Announcements

- We will accept late assignments up through Friday.
- Begin working with Javascript.
- Final project due Tues June 3.
- Fool around with browser graphics (canvas).

Example with Button

```html
<p id="demo">A Paragraph.</p>
<button type="button" onclick="myFunction()">Try it</button>
<script>
function myFunction() {
    var pgh = document.getElementById("demo");
    pgh.innerHTML = "Paragraph changed.";
}
</script>
```

- We could define the script anywhere, including in head.

Javascript runs in the browser

- The code is run when the browser is rendering the page.
- In this case, it just defines a function, so nothing happens (the function is not run until it is called, just like Python).
- The function is run when the button is pushed `onclick="myFunction()"`.

Javascript vs Python

<table>
<thead>
<tr>
<th>Javascript</th>
<th>Python</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>function</code></td>
<td><code>def</code></td>
</tr>
<tr>
<td>blocks in braces {}</td>
<td>blocks indented</td>
</tr>
<tr>
<td>statements end in ;</td>
<td>statements end with <code>\n</code></td>
</tr>
<tr>
<td>variables declared with var</td>
<td>declaration is implicit</td>
</tr>
<tr>
<td><code>//</code> comment</td>
<td><code>#</code> comment</td>
</tr>
<tr>
<td><code>string.split()</code></td>
<td><code>string.split()</code></td>
</tr>
<tr>
<td><code>string.trim()</code></td>
<td><code>string.strip()</code></td>
</tr>
</tbody>
</table>

How do I do...?

- Chances are, a simple Python feature will have a corresponding Javascript feature; might be the same, might not.
The Document Object Model (DOM)

- The HTML document shows up as an object in the Javascript program
  
  \[
  \text{document.getElementById("demo")}
  \]

- This is a method of the document object, that finds the HTML element that has id="demo"

Changing the Web page

- \[\text{pgh.innerHTML}\]

  innerHTML is an attribute of the object in pgh.

  It contains the string inside the paragraph. Changing it changes the contents of the paragraph.

- What happens when we reload the Web page?

Input checking example

\[
\begin{align*}
\text{<p>Please input a number:</p>} \\
\text{<input id="numb" type="text">} \\
\text{<button type="button" onclick="checkNumeric()">Click Me!</button>} \\
\text{<p id="demo"></p>}
\end{align*}
\]

<script>…</script>

- We have two labeled elements, numb and demo
- The button calls function checkNumeric()

Check for number

\[
\begin{align*}
\text{function checkNumeric() {} \\
  \text{var val = document.getElementById("numb").value;} \\
  \text{var elem = document.getElementById("demo");} \\
  \text{// If value is space or not a number} \\
  \text{if (\!(\!(\text{val.trim()}=="")) \&\& \text{isNaN(val)}) {} \\
    \text{elem.innerHTML = "Not a Number";} \\
  \text{else {}} \\
    \text{elem.innerHTML = "Valid Number";} \\
  \text{}} \\
\text{}} \]

Detail

- NaN stands for Not a Number
- isNaN checks a string to see if it can be cast to a number - great feature.

Javascript numbers

- Not totally like Python
- Everything is a float, although it may be written differently; there are no integers
- Casting is automatic! We did not have to convert.
- This can lead to some interesting behavior, ie:
  \[
  \text{var a = 5 * "2.0"} \\
  \text{// a = 10} \\
  \text{var b = 5 + "2.0"} \\
  \text{// b = "52.0"}
  \]