HTML

uses <tags>

**elements**

<h1>Highest Headings </h1>

<h6>Lowest Headings </h6>

<p> paragraph elements </p>

<**body**>body element <body> // this element covers the entire screen/background, can be styled in CSS

//if you give your body element font styles or colour, then they will be **inherited** by your other elements unless over-rided

<!-- Comment

-->

<ul>

<li>unordered list 1</li>

<li>unordered list 2</li>

</ul>

<od>

<li>ordered list 1</li>

<li>ordered list 2</li>

</od>

<input type=”text”> //**text field**

<input type=”text” placeholder=”placeholder text”>

<**form** action=”/URL-where-you-send-form-data”></form>

<form action=”/URL”><input type=”text” **required** placeholder=”text”></form> // this blocks from submitting until form is filled out

**buttons**

<button type=”submit”>submit</button> //submit button used with form

<**label**><input type=”**radio**” name=”name of radio buttons”>button1</label>

<**label**><input type=”**checkbox**” name=”name of checkboxes” **checked**> checkbox1 </label> //checked is checked by default

adding **properties**

<h1 **style**=”color:red”>inline style</h1>

<h2 **class**=”blue-class”>

<h2 **id** = “element id”> // can be used as handles

<h3 style = “**border-color**:red**”**>element</h3>

<h3 style = “**border-style**:solid**”**>element</h3>

<h3 style = “**border-width**:5px**”**>element</h3>

<h3 style = “**border-radius**:10px”>element</h3>

<h3 style = “**border-radius**:50%”>element</h3>

**importing font-families**

//place at top of page

<link href=”<https://fonts.googleapis.com/css?family=Lobster>” rel=”stylesheet” type=”text/css”>

**images**

<img src=”https://www.imagesource.com/image.jpg”>

resizing images <img src=”URL” style:500px> //can be done in CSS

<figcaption>text underneath image</figcaptionj>

**anchoring**

<a href=”URL”>link’s text</a>

<a href=”URL”><img src=”https://www.can\_embed\_image.com/image.jpg”>

resizing images <img src=”URL” style:500px></a>

<a href=”#”>dead link</a>

**div element containers**

<div>elements</div> // can use this to add properties to group of elements

**margin**

margin: 20px //amount of space between element border and surrounding elements

margin-bottom: -2px;

margin-top:

margin-left:

margin-right:

**padding**

padding: 10px; // amount of space between element and border

padding-top: 5px;

padding-right: 5px;

padding-bottom: 5px;

padding-left: 5px;

padding: 10px 20px 10px 20px; //top right bottom left

**Over-rides**

ids will always override styles

inline styles will override ids

!important in CSS will override all else

**Colors**

colours can be in Hex #000000;

there is abbreviated Hex code

rgb(0,0,0)

**Bootstrap – Responsive Design**

<link rel="stylesheet" href="//maxcdn.bootstrapcdn.com/bootstrap/3.3.1/css/bootstrap.min.css"/> // add to top of page

<div class=”container-fluid”> all other stuff so that browser can resize page to fit screen</div>

<img class=”img-responsive” [image source and other stuff]>

<h2 class=”text-center”> // centres text

<button class=”**btn**”>some text</button>

<button class=”btn **btn-block**”>fill entire screen</button>

<button class=”btn btn-block **btn-primary**”>gives it a great colour</button>

<button class=”btn btn-block **btn-info**”> gives a different secondary “info” colour</button>

<button class=”btn btn-block **btn-danger**”>gives a danger colour </button>

**Bootstrap Grid**

This grid helps organise the horizontal length of the screen into 12 units. You can assign elements size elements.

<div class=”col-xs-4”> //gives 4 size elements for extra small pages

<div class=”col-md-4”> // givesd 4 size elements for medium sized pages

<p>This helps change properties within<**span** class=”text-danger”>elements</span></p>

<link rel="stylesheet" href="//maxcdn.bootstrapcdn.com/font-awesome/4.5.0/css/font-awesome.min.css"/> //to include for font-awesome

**text input**’s can be given **form-control** classes which give it 100% width.

**icons**

<i class=”fa fa-info-circle”></i>

**row and wells**

<div class=”**row**”> //this creates columns

<div class=”col-xs-6”>

<div class=”**well**”>

//elements

</div>

</div>

<div class=”col-xs-6”>

<div class=”**well**” **id**=right-well> // can give ids to wells so that you can handle them

//elements

</div>

</div>

</div>

CSS Cascading Style Sheets

// place above HTML

<style>

h2 (color:red);

.blue-class {

color: blue;

**font-size**: 30px;

**font-family**: Sans-serif, Helvetica; //changes to Helvetica if Sans-serif is not present

}

.image-class{ // remember can put more than one style in element

border-color:red;

border-width:5px;

border-style:solid;

}

#image-id{

background-color:green;

}

</style>

jQuery and JavaScript

this gives functionality to webpages and allows you to run JavaScript

give elements class=”**target**”

<script>

$(document).ready(function(){

// code here runs as soon as page is open

$("button").addClass("animated bounce"); // can target all **elements** of a type

$(".well").addClass("animated shake"); // can target elements by **class**

$("#target3").addClass("animated fadeOut"); // can target elements by **id**

$("#target1").addClass("btn-primary"); // can target same element by different handle

$("#target1")f("color", "red"); // can change **CSS** of an element

$("#target1").**prop**("disabled", true); // can access property of element

$("#target4").**html**("<em>#target4</em>"); // can affect text in html, here *emphasis*

$("#target4").**remove**(); // can **remove** element completely

$("#target2").**appendTo**("#right-well"); // can move elements to different wells

$("#target5").**clone().appendTo**("#left-well"); // can **copy** element to different wells

$("#target1").**parent**().css("background-color", "red"); // cantarget element of **parent**

$("#right-well").**children**().css("color","orange"); // can target **children** of element

$(".target:nth-child(2)").addClass("animated bounce"); // target **specific children** of element

$(".target:even").addClass("animated shake"); // can target **odd** or **even** elements

$("body").addClass("animated hinge"); // can handle entire page

});

</script>

JavaScript

comments: // or /\* stuff \*/

data types:

*undefined, null, boolean, string, symbol, number,* and *object.*

Declaring variable requires *var* keyword:

var ourName; // have variable *undefined* if not given initial variable.

Let type:

only defined in scope to the block it was created in.

temporal dead zones

block scoping

const type:

defined once, never redefined.

Variables and functions are case sensitive and variables are typically in camelCase.

*Numbers*

operations are same as other languages.

I++ = i+1;

numbers can be decimal points, no need to do anything different.

% remainder operator is not modulus, it does not work with negative numbers.

MyVar += is myVar = myVar + num;

myVar -= is myVar = myVar – num;

myVar \*= is myVar = myVar \* num;

myVar /= is myVar/num;

*Strings Literals*

“Strings can be added together.”

if you want to include “ or ‘ inside your string, you can put a backslash before like this \”.

*Escape Sequences in JS*

| Code | Output |
| --- | --- |
| \' | single quote |
| \" | double quote |
| \\ | backslash |
| \n | newline |
| \r | carriage return |
| \t | tab |
| \b | backspace |
| \f | form feed |

.length will get the length of string literal.

Indexing of string is through [x]; // starts from 0

strings are *immutable* meaning that once defined, they cannot be changed.

Deep copy string.slice();

*Arrays*

var name = [“stuff”, “stuff” ] // can contain different types of variables. // also has zero-based indexing.

Nested arrays var name=[[“dog”, 1],[2,4]];

arrays are *mutable*.

**Push()** = Adding value to end of array

**Pop()** = removing value from end of an array;

**Shift()** = removing first value from array;

**unShift()** = adding first value to array

local vs global:

global variables are just variables defined outside functions.

Local variables are just variables defined inside functions. Local variables with the same name as global variables will override the global variable.

*functions*

function functionName(input variables){

return variables;

}

*arguments object*

you can get the arguments input into a function by going arguments[x].

*if statements*

if (condition){

statements;

}

wasThatTrue and isItTrue are boolean conditions uses in if statements.

*== Equality operator*

JavaScript can compare over two different data types such as 1 or ‘1’.

=== *Strict Equality Operator*

JavaScript has an operator that compares data types as well.

*!= inequality operator.*

*!== strict inequality operator.*

&& AND

|| OR

remember to string your if and else if statements from smallest to biggest to capture the best resolution!

*splice()*

var deletedElements = array.splice(start, deleteCount, item1, item2...)

returns modified array, deleteCount is number of elements you want to remove, and item1, etc are elements that you want to add to the array.

Slice()

returns a new array from items that you selected.

*Switch statements*

switch (num){

case value1:

statement1;

break;

case value2:

statement2;

break;

…

case valueN:

statementN;

break;

default:

statement;

}

a cool trick using switch statements:

switch(val) {  
case 1:  
case 2:  
case 3:  
result = "1, 2, or 3";  
break;  
case 4:  
result = "4 alone";  
}

refactoring trick!

don’t need if or else statements if return [equality statement] does the same.

*Objects*

similar to arrays but instead of using indexes to access and modify data, you access data through *properties*.

*object layout*

var objectName ={

“prop1”: “stuff”,

“prop2”: 2,

“prop3”: 1,

“prop4”: [“Water”, “Dogs”]

};

accessing properties: *objectName.prop1*;

or *objectName[“prop1”]*;

Here is an example of using a variable to access a property:

var someProp = "propName";  
var myObj = {  
propName: "Some Value"  
}  
myObj[someProp]; // "Some Value"

Here is one more:

var myDog = "Hunter";  
var dogs = {  
Fido: "Mutt", Hunter: "Doberman", Snoopie: "Beagle"  
}  
var breed = dogs[myDog];  
console.log(breed);// "Doberman"

can **overwrite properties** by going *objectName.prop1 = “NEW THING”;*

can **add properties** by going *objectName.newprop = “NEW Thing!”*;

can **delete properties** by going *delete objectName.prop1*;

can **check if property exist** by.hasOwnProperty() returns true or false.

You can also **nest objects** together

creating objects using **constructor** functions:

var Car = function() {  
  this.wheels = 4;  
  this.engines = 1;  
  this.seats = 5;  
};

making **instances** of objects with constructor function:

var myCar = new Car();

another cool example:

// Setup

function phoneticLookup(val) {

var result = "";

// Only change code below this line

var lookup ={

alpha: "Adams",

bravo: "Boston",

charlie: "Chicago",

delta: "Denver",

echo: "Easy",

foxtrot: "Frank"

}

result = lookup[val];

// Only change code above this line

return result;

}

// Change this value to test

phoneticLookup("charlie");

[JavaScript Object Notation](http://www.json.org/) or JSON is a related data interchange format used to store data.

{  
"artist": "Daft Punk",  
"title": "Homework",  
"release\_year": 1997,  
"formats": [   
"CD",  
"Cassette",  
"LP"  
],  
"gold": true  
}

**Unique Objects**

var Car = function(wheels, seats, engines) {  
  this.wheels = wheels;  
  this.seats = seats;  
  this.engines = engines;  
};

Objects can have their ownfunctions called **methods**.

var Car = function() {

// this is a **private** variable

var speed = 10;

// these are **public** methods

this.accelerate = function(change) {

speed += change;

};

this.decelerate = function() {

speed -= 5;

};

this.getSpeed = function() {

return speed;

};

};

**map method**  is used to iterate through an array.

OldArray.map(function(val)){ //multiplies all values in array by 4

return val\*4;

}

**reduce method** is used to operate cumulatively on each value of array.

var singleVal = array.reduce(function(previousVal, currentVal) {  
  return previousVal - currentVal;  
}, 0);

**filter method** is used to filter out unwanted variables.

array = array.filter(function(val) {  
  return val !== 5;  
});

**sort method** is used to sort array, it changes the original array and typically you should do a compare function inside of it too so that it knows how you want to sort it.

var array = [1, 12, 21, 2];  
array.sort(function(a, b) {  
  return a - b;  
});

**reverse method** is a method that just reverses an array, it alters the original array.

var myArray = [1, 2, 3];  
myArray.reverse();

**concat method** is a method that joins an array to the end of the first array.

newArray = oldArray.concat(otherArray);

**split method** is a method to split strings into many strings and put them into an array.

Var array=string.split(‘s’);

**join method** is a method that takes an array of strings and then joins them together to form one string. You can place an argument between each string.

Var salad = veggies.join(“ and “);

*for loops*

for([initialization];[condition]; [final-expression]){

statements;

}

*while* loops

while(condition){

statements;

}

**Math**

Random Numbers Generator 0 to 1: *Math.random()*

floor fractions using: *Math.floor()*

console.log("Hi World"); // prints to console

**Finding Occurrences of Words in Strings**

Regular expressions are used to find certain words or patterns inside of strings.

For example, if we wanted to find the word the in the string The dog chased the cat, we could use the following regular expression: /the/gi

Let's break this down a bit:

/ is the start of the regular expression.

the is the pattern we want to match.

/ is the end of the regular expression.

g means global, which causes the pattern to return all matches in the string, not just the first one.

i means that we want to ignore the case (uppercase or lowercase) when searching for the pattern.

andCount = testString.match(expression).length;

for **numbers** use expression: var expression = /\d+/g; // the + symbol means look for more than one.

For **whitespace** use expression: var expression = /\s+/g;

For any **non-whitespace** use expression: var expression = /\S/g;

Closures:

Closures are functions that refer to independent (free) variables (variables used locally, but defined in an enclosing scope). These variables remember the environment in which they were created.

JSON APIs and Ajax

APIs mean Applicaiton Programming Interfaces

Ajax is a technology that updates HTML with data

// code for getMessage button

$(“#getMessage”).on(“click”, function(){

$.getJSON("/json/cats.json", function(json){

$(".message").html(JSON.stringify(json));

});

#(“.message”).html(“message”); // changes the html message in .message

});

JSON is a data format for transferring API data.

{key :value, key:value}

adding JSON data to html variable.

json.forEach(function(){

var keys = Object.keys(val);

html += "<div class = 'cat'>";

keys.forEach(function(key){

html+= "<strong>" + key + "</strong>: " + val[key] + "<br>";

});

html += "</div><br>"

});

rednering images from JSON

html += "<img src = '" + val.imageLink + "' " + "alt='" + val.altText + "'>";

getting location:

if (navigator.geolocation){

navigator.geolocation.getCurrentPosition(function(position){

$("#data").html("latitude: " + position.coords.latitude + "<br>longitude: " + position.coords.longitude);

});

}

**Calling an api**

url = “something.com”

$.ajax({

Type: “GET”,

[url:url](file:///C:\Users\JackyRecelis\AppData\Roaming\Microsoft\Word\url),

success:function(data){

//do press

}

**NodeJS**

This is a package that allows you to turn your computer into a server and access server side data using Javascript, rather than using PHP or any server side language.

NodeJS has a set of built-in modules, similar to javascript libraries that you can just use.

In windows, use the command node filename.js to run any nodeJS file.

In linux/ubuntu, use the command nodejs to run the files.

**Require(‘modulename’)**  keyword: To use a module

**Creating a module**

Use the **exports**  keyword to make properties and methods available outsid of module file. Kind of like public keyword in java amd C++.

e.g.

exports.myDateTime = function(){

return Date();

};

var http = require('http');  
http.createServer(function (req, res) {  
    res.writeHead(200, {'Content-Type': 'text/html'});  
    res.write(req.url);  
    res.end();  
}).listen(8080);

To log into server as client, go to browser and type in [http://localhost:8080/](http://localhost:8080/summer).

the module **http** allows Node.js to transfer data using the hyper-text transfer protocol, and can create servers to do this bys using the createServer() function in the http module.

Http.createServer(function(req, res){

// can do things on server creation

});

The res argument is the response you get from the server. So when you’re building your own server, you can write strings or do stuff with your response.

you can write to the screen using the function: res.**write()**.

you can add a HTTP header using the function:

res.**writeHead(200, {response headers})**;

the first argument is the status code, and the second is the response headers

The end of your response is given using the res**.end()** function.

The **listen** method at the end of createServer tells the server to listen to port 8080.

The **req** argument is the request from the client and is an object.

You can get the input **url** of the client logging into your server. This is the url that follows the localhost.

NodeJS as a file server. **Require(‘fs’)** so that you can access files on your computer.

You can read files. create files, update files, and delete files using nodeJS.

e.g.

inside the createServer function →

fs.**readFile(‘fileinsamedirectory’, function(err,data){**

**// do stuff**

**// data is the data, if in html, you can specify in writeHead what content it is using**

res.writeHead(200, {'Content-Type': 'text/html'});

**})**;

Other functions for file system

fs.appendFile()

appends to end of file. If file does not exist, creates that file.

Etc.

fs.open()

fs.writeFile()

to delete files use: fs.unlink()

Javascript Browser Object Model (BOM)

not all same in difference browsers

window.innerHeight

window.innerWidth

[doesn’t incluse scrollbars]

window.open()

window.close()

window.moveTo()

window.resizeTo()

Window.Screen Object

information on user’s screen, don’t need to use window. Prefix.

Props

screen.width

* screen.height
* screen.availWidth, in pixels minus things like Windows Taskbar
* screen.availHeight
* screen.colorDepth, amount of different colours computer resolution, based on hardware
* screen.pixelDepth, same as colorDepth for modern computers

Window.location object

can be written without window prefix

* window.location.href returns the href (URL) of the current page
* window.location.hostname returns the domain name of the web host
* window.location.pathname returns the path and filename of the current page
* window.location.protocol returns the web protocol used (http: or https:)
* window.location.assign(“URL”) loads a new document
* window.location.port returns port number of page, if default 80 for http and 443 for https, browsers will display 0 or nothing.

Window.history

can be written without window prefix.

* history.back returns previous URL
* history.forward loads next URL on history list

Window Navigator

can be written without window prefix

* navigator.cookieEnabled returns true if cookies enabled, else false
* navigator.appName returns application name of browser, Netscape is application name of IE11, Chrome, Firefox and Safari. So doesn’t give that much info.
* Navigator.appCodeName returns app code name which apparently is Mozilla for pretty much everything.
* Navigator.product returns produce name of browser engine. For Mozilla this is Gecko.
* Navigator.appVersion returns version of browser
* Navigator.userAgent returns browser type, OS and 32bit or 64bit.

Warning, don’t use this navigator object to get browser type because people can change it.

* Navigator.platform returns operating system.
* Navigator.language returns browser’s language.
* Navigator.onLine returns true is browser is online.
* Navigator.javaEnabled() returns true if Java is enabled.

Javascript Popup Boxes

all can be written without window prefix

* window.alert(“string”) can be written without window prefix
* window.confirm(“sometext”) will have OK returns true and Cancel returns false,
* window.prompt(“sometext”, “defaultText”) gives a box with some text and a form.
* Line breaks are done using \n characters.

Timing Events

all can be written without window prefix

* window.setTimeout(function, milliseconds) runs function after waiting for milliseconds
* window.clearTimeout(setTimeoutHandle) stops setTimeout if function has not begin running yet.
* Window.setInterval(function,milliseconds) function is executed between time intervals set by second argument.
* Window.clearInterval(setIntervalHandle) stops setInterval

Cookies

* cookies saved in name-value pairs e.g. username = someone someone
* document.cookie property
* create cookie: document.cookie= “username=John Smith”;
* expiry date of cookie: document.cookie = "username=John Doe; expires=Thu, 18 Dec 2013 12:00:00 UTC";
* can tell browser which path cookie belongs to. document.cookie = "username=John Doe; expires=Thu, 18 Dec 2013 12:00:00 UTC; path=/";
* reading cookie by: var x= document.cookie
* change cookie same way as creating it.
* Delete cookie by setting expires parameter to passed date.

**ReactJS**

It’s a Javascript library that is used to create user interfaces. It’s good because it allows you to render parts of a website from the server which makes it faster on your own computer because you don’t need to do that much on your own computer. The basic building blocks of stuff in React are components.

You’ll need to call the ReactJS headers and add this line to initiate your fundamental class. Here it is element. The header files are:

import React from 'react';

import ReactDOM from 'react-dom';

If you writing in a different file, you’ll need to import that class using:

import Game from './Game';

You’ll need to export everything from that other file using this command:

export default Game;

To actually render everything, you’ll need to call this to your fundamental component.

ReactDOM.render(<Game />, document.getElementById('root'));

**JSX**

ReactJS is typicaly used with JSX, a syntax extension to Javascript which allows HTML to be embedded into your Javascript code. You need to use {} braces for Babel to use Javascript expressions into JSX HTML code, this allows you to use Javascript to change different components elsewhere.

If you have an empty tag, <img></img>, you write instead as <img /> which is also how you write components.

You can embed user input in JSX without a malignant user putting malware into your code because JSX converts everything into Strings before it used.

Elements in JSX

These are the objects that can contain headings, methods to run these objects, and values.

Creating an element is as simple as:

const element = (

<h1 className="greeting">

Hello, world!

</h1>

);

Or using the createElement function:

const element = React.createElement(

'h1',

{className: 'greeting'},

'Hello, world!'

);

This is what it actually looks like:

// Note: this structure is simplified

const element = {

type: 'h1',

props: {

className: 'greeting',

children: 'Hello, world'

}

};

As I said before: elements are rendered onto the DOM using the render function within the reactDOM node.

const element = <h1>Hello, world</h1>;

ReactDOM.render(

element,

document.getElementById('root')

);

Elements are immutable, they can’t be changed at all after they’ve been made, so the only way to change an element is by creating a new element everytime and then calling the render function in reactDOM.

But most of the time, you only call the reactDOM.render() function only once in your app, and the way you do this is by using stateful components.

The really cool thing about React is that it only renders the changes you’ve made, so even if you call the whole element that contain heaps of children, React will look at your current element and compare it to what it was, and then only make the changes that you made.

Functional Components and Props

Are things that accept at least one property (**props**) and return an element. This element is defined by the user, using a props. Props is an object and is usually defined and sent to the functional component as another element. Functional components are named as such because they are actually functions, and differ from class components.

*Always start component names with a capital letter.*

*For example, <div /> represents a DOM tag, but <Welcome /> represents a component and requires Welcome to be in scope.*

Components are usually created to represent an entity like a button, screen, or form. Their output is often important, returning the element behind the component itself, and so components are often called from other components. E.g. A component Board calls multiple Button components, which render these multiple buttons on the board.

*Components must return a single root element. This is why we added a <div> to contain all the <Welcome /> elements.*

Components that have a lot of nesting can be written so it has components within the component of it extracted out of it. Kind of like taking cumbersome function, and making parts of the function into small functions.

*We recommend naming props from the component's own point of view rather than the context in which it is being used.*

The big rule behind React is that props must **NEVER change** inside a component (otherwise called ‘pure’). But of course websites are dynamic, so the way around this is by using states.

State and Lifecycle