

CSC 433/533

Computer Graphics

Javascript Intro

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Credit: Joshua Levine

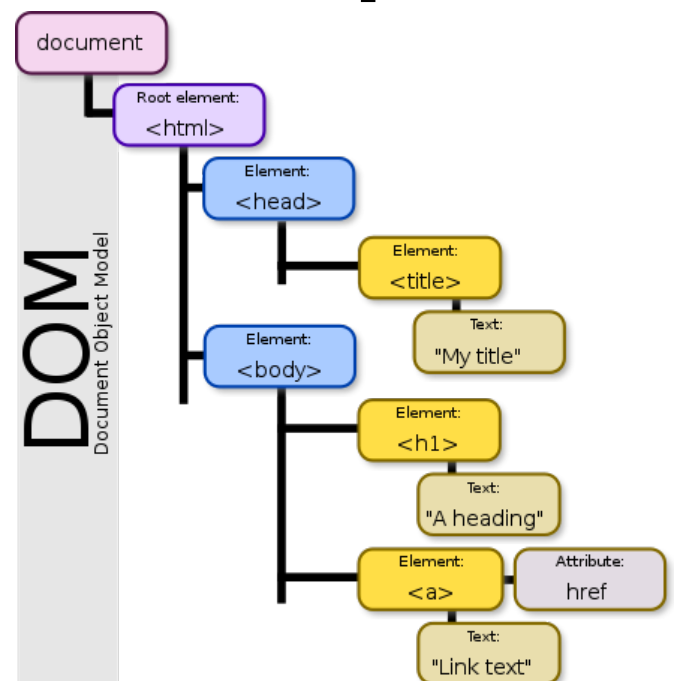
Today's Agenda

- Reminders:
 - Registration Issues? See me after class.
- Goals: Introduce the basics of Javascript

HTML Basics

HTML Main Concepts

- Tags and Elements
- The Document Object Model or DOM
XML or HTML **document** as a tree structure where in each node is an **object** representing a part of the **document**. The **DOM** represents a **document** with a logical tree.
- Important elements we will use in this class:
 - HTML5 Canvas Objects (https://developer.mozilla.org/en-US/docs/Web/API/Canvas_API)
 - Forms (<https://developer.mozilla.org/en-US/docs/Learn/HTML/Forms>)



How to Code Javascript

- Developer Tools in browsers
- Coding in an IDE: Visual Studio Code
 - Running a simple http server <— usually won't be needed
- Accessing the DOM

Connecting Javascript to HTML

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8"/>
    <title>Canvas tutorial</title>
    <script type="text/javascript">
      function draw() {
        var canvas = document.getElementById('tutorial');
        if (canvas.getContext) {
          var ctx = canvas.getContext('2d');
        }
      }
    </script>
    <style type="text/css">
      canvas { border: 1px solid black; }
    </style>
  </head>
  <body onload="draw();" >
    <canvas id="tutorial" width="150" height="150"></canvas>
  </body>
</html>
```

V5.html

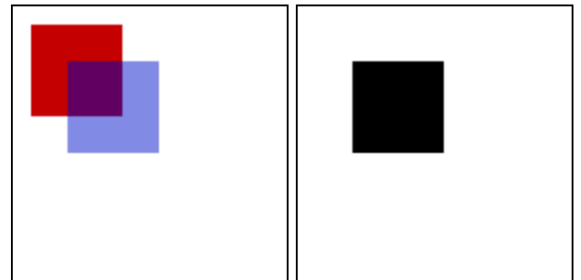
```
<head>
  <canvas id="canvas" width="150" height="150"></canvas>
  <canvas id="canvas2" width="150" height="150"></canvas>

  <meta charset="utf-8" />
  <title>Canvas tutorial</title>
  <script type="text/javascript">
    var canvas = document.getElementById('canvas');
    var ctx = canvas.getContext('2d');
    ctx.fillStyle = 'rgb(200, 0, 0)';
    ctx.fillRect(10, 10, 50, 50);

    ctx.fillStyle = 'rgba(0, 0, 200, 0.5)';
    ctx.fillRect(30, 30, 50, 50);

    var v3 = document.getElementById('canvas2');
    var ctx4 = v3.getContext('2d');
    ctx4.fillRect(30, 30, 50, 50);

  </script>
  <style type="text/css">
    canvas {
      border: 1px solid black;
    }
  </style>
</html>
```




```
2
3 <html>
4 <head>
5   <title>getElementById example</title>
6 <script>
7 function changeColor(newColor) {
8   var elem = document.getElementById('para');
9   elem.style.color = newColor;
10 }
11 </script>
12
13 </head>
14 <body>
15   <p id="para">Some text here</p>
16   <button onclick="changeColor('blue');">blue</button>
17   <button onclick="changeColor('red');">red</button>
18 </body>
19 </html>
20
```

Some text here

blue

red

Javascript Main Concepts

- Variable types and declarations
 - Dynamically-typed language!
 - 3 key types: Primitives, Objects, and Arrays (which are objects)