

cs174A-dis1B-week0

October 11, 2019

1 CS-174A Discussion 1B, Week 0

@ Yunqi Guo

@ DODD 161 / Friday / 12:00pm-1:50pm

@ <https://github.com/luckiday/cs174a-1b-2019f>

2 Outline

- About this course
- JavaScript and WebGL Basic
- Assignment 1

3 CS-174A Introduction

3.1 About Me:

- Yunqi Guo, Ph.D student in Computer Science
- Office hours: Eng-VI 396, Tuesday 9:00 - 11:00 AM
- Email: guoyunqi@gmail.com

3.2 Grading Policies (1000pts)

- 4 assignments (0 + 50 + 50 + 50): 150 pts
- Team project: 600 pts
- Midterm: 100 pts
- Final: 150 pts

More Points - Class participation (50 pts) - Interaction with classmates on Piazza (50 pts) - Super impressive final project (50 pts) - Bonus questions on midterm and final exams (50 pts)

4 JavaScript Basics

JavaScript can change HTML content

```
[1]: %%html
    <p id="demo">JavaScript can change HTML content.</p>
```

```
<button type="button" onclick='document.getElementById("demo").innerHTML +=  
→"Hello JavaScript!"'>Click Me!</button>
```

<IPython.core.display.HTML object>

4.1 Variables and Data types

JavaScript variables can hold many **data types**: numbers, strings, objects and more:

```
var length = 16; // Number  
var lastName = "Johnson"; // String  
var x = {firstName:"John", lastName:"Doe"}; // Object
```

```
[1]: %%js  
var num = 16; // Number  
element.text("The number is " + num)
```

<IPython.core.display.Javascript object>

4.2 Objects

You define (and create) a JavaScript object with an object literal:

```
var person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"};
```

```
[3]: %%js  
var person = {firstName:"John", lastName:"Doe", age:50, eyeColor:"blue"};  
element.text(person.firstName + "'s age is " + person["age"]); // two ways for  
→accessing the property of an object  
  
var name = new String("John");  
var name_2 = "John";  
element.text(name === "John");
```

<IPython.core.display.Javascript object>

4.3 Functions

A JavaScript function is a block of code designed to perform a particular task.

A JavaScript function is executed when “something” invokes it (calls it).

```
[4]: %%js  
function myFunction(p1, p2) {  
    return p1 * p2; // The function returns the product of p1 and p2  
}
```

```

var a = 3;
var b = 4;
element.text("The product of a and b is " + myFunction(a,b))

```

<IPython.core.display.Javascript object>

4.4 Object Methods

```

[2]: %%js
var person = {
  firstName: "John",
  lastName : "Doe",
  id       : 5566,
  fullName : function() {
    return this.firstName + " " + this.lastName;
  }
};
element.text(person.fullName())

```

<IPython.core.display.Javascript object>

4.4.1 Object Constructors

```

[6]: %%js
function Person(first, last, age, eye) {
  this.firstName = first;
  this.lastName = last;
  this.age = age;
  this.eyeColor = eye;
}

var myFather = new Person("John", "Doe", 50, "blue");

element.text("My father is " + myFather.firstName + " " + myFather.lastName + ".
↪")
//element.text(myFather)

```

<IPython.core.display.Javascript object>

4.5 JavaScript Classes

ES6, also known as ECMAScript2015, introduced classes.

A class is a type of function, but instead of using the keyword `function` to initiate it, we use the keyword `class`, and the properties is assigned inside a `constructor()` method.

4.5.1 Class Definition

Use the keyword `class` to create a class, and always add a constructor method.

The constructor method is called each time the class object is initialized.

```
class Car {  
  constructor(brand) {  
    this.carname = brand;  
  }  
}  
mycar = new Car("Ford");
```

4.6 A Quick Way to Learn JS

- <https://www.w3schools.com/js/>

5 WebGL Basics

WebGL (Web Graphics Library) is a JavaScript API for rendering interactive 3D and 2D graphics within any compatible web browser without the use of plug-ins. WebGL does so by introducing an API that closely conforms to OpenGL ES 2.0 that can be used in HTML5 `<canvas>` elements.

- [Demo 0: Clearing with colors](#). How to clear the rendering context with a solid color.
- [Demo 1: Simple color animation](#). A very basic color animation.

5.1 ... and some other projects

- [WebGL Wather](#)
- [Make me pulse wish 2017](#)

6 Assignment 1: Environment Setup and Creating a Simple Rectangle

- [Demo](#)