ECS 189
Web Programming

4/17

Announcements

- Midterm Fri 4/28 – is this a problem?
- Design for weather app Friday
- Due Wednesday
- Rough design today focusing on layout, features

Using Chrome Javascript console

- View -> Developer -> Javascript console

- \(2 + 3 = 5\)  // tries to set value of a number
  - nasty error message

- \(2 + 3 == 5\)  // the Boolean test equality operator
  - true
- \(2 + 3 == "5.0"\)  // ?? try it!

Javascript tricky questions

- \(a = (3.0 === 3)\);
- \(b = ("a" === 'a')\);

- What is in \(a\)? \(b\)?

Javascript tricky questions

- \(a = (3.0 === 3)\);
- \(b = ("a" === 'a')\);

- What is in \(a\)? \(b\)?
- Both true.
Function assignment

function f () { var r = 1; return r; }
a = f();
b = f;

- What is in a? b?

Weather App, 2017

Basic layout using flexbox

- How are elements arranged in body?
  Laid out vertically in order, centered horizontally
- What should CSS for body be using flexbox?
  display: flex; - makes it a flexbox
  flex-direction: column; - vertical layout
  align-items: center; - center horizontally

Basic layout using flexbox

- How are elements arranged in body?
  Laid out vertically in order, centered horizontally
- What should CSS for body be using flexbox?
The usual trick with main box

```css
main {
  display: flex;
  flex-direction: column;
  justify-content: center;
  align-items: center;
  flex-grow: 1;
  align-self: stretch;
}
```

Carousel

- Elements slide horizontally in and out of the box
- Eg. push arrow, weather forecast slides one day to the left.
- Implement with flexbox and Javascript

Layout using absolute positioning

- Place a box (eg. a day's forecast) explicitly in its container, not relying on flexbox.
  - Absolute position, fixed height and width
  - Flexible position, width and/or height might be flexible
- Placement of container in grand-parent container still uses flexbox, height and/or width might be flexible

Using absolute positioning

- Use flexbox to do as much as you can (eg. align-left rather than absolutely positioning something at the left of its box)
- Save absolute positioning for doing fancy things in Javascript, when you take over layout using your own code.
- Javascript code usually need to know width of parent box! Which is determined by flexbox (or other responsive layout…)

The DOM

```
<document>
  <head>
    <title>Document Title</title>
  </head>
  <body>
    <div id="content">
      <p id="text">Hello World</p>
    </div>
  </body>
</document>
```
Structure of the DOM

- Elements in the DOM have properties.
- Important ones: it’s parents and children.
- For instance, say we have one div inside another; the inner is a child of the outer.

Changing style in the DOM

- We can change style as well as structure using Javascript.

```javascript
sty = idiv.style;
sty.backgroundColor = "pink";
```

- The style is an object as well. Its properties are the style properties we’ve been setting in CSS.
- Sadly, they usually don’t have the same names (eg. in CSS it’s background-color).

Getting children

```html
<div id="outerDiv">
  <div id="innerDiv">
    <p>Child div</p>
  </div>
</div>
```

```javascript
var odiv = document.getElementById("outerDiv");
var idiv = odiv.children[0];
```

- odiv is an object in the Javascript code
- odiv has a list of children; in this case a list of length 1.

Getting parents

```html
<div id="outerDiv">
  <div id="innerDiv">
    <p>Child div</p>
  </div>
</div>
```

```javascript
var idiv = document.getElementById("innerDiv");
var odiv = idiv.parentElement;
```

- idiv is an object in the Javascript code
- It’s parent is the outer div.

Getting HTML element properties

```javascript
var odiv = document.getElementById("outerDiv");
var width = odiv.clientWidth;
```

- clientWidth and clientHeight contain actual inner dimensions of the box in the current layout for the current viewport.