  
Last fetched 11 hours ago

Filter

Add ▾

# No local changes

es in this  
suggestions

Open in Visual Studio Code

Add Local Repository

Local Path

repository path Choose...

Cancel Add Repository

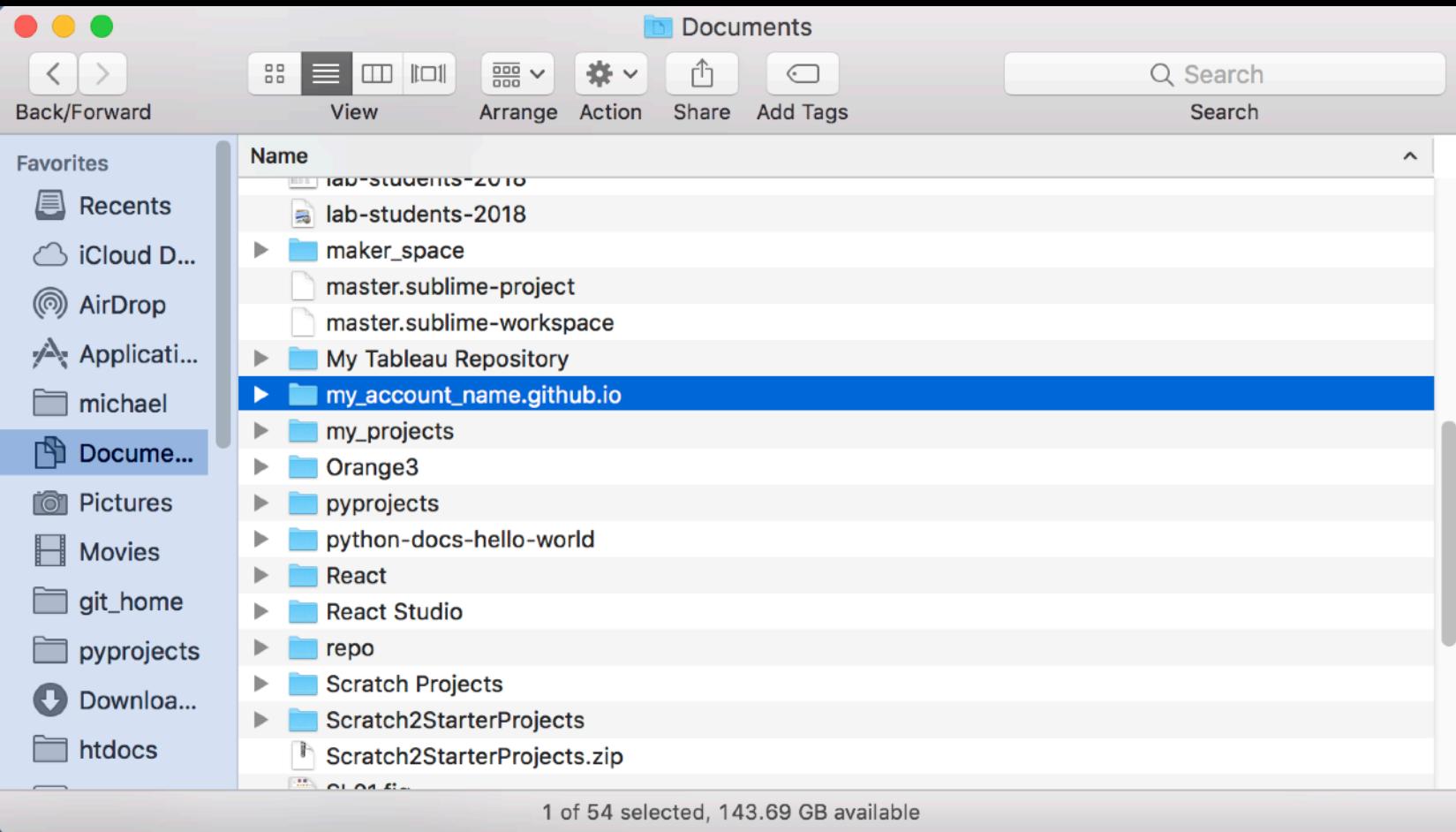
Repository menu or ⌘ ⌄ A

View the files of your repository  
in Finder

Repository menu or ⌘ ⌄ F Show in Finder

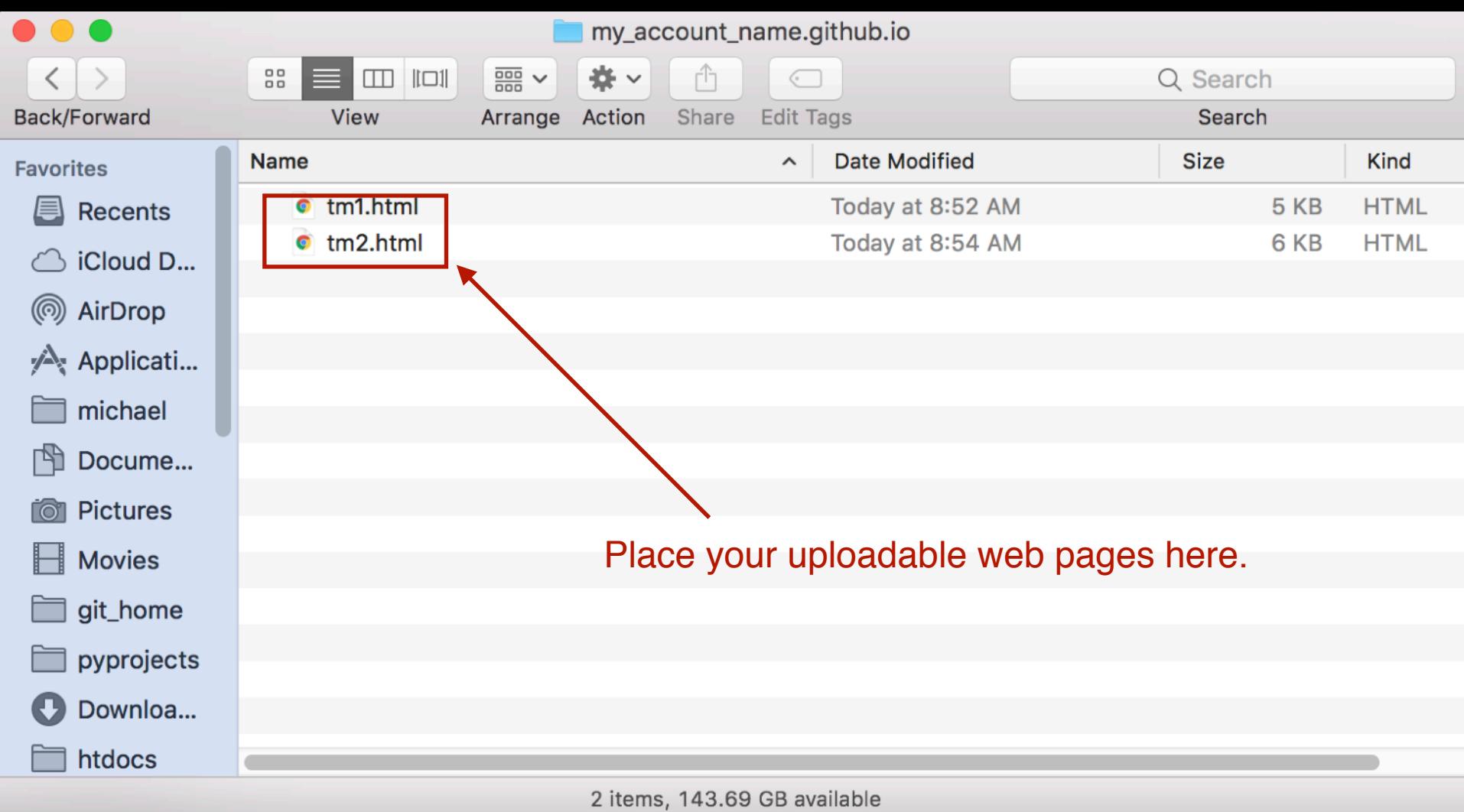
The screenshot shows the GitHub desktop application interface. At the top, there are status indicators for the current repository (ybsuen.github.io), current branch (master), and fetch origin (last fetched 11 hours ago). Below this is a search bar labeled 'Filter' and an 'Add' button with a dropdown arrow. The main area displays the message 'No local changes'. In the foreground, a modal window titled 'Add Local Repository' is open. It has a 'Local Path' section containing a text input field with the placeholder 'repository path' and a 'Choose...' button. At the bottom of the modal are 'Cancel' and 'Add Repository' buttons. The background of the application shows a repository overview with file icons and a 'View the files of your repository in Finder' section.





tm1.html

tm2.html



Current Repository my\_account\_name.github.io

Current Branch master

Publish repository Publish this repository to GitHub

Changes 2

History

tm1.html

2 changed files

tm1.html

tm2.html

Summary (required)

Description

Commit to master

Committed just now Initial commit

Undo

```
@@ -0,0 +1,111 @@
1+<!DOCTYPE html>
2+<html>
3+
4+    <head>
5+        <meta charset="utf-8">
6+        <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=0">
7+        <meta name="description" content="">
8+        <meta name="author" content="">
9+        <title>Cover Template for Bootstrap</title>
10+       <!-- Bootstrap core CSS -->
11+       <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css">
12+       <style>
13+           .container {
14+               background-color:white;

```

Current Repository my\_account\_name.github.io

Current Branch master

Publish repository Publish this repository to GitHub

Changes 2

History

tm1.html

2 changed files

tm1.html

tm2.html

SL Prepare repository for displaying ML and NLP demo.

Prepare repository for displaying ML and NLP demo.

Enter the topic and description, then press the “Commit to Master” button.

Commit to master

Committed a minute ago

Initial commit

Undo

tm1.html

```
@@ -0,0 +1,111 @@
+<!DOCTYPE html>
+<html>
+
+<head>
+    <meta charset="utf-8">
+    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
+    <meta name="description" content="">
+    <meta name="author" content="">
+    <title>Cover Template for Bootstrap</title>
+    <!-- Bootstrap core CSS -->
+    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css">
+<style>
+.container {
background-color:white;
}
```

Current Repository  
my\_account\_name.github.io

Current Branch  
master

Publish repository  
Publish this repository to GitHub

Changes History

0 changed files

SL Summary (required)

Description

Commit to master

Committed just now  
Prepare repository for displaying ML and NLP demo.

Undo

No local changes

There are no uncommitted changes in this repository. Here are some friendly suggestions for what to do next.

Publish your repository to GitHub

This repository is currently only available on your local machine. By publishing it on GitHub you can share it, and collaborate with others.

Always available in the toolbar for local repositories or ⌘ P

Press the “Publish repository” button to upload.

Open the repository

Current Repository my\_account\_name.github.io

Current Branch master

Publish repository Publish this repository to GitHub

Changes History

0 changes

SL Summary (required)

Description

Commit to master

Committed just now Prepare repository for displaying ML and NLP demo.

Undo

Open the repository

**Publish Repository**

Keep this code private

**Uncheck the keep this code private button.**

Cancel Publish Repository

for local repositories or ⌘ P

Current Repository my\_account\_name.github.io

Current Branch master

Publish repository Publish this repository to GitHub

Changes History

0 changes

SL Summary (required)

Description

Commit to master

Committed just now Prepare repository for displaying ML and NLP demo.

Undo

Open the repository

**Publish Repository**

**GitHub.com** GitHub Enterprise Server

Name my\_account\_name.github.io

Description

Keep this code private

**Uncheck the keep this code private button and press “Publish Repository” to share.**

Cancel Publish Repository

for local repositories or **⌘ P**

Publish repository



Search or jump to...

Pull requests Issues Marketplace Explore



Bernard Y S Suen

ybsuen

Life-long learner with a passion for interdisciplinary learning in advancing digital humanities.

Edit profile

58 followers · 0 following · 1 star

Chinese University of Hong Kong

Overview

Repositories 18

Projects

Packages

Find a repository...

Type: All

Language: All

New

my\_account\_name.github.io

HTML Updated 17 seconds ago

Star

ybsuen.github.io

Personal Website

Jupyter Notebook 6 MIT License Updated 2 days ago

Star



Learning-Garden

Learning Garden Repo

HTML Updated 10 days ago

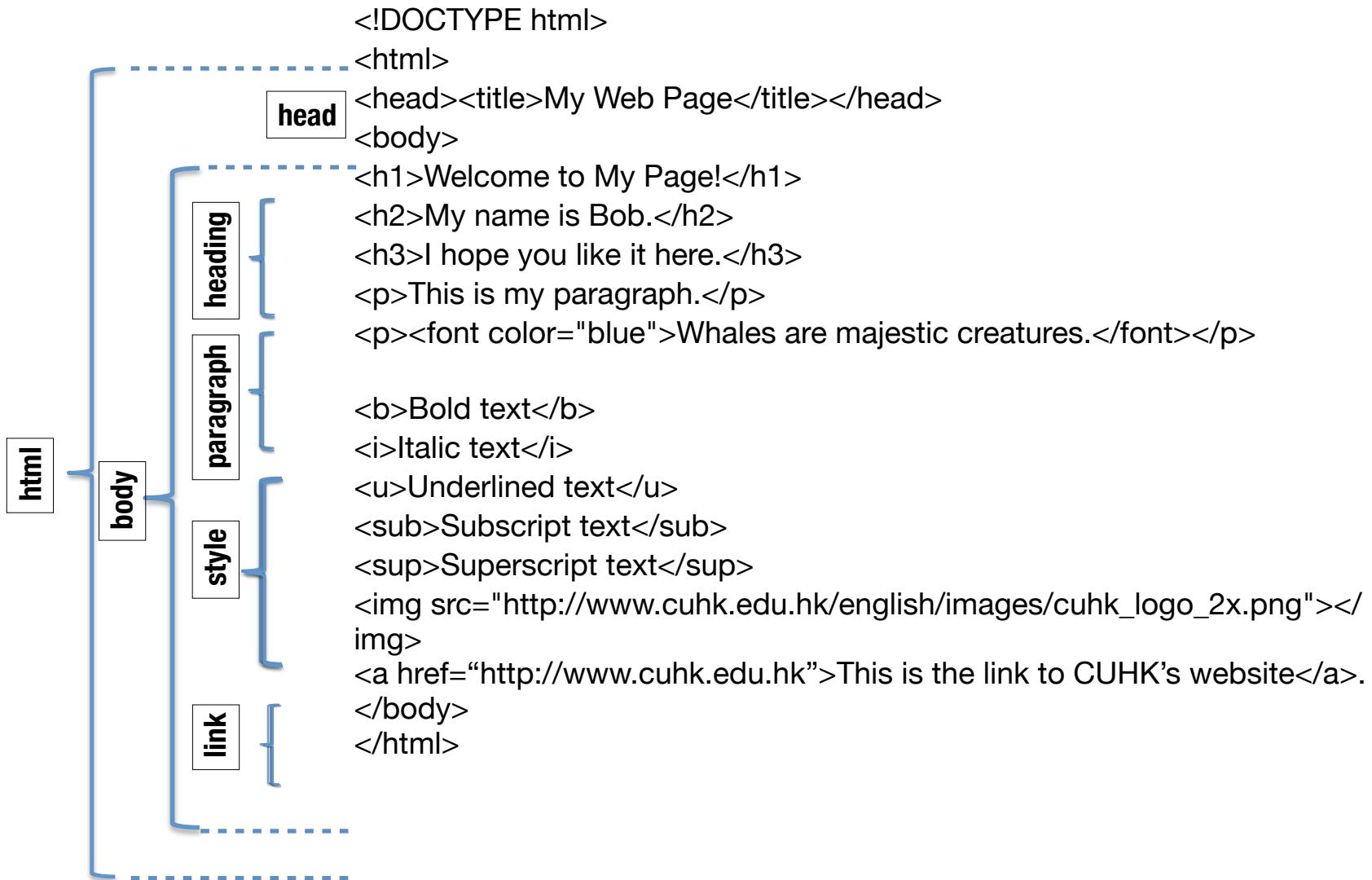
Star



maker\_space

Demo for CUHK Maker Space Workshop

Star



## Browser View

# Welcome to My Page!

**My name is Bob.**

I hope you like it here.

This is my paragraph.

[Whales are majestic creatures.](#)



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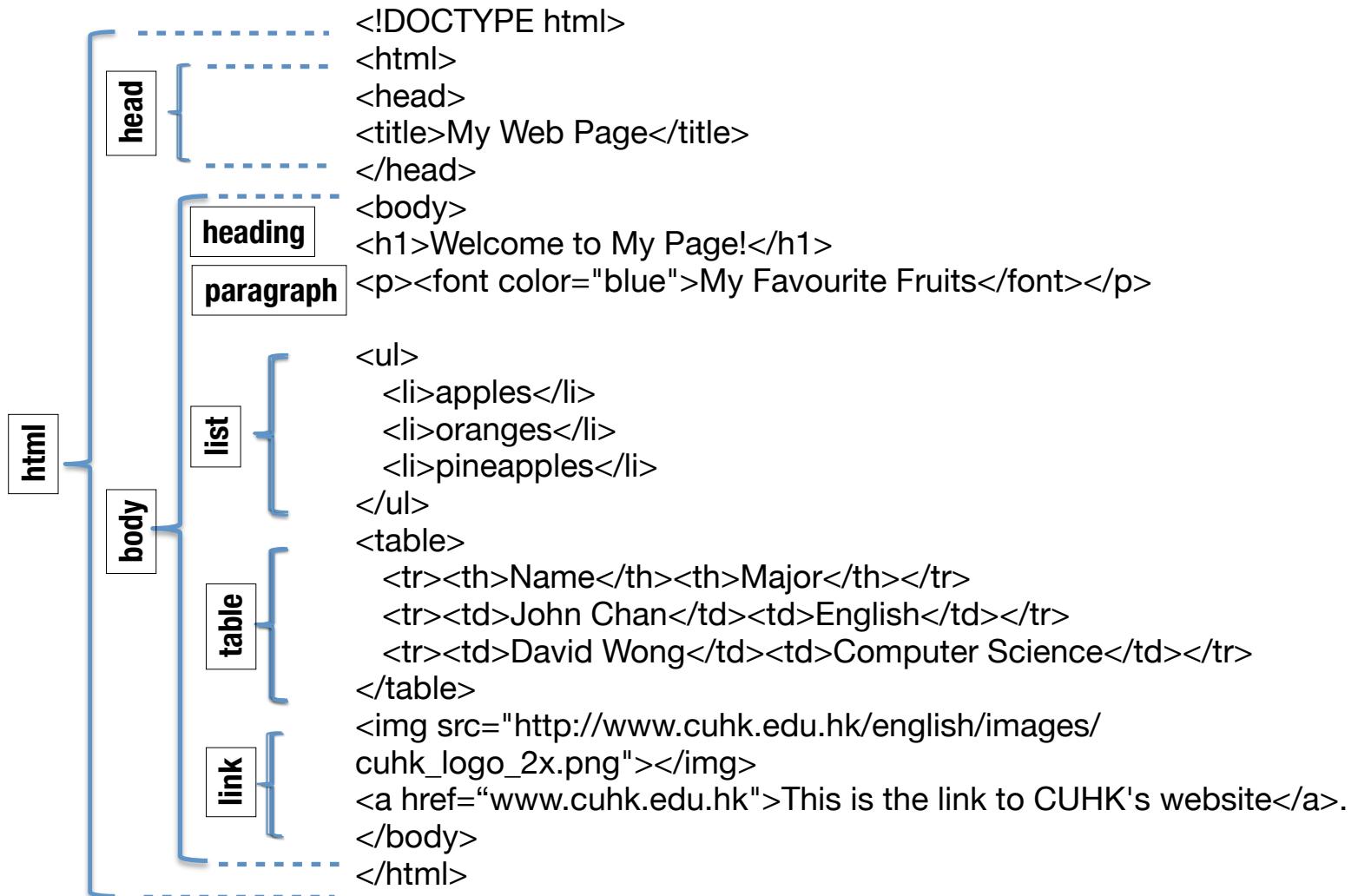
[This is the link to CUHK's website.](#)

[Bold text](#) [Italic text](#) [Underlined text](#) [Subscript text](#) [Superscript text](#)

---

**Second hands-on exercise:**

**<https://coder-coder.com/how-to-make-simple-website-html/> (Add the list and table codes into example2.html)**



```
<meta charset="UTF-8">
```

## Browser View

# Welcome to My Page!

### My Favourite Fruits

- apples
- oranges
- pineapples

Name              Major

John Chan   English

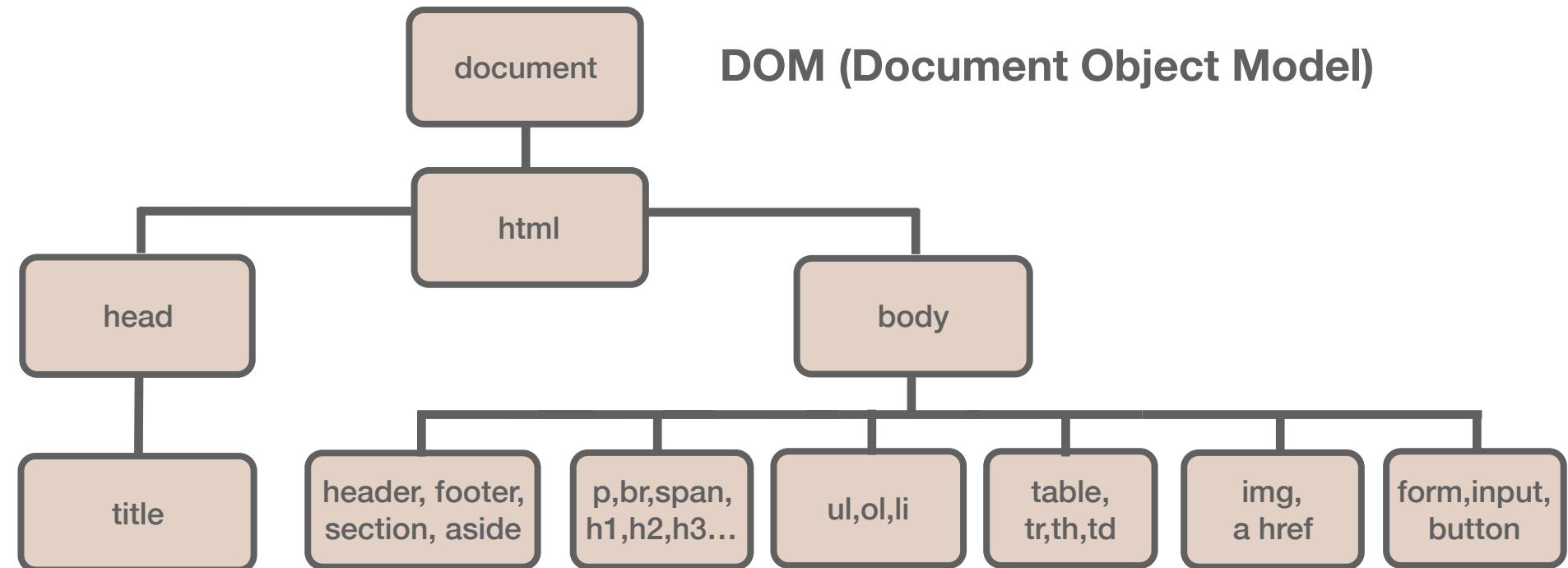
David Wong Computer Science



香港中文大學  
The Chinese University of Hong Kong

[This is the link to CUHK's website.](#)

# DOM (Document Object Model)



## Decomposition

Break a problem down into smaller parts.

# The Grammar of HTML Elements

- Starts with a start tag (e.g. <p>)
- End with an end tag (e.g. </p>)
- Elements content is everything between the start and end tags
- Some elements have empty content and no end tag (e.g. <br>)
- Most elements have attributes

**What does CSS stand for?**

**(C)ascading (S)tyle (S)heet**

**CSS Demonstration:**

**[https://www.w3schools.com/css/css\\_intro.asp](https://www.w3schools.com/css/css_intro.asp)**

## Browser View

### Welcome to My Page!

My name is Bob.

I hope you like it here.

This is my paragraph.

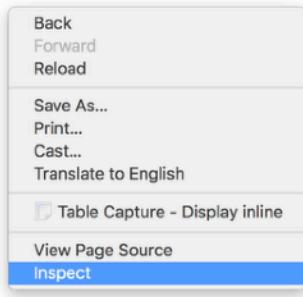
Whales are majestic creatures.



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[This is the link to CUHK's website.](#)

[Bold text](#) [Italic text](#) [Underlined text](#) [Subscript text](#) [Superscript text](#)



← Use right mouse click to trigger pop-up window

# Browser View

## Welcome to My Page!

My name is Bob.

I hope you like it here.

This is my paragraph.

Whales are majestic creatures.



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[Bold text](#) [Italic text](#) [Underlined text](#) [Subscript text](#) [Superscript text](#)

[This is the link to CUHK's website.](#)

The screenshot shows the Chrome DevTools interface with the 'Elements' tab selected. The left panel displays the HTML structure:

```
<!doctype html>
...<html> == $0
▶ <head>...
▶ <body>...
</html>
```

The right panel shows the 'Styles' tab of the element inspector for the `html` element, which has a red border. The computed styles for `html` include:

```
element.style {
}
html { user agent stylesheet
  display: block;
}
```

A detailed breakdown of the element's bounding box is shown in the bottom right corner:

margin	-
border	-
padding	-
1679 x 351.500	
width	-
height	-

## Browser View

### Welcome to My Page!

**My name is Bob.**

I hope you like it here.

This is my paragraph.

Whales are majestic creatures.



香港中文大學  
The Chinese University of Hong Kong

This is the link to CUHK's website.

Bold text Italic text Underlined text Subscript text Superscript text

Screenshot of the Chrome DevTools Elements tab showing the page structure and CSS styles applied.

The page structure is as follows:

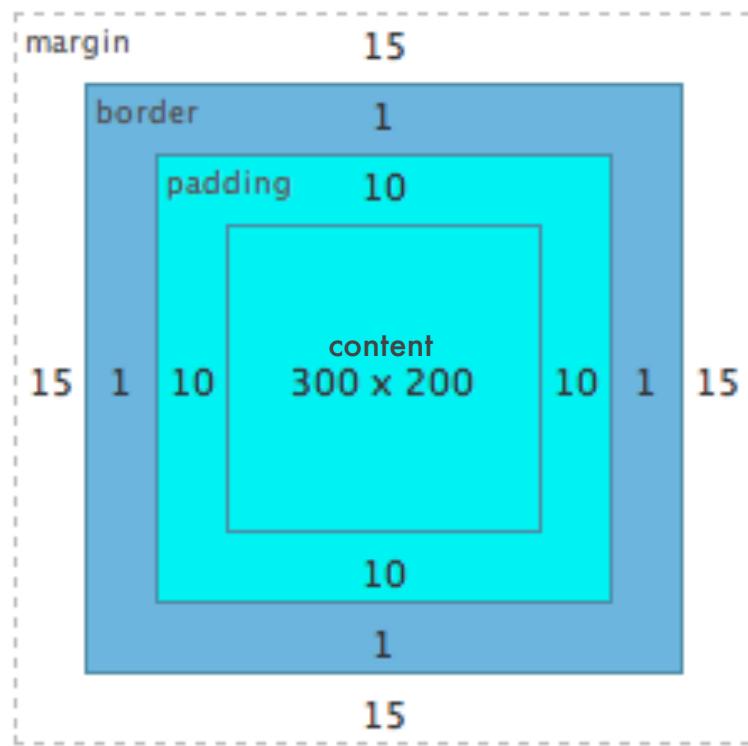
```
<!doctype html>
<html>
  <head>
    <title>My Web Page</title>
  </head>
  <body>
    <h1 style="background-color: #CA4D4C; color: #fefdff; ">Welcome to My Page!</h1>
    <h2 style="border-style: solid; border-width: 1px;">My name is Bob.</h2> == $0
    <h3>I hope you like it here.</h3>
    <p>This is my paragraph.</p>
    ><p>...</p>
    <b>Bold text</b>
    <i>Italic text</i>
  </body>
</html>
```

The CSS styles applied are:

```
element.style {
  border-style: solid;
  border-width: 1px;
}

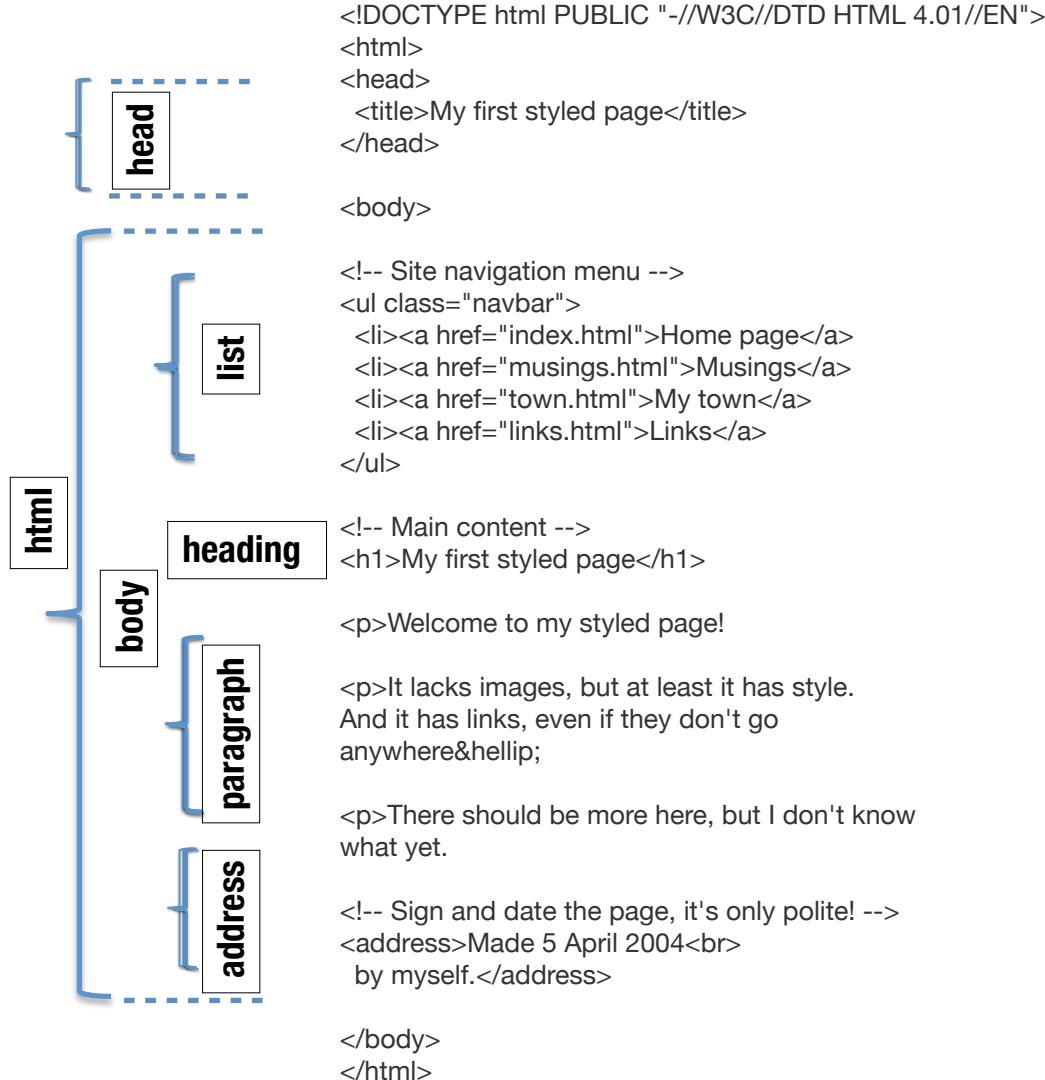
h2 {
  user agent stylesheet
  display: block;
  font-size: 1.5em;
  -webkit-margin-before: 0.83em;
  -webkit-margin-after: 0.83em;
  -webkit-margin-start: 0px;
  -webkit-margin-end: 0px;
  font-weight: bold;
}
```

# The Box Model



**Third hands-on exercise:**

**<https://www.w3.org/Style/Examples/011/firstcss.en.html>**



## Browser View

- [Home page](#)
- [Musings](#)
- [My town](#)
- [Links](#)

# My first styled page

Welcome to my styled page!

It lacks images, but at least it has style. And it has links, even if they don't go anywhere...

There should be more here, but I don't know what yet.

*Made 5 April 2004  
by myself.*

## Browser View

# My first styled page

Welcome to my styled page!

It lacks images, but at least it has style. And it has links, even if they don't go anywhere...

There should be more here, but I don't know what yet.

*Made 5 April 2004  
by myself.*

The screenshot shows a browser developer tools window with the following tabs:

- Elements
- Console
- Sources
- Network
- Performance
- Memory
- Application
- Security
- Audits
- JavaScript Profiler

The **Elements** tab displays the HTML structure:

```
<!doctype html PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
  <head>...</head>
  <body>
    <!-- Site navigation menu -->
    <ul class="navbar">...</ul>
    <!-- Main content -->
    ... <h1 style="border-style: solid; border-width: 7px; border-color: black; padding: 20px; text-align: center; background-color: cadetblue; color: white;">
      "My first styled page</h1> == $0
    <p>Welcome to my styled page!
  <html> <body> <h1>
```

The **Styles** tab shows the CSS rules applied to the `h1` element:

```
element.style {
  border-style: solid;
  border-width: 7px;
  border-color: black;
  padding: 20px;
  text-align: center;
  background-color: cadetblue;
  color: white;
}

h1 { user agent stylesheet
  display: block;
  font-size: 2em;
  -webkit-margin-before: 0.67em;
  -webkit-margin-after: 0.67em;
}
```

The **Computed** tab shows the final computed styles for the `h1` element.

```
<body>
<!-- Site navigation menu -->
<ul class="navbar">
<li><a href="index.html">Home page</a>
<li><a href="musings.html">Musings</a>
<li><a href="town.html">My town</a>
<li><a href="links.html">Links</a>
</ul>
<!-- Main content -->
<h1 style="
    border-style: solid;
    border-width: 7px;
    border-color: black;
    padding: 20px;
    text-align: center;
    background-color: cadetblue;
    color: white;
">My first styled page</h1>
<p>Welcome to my styled page!
<p>It lacks images, but at least it has style.
And it has links, even if they don't go
anywhere&hellip;
<p>There should be more here, but I don't know
what yet.
<!-- Sign and date the page, it's only polite! -->
<address>Made 5 April 2004<br>
    by myself.</address>
</body>
</html>
```

## In-line style definition

# Browser View

## My first styled page

Welcome to my styled page!

It lacks images, but at least it has style. And it has links, even if they don't go anywhere...

There should be more here, but I don't know what yet.

*Made 5 April 2004  
by myself.*

The screenshot shows the Chrome DevTools interface with the 'Elements' tab selected. On the left, the DOM tree displays the structure of the page, including the root `<html>`, `<head>`, `<body>` containing a `<ul>` with a class of `"navbar"`, and the main content area with an `<h1>` heading and several `<p>` paragraphs. The `<address>` tag is also present. On the right, the 'Styles' tab of the DevTools is active, showing the computed styles for the `h1` element. The `element.style` section shows the following CSS:

```
h1 { border-style: solid; border-width: 7px; border-color: black; padding: 20px; text-align: center; background-color: cadetblue; color: white; }
```

Below this, the user agent stylesheet section shows:

```
h1 { display: block; font-size: 2em; }
```

The status bar at the bottom of the DevTools window shows the path `html body h1`.

```
<head><title>Example 3</title>
<style type="text/css">
border-style: solid;
border-width: 7px;
border-color: black;
padding: 20px;
text-align: center;
background-color: cadetblue;
color: white;
</style>
</head>
<body>
<!-- Site navigation menu --&gt;
&lt;ul class="navbar"&gt;
&lt;li&gt;&lt;a href="index.html"&gt;Home page&lt;/a&gt;
&lt;li&gt;&lt;a href="musings.html"&gt;Musings&lt;/a&gt;
&lt;li&gt;&lt;a href="town.html"&gt;My town&lt;/a&gt;
&lt;li&gt;&lt;a href="links.html"&gt;Links&lt;/a&gt;
&lt;/ul&gt;
<!-- Main content --&gt;
&lt;h1&gt;My first styled page&lt;/h1&gt;
&lt;p&gt;Welcome to my styled page!
&lt;p&gt;It lacks images, but at least it has style.
And it has links, even if they don't go anywhere&amp;hellip;
&lt;p&gt;There should be more here, but I don't know what yet.
<!-- Sign and date the page, it's only polite! --&gt;
&lt;address&gt;Made 5 April 2004&lt;br&gt;by myself.&lt;/address&gt;
&lt;/body&gt;
&lt;/html&gt;</pre>
```

## Internal style-sheet definition

## Browser View

- [Home page](#)
- [Musings](#)
- [My town](#)
- [Links](#)

# My first styled page

Welcome to my styled page!

It lacks images, but at least it has style. And it has links, even if they don't go anywhere...

There should be more here, but I don't know what yet.

*Made 5 April 2004  
by myself.*

The screenshot shows a browser window with developer tools open. The title bar includes tabs for Elements, Console, Sources, Network, Performance, Memory, Application, Security, Audits, and JavaScript Profiler. The Elements tab is active, displaying the page's HTML structure. A dashed red box highlights the `<link rel="stylesheet" type="text/css" href="style.css">` tag within the head section. The main content area shows the page's content: a header, a navigation menu, and some placeholder text. The right side of the interface features the Styles panel, which lists styles for various elements. The `h1` element is selected, showing its styles from both the external `style.css` file and the user agent stylesheet. The styles listed include border, padding, text-align, background-color, and color.

```
<html>
  <head>
    <title>My first styled page</title>
    <link rel="stylesheet" type="text/css" href="style.css">
  </head>
  <body>
    <!-- Site navigation menu -->
    <ul class="navbar">...</ul>
    <!-- Main content -->
    ... <h1>My first styled page</h1> == $0
    <p>Welcome to my styled page!
    </p>
    > <p>...</p>
    > <p>...</p>
    > <address>...</address>
  </body>

```

Styles	Computed
element.style {	:hover .cls +
h1 {	style.css:1
border-style: solid;	
border-width: 7px;	
border-color: black;	
padding: 20px;	
text-align: center;	
background-color: cadetblue;	
color: white;	
h1 {	user agent stylesheet
display: block;	
font-size: 2em;	

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
<head>
  <title>My first styled page</title>
  <link rel="stylesheet" type="text/css" href="style.css">
</head>
<body>
  <!-- Site navigation menu -->
  <ul class="navbar">
    <li><a href="index.html">Home page</a>
    <li><a href="musings.html">Musings</a>
    <li><a href="town.html">My town</a>
    <li><a href="links.html">Links</a>
  </ul>
  <!-- Main content -->
  <h1>My first styled page</h1>
  <p>Welcome to my styled page!
  <p>It lacks images, but at least it has style.
  And it has links, even if they don't go
  anywhere&hellip;
  <p>There should be more here, but I don't know what yet.
  <!-- Sign and date the page, it's only polite! -->
  <address>Made 5 April 2004<br> by myself.</address>
</body>
</html>
```

## External style definition

## 3 Ways of Style Definition + Cascading Rule

- Inline style definition (Highest priority)
- Internal style definition (Middle priority)
- External style definition (Lowest priority)
- Style defined last has priority over style defined earlier

Base  
Selector

ADJECTIVE

CSS

Declaration

Declaration

body

{ color:purple; font-size:12px; }

Property

Value

Property

Value

**Third hands-on exercise:**

**<https://www.w3.org/Style/Examples/011/firstcss.en.html>**  
**(Step 1 to 5)**

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
<head>
  <title>My first styled page</title>
</head>
<body>
  <!-- Site navigation menu -->
  <ul class="navbar">
    <li><a href="index.html">Home page</a>
    <li><a href="musings.html">Musings</a>
    <li><a href="town.html">My town</a>
    <li><a href="links.html">Links</a>
  </ul>
  <!-- Main content -->
  <h1>My first styled page</h1>

  <p>Welcome to my styled page!
  <p>It lacks images, but at least it has style. And it has links, even if they don't go anywhere&hellip;
  <p>There should be more here, but I don't know what yet.

  <!-- Sign and date the page, it's only polite! -->
  <address>Made 5 April 2004<br>
    by myself.</address>
</body>
</html>
```

## Code View - Step 1

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
<head>
<title>My first styled page</title>
<style type="text/css">
body {
    color: purple;
    background-color: #d8da3d }
</style>
</head>
<body>
<!-- Site navigation menu --&gt;
<ul class="navbar">
- <a href="index.html">Home page</a>
- <a href="musings.html">Musings</a>
- <a href="town.html">My town</a>
- <a href="links.html">Links</a>


<!-- Main content --&gt;
:
:
&lt;/body&gt;
&lt;/html&gt;</pre>
```

## Code View - Step 2 (Add colours)

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
<head>
<title>My first styled page</title>
<style type="text/css">
body {
    color: purple;
    background-color: #d8da3d }
h1 {
    font-family: Helvetica, Geneva, Arial,
    SunSans-Regular, sans-serif }
</style>
</head>
<body>
<!-- Site navigation menu --&gt;
&lt;ul class="navbar"&gt;
    &lt;li&gt;&lt;a href="index.html"&gt;Home page&lt;/a&gt;
    &lt;li&gt;&lt;a href="musings.html"&gt;Musings&lt;/a&gt;
    &lt;li&gt;&lt;a href="town.html"&gt;My town&lt;/a&gt;
    &lt;li&gt;&lt;a href="links.html"&gt;Links&lt;/a&gt;
&lt;/ul&gt;
<!-- Main content --&gt;
    :
    :
&lt;/body&gt;
&lt;/html&gt;</pre>
```

### Code View - Step 3 (Add fonts)

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN">
<html>
<head>
<title>My first styled page</title>
<style type="text/css">
body {
    color: purple;
    background-color: #d8da3d }
ul.navbar {
    position: absolute;
    top: 2em;
    left: 1em;
    width: 9em }
h1 {
    font-family: Helvetica, Geneva, Arial,
    SunSans-Regular, sans-serif }
</style>
</head>
<body>
<!-- Site navigation menu --&gt;
&lt;ul class="navbar"&gt;
    &lt;li&gt;&lt;a href="index.html"&gt;Home page&lt;/a&gt;
    &lt;li&gt;&lt;a href="musings.html"&gt;Musings&lt;/a&gt;
    &lt;li&gt;&lt;a href="town.html"&gt;My town&lt;/a&gt;
    &lt;li&gt;&lt;a href="links.html"&gt;Links&lt;/a&gt;
&lt;/ul&gt;
<!-- Main content --&gt;
:
:</pre>
```

## Code View - Step 4 (Add navbar)

```
<html>
<head>
    <title>My first styled page</title>
    <style type="text/css">
        :
        ul.navbar {
            position: absolute;
            top: 2em;
            left: 1em;
            width: 9em }
        h1 {
            font-family: Helvetica, Geneva, Arial,
            SunSans-Regular, sans-serif }
        ul.navbar li {
            background: white;
            margin: 0.5em 0;
            padding: 0.3em;
            border-right: 1em solid black }
        ul.navbar a {
            text-decoration: none }
        a:link {
            color: blue }
        a:visited {
            color: purple }
    </style>
        :
```

## Code View - Step 5 (Styling the navbar)

Pattern

Discover similarities between things.

Custom (e.g. class or id)  
Selector

ADJECTIVE

CSS

Declaration

Declaration

.box

#nav

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

class

id

Property

Value

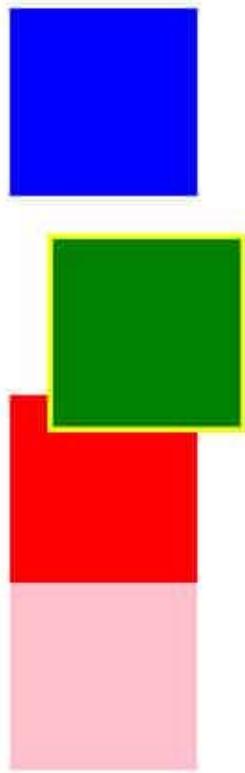
Property

Value

**Put the Internal Style Definition into an External File**

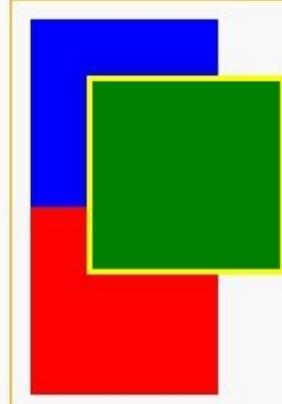
## **4 Ways of Positioning Display Box**

- Static - default position of a box following the normal document flow (not affected by top, left, right, bottom pos.)
- Fixed - it always stay on the same location as defined by the positions (top and left or bottom or right) even the page is scrolled. Unlike absolute, its parent is the viewport.
- Relative - relative when used with top and left position pair or bottom and right position pair will allow the object box to be moved to a new location relative to its current position (not container).
- Absolute - take the positioning out of the document flow and place it at a location (top and left position) as defined in relationship to its containing (or parent) element (context). The container/parent should be set to relative.



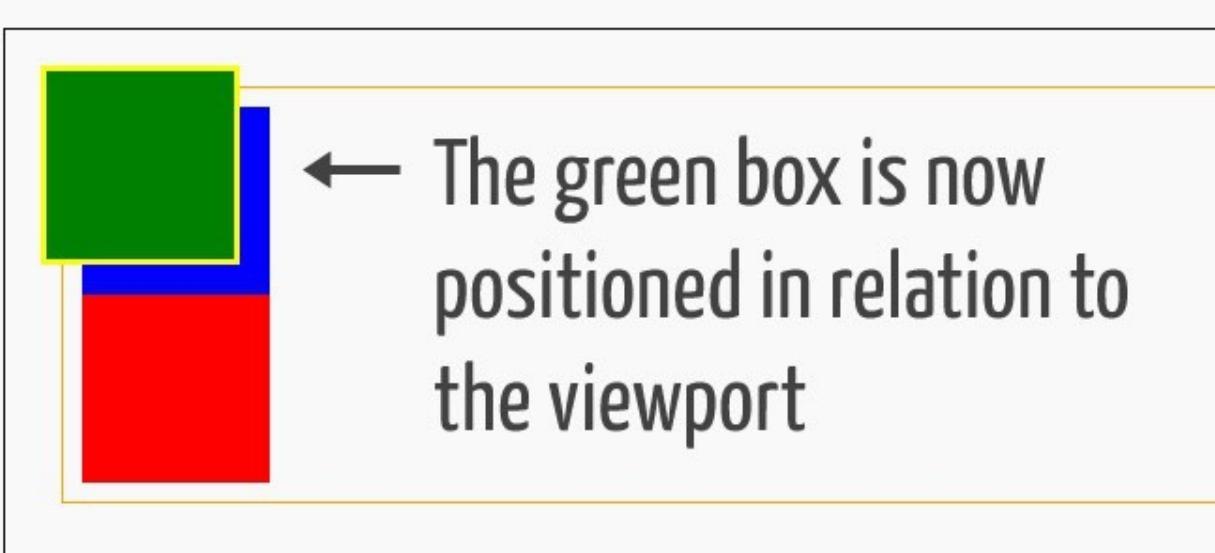
The second box is set to “position: relative” and is offset using top and left values.

Source: CSS Positioning: A Comprehensive Look  
(<http://blog.teamtreehouse.com/css-positioning>)

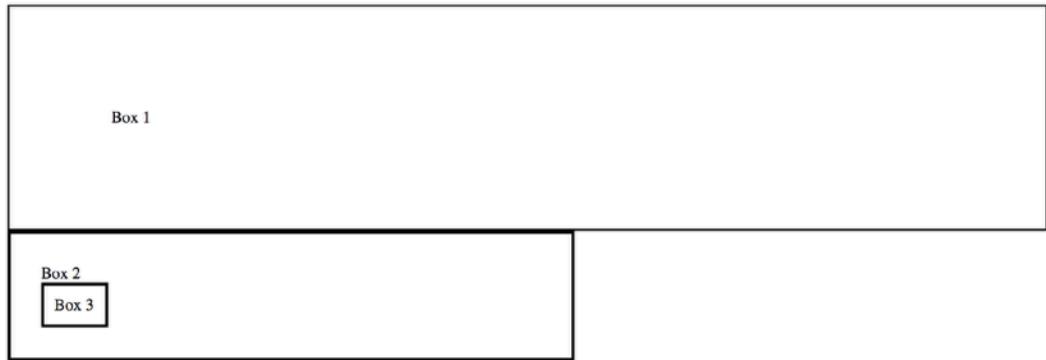


The second box is set to “position: absolute” and is offset in relation to the “.container” element

Source: CSS Positioning: A Comprehensive Look  
(<http://blog.teamtreehouse.com/css-positioning>)



Source: CSS Positioning: A Comprehensive Look  
(<http://blog.teamtreehouse.com/css-positioning>)



**A Simple Example**

# The Grammar of CSS

- Styles define how to display HTML elements
- Each style description is made up of a Selector and Declaration
- Selector defines which HTML element should be used for display and the declaration defines how
- Each declaration contains properties and values
- There are base and custom selectors (ID and CLASS are custom selectors)
- Style definition can be placed inline, in the head section or in an external file (e.g. style.css)

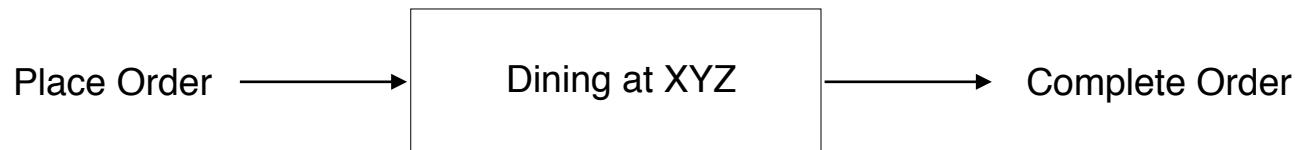
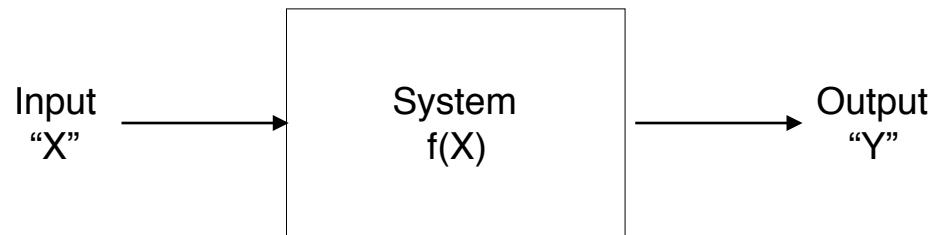
VERB

JS

**JavaScript = act on a HTML tag, CSS property or respond to an event triggered by user action**

**What is JavaScript? How does it fit into computational thinking?**

$$Y = f(X)$$



Example: Cell manipulation in Excel with some cells controlling inputs while others outputs.

**JavaScript provides us with the capabilities  
to build system and transform data.**

**Learning JavaScript with Google Blockly:**

**[https://blockly-demo.appspot.com/static/demos/code/  
index.html](https://blockly-demo.appspot.com/static/demos/code/index.html)**

Blocks    JavaScript    Python    PHP    Lua    Dart    XML    ✖️ ➔

Logic  
Loops  
Math  
Text  
Lists  
Colour  
Variables  
Functions

# From Google Blockly to JavaScript, Python, PHP, etc.

The diagram illustrates the process of translating code blocks into various programming languages. It features a central circle labeled "Google Blockly". An arrow points from the left towards the circle, labeled "Input 輸入 Blocks". Another arrow points away from the circle to the right, labeled "Output 輸出 Codes".

**Input 輸入 Blocks**

**Output 輸出 Codes**

Blockly interface elements visible on the right include a trash can icon, a play button, and icons for loops, math, text, lists, colour, variables, and functions.

# **Data Types in JavaScript**

## **Declaring a variable and its data type:**

- **String** - e.g. **var str\_var = “This is a string.”;**
- **Numeric** - e.g. **var num\_var = 3.2;**
- **Boolean** - e.g. **var bol\_var = true;**

## **Basic Input/Output Commands**

- **Entering a variable** - e.g. `var x = prompt("Enter x value");`
- **Displaying a variable** - e.g. `alert("x = " + x_var);`

# **JavaScript Functions that Transform Input into Output**

## Basic Structure of a JavaScript Function

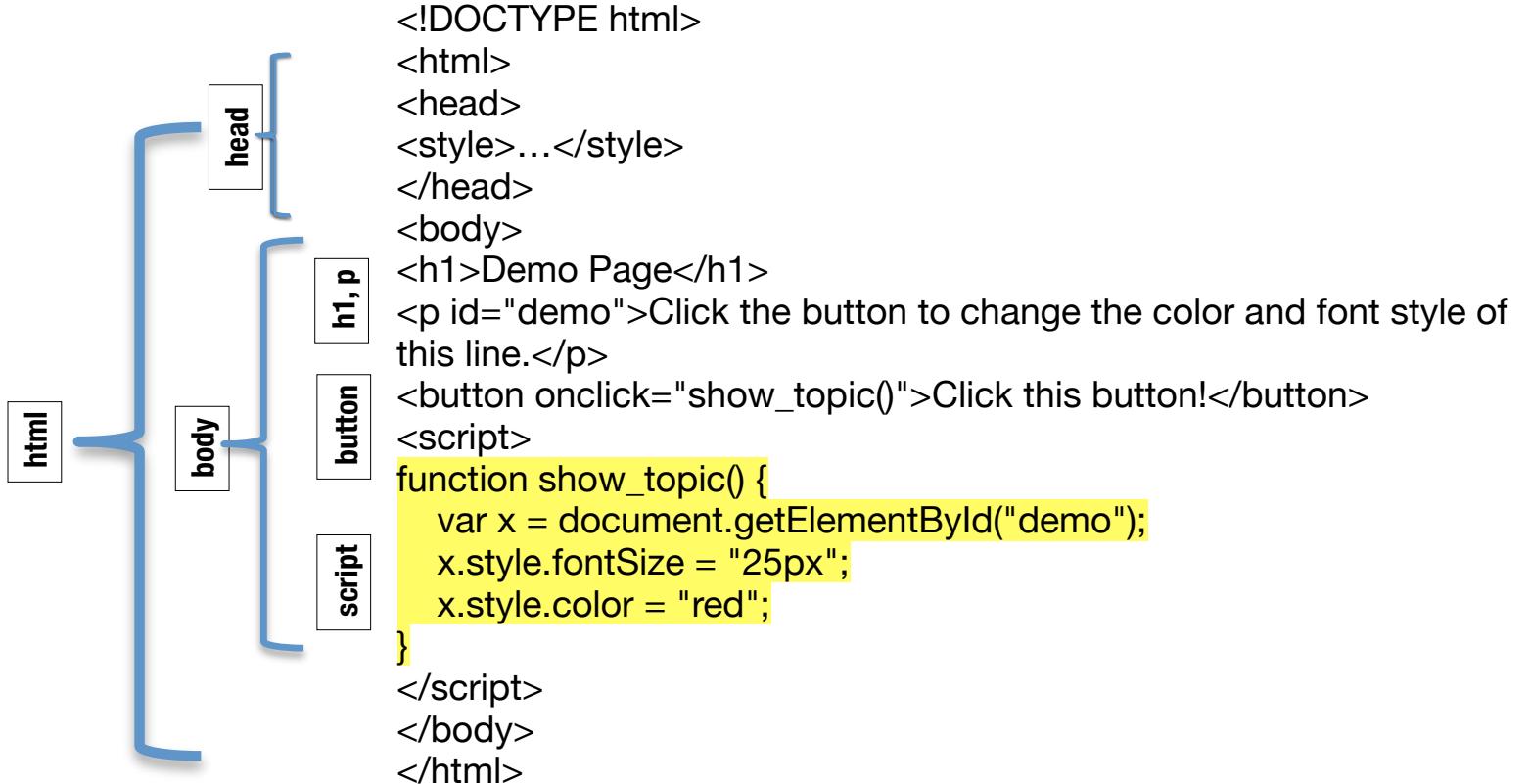
```
<script>
    function function_name(parameter1, parameter 2...) {
        Embed data type variables, input/output commands and
        logical and mathematical operators in the function to
        compute and return values.

    }
</script>
```

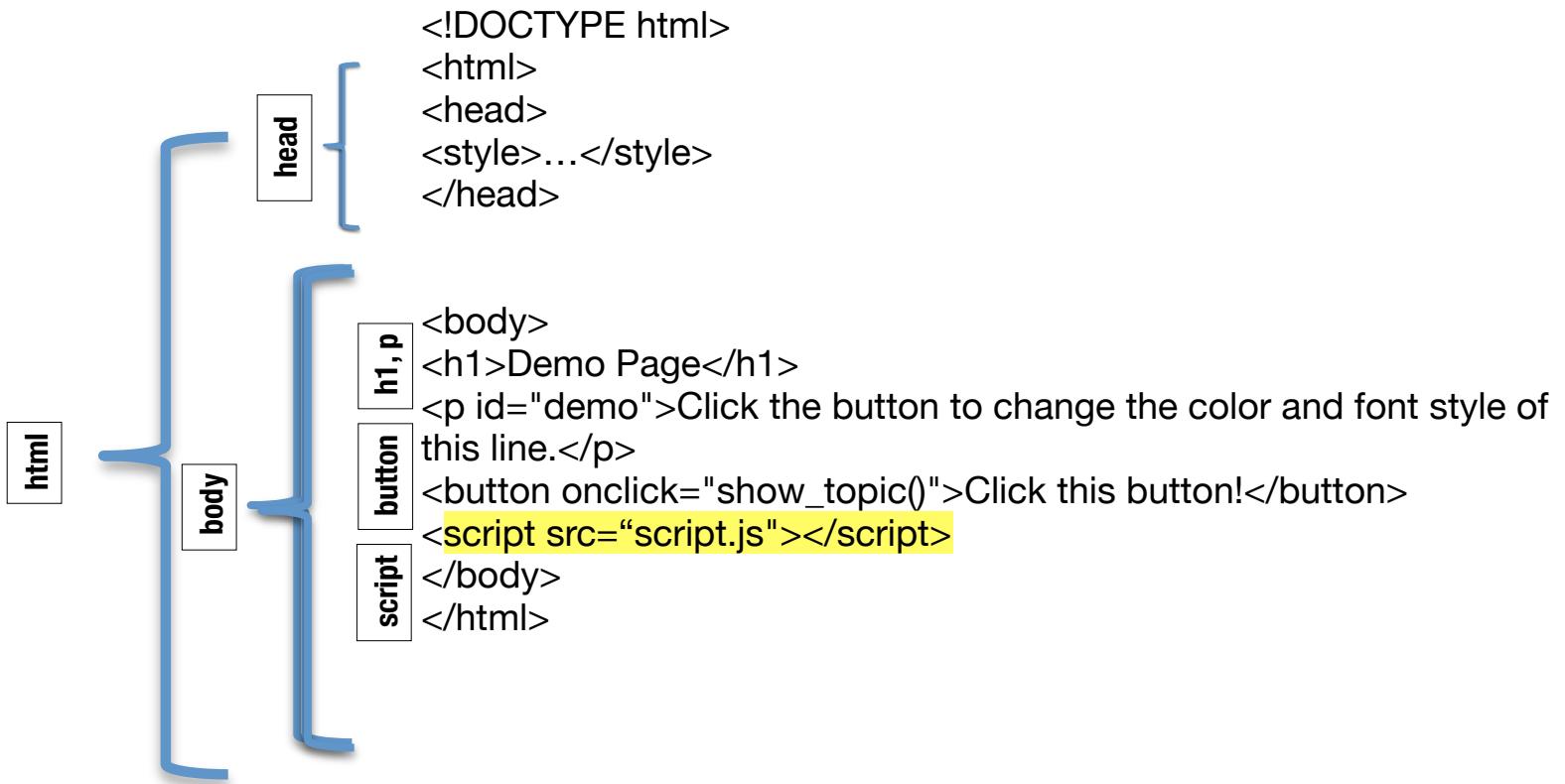
**optional parameters**

**First hands-on exercise on JavaScript:**

**<https://www.javascript.com/try>**



**Similar to CSS, JS can be placed in  
an External File**



# **JavaScript Operations and Commands that Can Enrich the Transformation Process**

## Abstraction

Ignore irrelevant details to focus on essential features to come up with one solution or classification that works for multiple situations.

## **Basic Logical and Mathematical Operations**

- `==` equal (comparing string and boolean)
- `!=` not equal (comparing string and boolean)
- `=` equal (comparing numerical values)
- `>=` greater than or equal to (comparing numerical values)
- `<=` smaller or equal to (comparing numerical values)
- `+, -, *, /, %, &&, ||, !` (addition, subtraction, multiplication, division, modular, and, or, not)

# Basic Structure of JavaScript Functions In a HTML File

```
<!DOCTYPE html>
<html><head>
<style>...</style>
</head>
<body>
  :
  <button onclick="get_values()">Click here</button>
<script>
  function addition(a, b) {
    a = parseInt(a); b = parseInt(b);
    c = a + b;
    return c;
  }
  function get_values() {
    var a = prompt("Enter first number:");
    var b = prompt("Enter second number:");
    var z = addition(a,b), alert("The answer is:" + z);
  }
</script>
</body>
</html>
```

## Basic Logical and Mathematical Operations

**if (condition) {action} else {action}**

**Examples:**

- `if (boolean_var == true) {alert("That is correct");} else {alert("That is incorrect");}`
- `if (string_var != "David") {alert("Not Peter");}`
- `if (num_var >= 8) {alert("The number is greater than or equal to eight.");} else {alert("The number is smaller than eight.");}`

## Input/Output Commands without Pop-up

Entering a variable values through HTML form - e.g.

```
<body>
<form name='guessForm'>
    <input name = "guessValue" class="inputField">
</form>
<button class='button' onclick='guessInteger()>Guess an Integer</button>
<div id='demo'></div>

<script>
function guessInteger() {
    guess = document. forms['guessForm']['guessValue'].value;
    if (guess == "") {
        document.getElementById('demo').innerHTML = "Empty!";
        return;
    } else {
        guess_int = parseInt(guess);
        if (guess_int) == 20)
            {document.getElementById('demo').innerHTML = "Right!";} else
            {document.getElementById('demo').innerHTML = "Wrong!";}
    return;
}
</script>
</body>
```

# **Introducing JavaScript object, array, and loop**

The screenshot shows a web browser window with the Google homepage loaded. The browser's address bar contains "Search Google or type a URL". Below the address bar is a bookmarks bar with links to various categories like Apps, Cyberport Bootca..., Blockchain, NLP and Chatbot, FinTech, E-Commerce, Classes, Development Tools, Data Science, Machine Learning, Music, Drupal, Cloud Providers, and Other Bookmarks. On the right side of the browser are icons for Gmail, Images, and other account settings.

The main content area features the large Google logo. Below it is a search bar with the placeholder "Search Google or type a URL" and a microphone icon for voice search. The browser's toolbar includes icons for back, forward, and refresh, along with tabs for Elements, Console, Sources, Network, Performance, Memory, Application, Security, Audits, and JavaScript Profiler. The "Console" tab is currently selected.

In the developer console, the "Console" tab is active, showing the following log output:

```
newtab?ie=UTF-8:8
17:25:20.426 SW registered
> 17:26:54.913 var student1 = {name:'John',id:1001};
<- 17:26:54.918 undefined
> 17:27:13.330 var student2 = {name:'Mary',id:1002};
<- 17:27:13.335 undefined
> 17:28:15.340 student3 = {name:'David',id:1003};
<- 17:28:15.346 > {name: "David", id: 1003}
> students = [];
```

The screenshot shows a web browser window with the Google homepage loaded. The browser's address bar and various toolbars are visible at the top. Below the address bar, there is a horizontal navigation bar with links to various categories like Apps, Cyberport Bootca..., Blockchain, NLP and Chatbot, FinTech, E-Commerce, Classes, Development Tools, Data Science, Machine Learning, Music, Drupal, and Cloud Providers. To the right of these links, there is a "Other Bookmark" section and a series of icons.

The main content area displays the classic Google logo. Below the logo is a search bar with the placeholder "Search Google or type a URL".

At the bottom of the screen, the developer tools are open, specifically the "Console" tab. The console output shows the following JavaScript code and its execution results:

```
> 0: {name: "John", id: 1001}
length: 1
> __proto__: Array(0)

> 17:45:10.195 students.push(student2);
<- 17:45:10.206 2

> 17:45:19.164 students.push(student3);
<- 17:45:19.169 3

> 17:45:23.621 students;
<- 17:45:23.629 ▶(3) [{} , {} , {} ] ⓘ
  ▶ 0: {name: "John", id: 1001}
  ▶ 1: {name: "Mary", id: 1002}
  ▶ 2: {name: "David", id: 1003}
  length: 3
  > __proto__: Array(0)
```

A screenshot of the Chrome DevTools interface, specifically the "Console" tab. The console shows the following log output:

```
> 17:40:25.934 students.push[student2];
< 17:40:25.939 undefined
> 17:40:28.751 students.push[student3];
< 17:40:28.756 undefined
> 17:40:31.102 students.push[student3];
< 17:40:31.107 undefined
> 17:40:37.113 students
< 17:40:37.116 []
    length: 0
    > __proto__: Array(0)
> 17:41:33.699 students;
< 17:41:33.705 > []
> for (i = 0; i<4; i++) {document.write(students[i].name + "/" + students[i].id + "<br>");}
```

## More Advanced JS Data Structures: Array and Object

- **Array - a list of elements e.g.**  
**`var fruits = ["apple","grape","pear"];`**
- **Object - a collection of properties represented in name:values pairs**  
e.g.  
**`var student {  
 student_id: 1155115511;  
 student_fname: "Bernard";  
 student_lname:"Suen";  
 student_major: "EPIN";  
}`**

# Loop

**Loop is an iterative programming construct suitable for handling JavaScript array and object.**

```
for (initialization; condition; increment) {  
    JavaScript statements  
}
```

**Try the following steps:**

- 1) var fruits = [];
- 2) for (i=1; i< 10 ;i++) {  
 fruits[i] =  
 prompt("Enter  
 fruit:");  
 }  
3) alert("fruits contain"  
+ fruits);

$$Y = f(a,b)$$

“Ending Number” e.g.  
 $b = 200$

Compute next lower  
number from the top and  
next higher number from  
the bottom.  
 $200 \rightarrow 199 \rightarrow 198 \rightarrow 197 \dots$   
 $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \dots$   
Sum the results

Sum of  
 $a + b$  where  
 $a =$  next lower number from  
the top and  $b =$  next higher  
from the bottom

“Starting Number” e.g.

$a = 1$

“You may need a loop to complete this function.”

# **Functions in JavaScript Programming**

- You can look at a function as a mini-system.
- A function is designed to transform input into output.
- You can execute a function within another function.
- A program can be viewed as a collection of functions decomposed into hierarchy of functions to get things done.
- Good programmer looks for patterns in job to be done and abstract common parameters, algorithms, and outcomes to be placed inside a function for code reuse.

# The Grammar of JavaScript

- JavaScript is a programming language that can be used to write functions placed inside html or an external file.
- JavaScript can be placed between the <script> and </script> tags before the end of the </body> tag or link to an external file through the script src link.
- JavaScript codes can be understood as a collection of functions that respond to events triggered by internal browser activities and external user interactions.
- JavaScript can be used to manipulate HTML elements and CSS styles.

# **JavaScript Has Become the Most Popular Front-end Language with Pre-packaged Framework and Library Support**

e.g. jQuery,  
AngularJS, React,  
Vue

e.g. jQuery  
DataTable, D3,  
C3D3, Leaflet

Base  
Selector

ADJECTIVE

CSS

Declaration

Declaration

body

{ color:purple; font-size:12px; }

Property

Value

Property

Value

Custom (e.g. class or id)  
Selector

ADJECTIVE

CSS

Declaration

Declaration

.box

#nav

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

class

id

Property

Value

Property

Value

# **WHAT IS RESPONSIVE DESIGN ?**

**RESPONSIVE DESIGN = MEDIA QUERY + CONDITIONAL**

# STYLE.CSS

```
body {  
    background-color: grey;  
}  
  
@media screen and (max-width: 960px) {  
    body {  
        background-color: red;  
    }  
}  
  
@media screen and (max-width: 768px) {  
    body {  
        background-color: orange;  
    }  
}  
  
@media screen and (max-width: 550px) {  
    body {  
        background-color: yellow;  
    }  
}  
  
@media screen and (max-width: 320px) {  
    body {  
        background-color: green;  
    }  
}
```

```
<!DOCTYPE html>
<html>
<head>
<meta charset="utf-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0, user-scalable=0">
<title>Workshop</title>
<!--link href='http://fonts.googleapis.com/css?family=Average|Courgette' rel='stylesheet' type='text/css'-->
<!--link href="https://fonts.googleapis.com/css?family=Open+Sans|Oswald" rel="stylesheet"-->
<link href="https://fonts.googleapis.com/css?family=Balo+Khanda+Balo+Paajil+Merriweather" rel="stylesheet">
<link href="mq_demo.css" rel="stylesheet" type="text/css">
</head>
<body>
<div class="showview">
</div>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>
<script src="http://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
<script>
$(document).ready(function() {
    $(window).resize(function() {
        if ($(window).width() >= 960) {
            $(".showview").html('<h1>Higher than 960</h1>');
        }

        if ($(window).width() < 960) {
            $(".showview").html('<h1>960</h1>');
        }

        if ($(window).width() < 768) {
            $(".showview").html('<h1>768</h1>');
        }

        if ($(window).width() < 550) {
            $(".showview").html('<h1>550</h1>');
        }

        if ($(window).width() < 320) {
            $(".showview").html('<h1>320</h1>');
        }
    });
});

</script>
</body>
</html>
```

# **Putting Everything Together**

# **Using Bootstrap Form and Button to Make Browser UI Look Better**

<https://getbootstrap.com/>

# Bootstrap

Build responsive, mobile-first projects on the web with the world's most popular front-end component library.

Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mixins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery.

[Get started](#)

[Download](#)

Currently v4.1.3



# **Using Bootstrap Form and Button to Make Browser UI Look Better**

Source: <https://getbootstrap.com/docs/4.0/components/forms/>

Email address

Enter email

We'll never share your email with anyone else.

Password

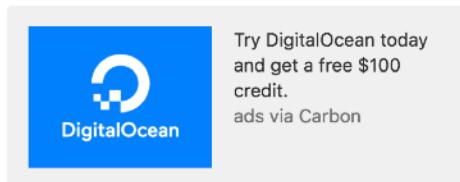
Password

Check me out

Submit

# Buttons

Use Bootstrap's custom button styles for actions in forms, dialogs, and more with support for multiple sizes, states, and more.



## Examples

<https://getbootstrap.com/docs/4.0/components/buttons/>

Bootstrap includes several predefined button styles, each serving its own semantic purpose, with a few extras thrown in for more control.

Primary   Secondary   Success   Danger   Warning   Info   Light   Dark   Link

```
<button type="button" class="btn btn-primary">Primary</button>
<button type="button" class="btn btn-secondary">Secondary</button>
<button type="button" class="btn btn-success">Success</button>
<button type="button" class="btn btn-danger">Danger</button>
<button type="button" class="btn btn-warning">Warning</button>
<button type="button" class="btn btn-info">Info</button>
<button type="button" class="btn btn-light">Light</button>
<button type="button" class="btn btn-dark">Dark</button>

<button type="button" class="btn btn-link">Link</button>
```

**Thank you for your time!**