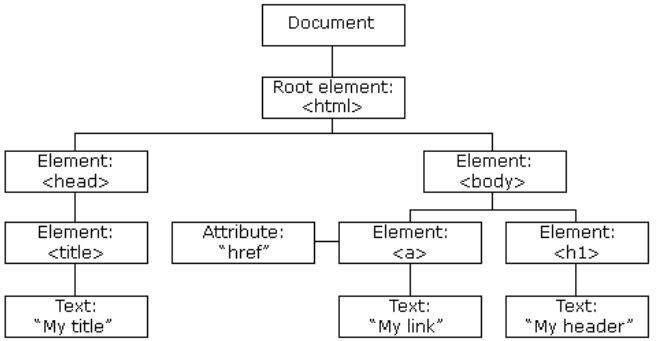
EECS 1012: Introduction to Computer Science

October 17, 2016

DOM (Document Object Model)



We have already accessed parts of this

- x = document.getElementById("name");
- x.innerHTML = "this text";

The entire html document is available programmatically

- document has many elements that map to the structure of the HTML document
  - body - the body element
  - documentURI - the URI of the document
  - document.images - all images
  - document.title - the title
- and so on

index.html

```
<!DOCTYPE html>
<html>
<head>
  <title>This is the title </title>
<script src="test.js" type="text/javascript"> </script>
</head>
<body>
  <button onclick="go()">Go</button>
  <div id="output"> output<br> </div>
</body>
</html>
```

test.js

```
function go() {
  var x = document.getElementById("output");
  x.innerHTML = document.title;
}
```

You can collect all (of something)

- So all elements in a particular class
- All paragraphs or ….

```
<!DOCTYPE html>
<html>
<head>
  <title>This is the title </title>
<script src="test.js" type="text/javascript"> </script>
</head>
<body>
  <p class="myclass">this one is</p>
  <p>this one is not</p>
  <p class="myclass">this one is too</p>
  <button onclick="go()">Go</button>
  <div id="output"> output<br> </div>
</body>
</html>
```

```
function go() {
  var x = document.getElementById("output");
  var s = document.getElementsByClassName("myclass");
  x.innerHTML ="There are " + s.length + "<br>";
  for(var i=0;i<s.length;i++) {
    x.innerHTML += "<br>tag " + i + " " +s[i].innerHTML;
  }
}
```

Lets do something more interesting

- Capture an image with the camera
  - NB: This may not work with some devices
- Or use an image on your device
  - Works will all devices

Can create HTML elements programmatically

- var z = document.createElement(“img”);
  - Creates an img (image) element
- var p = document.createElement(“p”);
  - Creates a p (paragraph) element

Once created

- You can set its attributes, its innerHTML and so on.
  - You can create other elements inside this one (and so on)
- And then you can add it to the DOM
  - e.appendChild(x) adds x as a child to e (other methods to insert in a specific order, we will look at that later)

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript" src="camera.js"> </script>
</head>
<body>
<input type="file" id="userImage" accept="image/* capture="camera"/>
<button onclick="display();">Display</button>
<div id="photo"> </div>
</body>
</html>
```

```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}

function doDisplay(e){
  var src = e.target.result;
  var div = document.getElementById("photo");
  var img = document.createElement("img");
  img.src = src;
  if(img.width > img.height) {
    img.style.width ="400px";
    img.style.height = (400 * img.height / img.width) + "px";
  } else {
    img.style.height = "400px";
    img.style.width = (400 * img.width / img.height) + "px";
  }
  div.appendChild(img);
}
```

Gets a reference to the file input type

```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}
```

files - the array of files the user choose (or camera picture)

```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}
```

if list length not zero

```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}
```

FileReader - reads the file

```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}
```

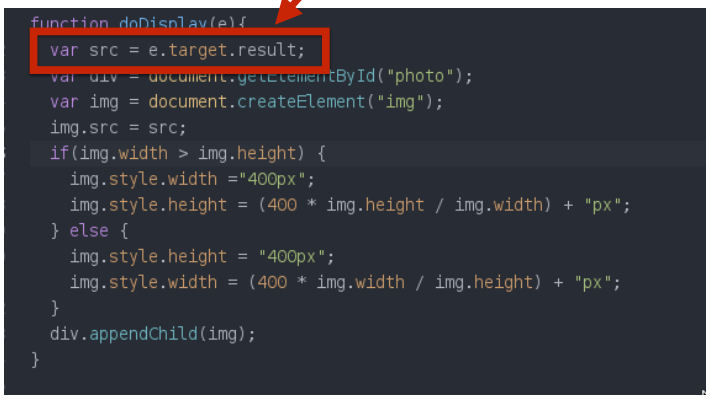
When file is loaded, call this **with the file**

```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}
```

Start reading the first file

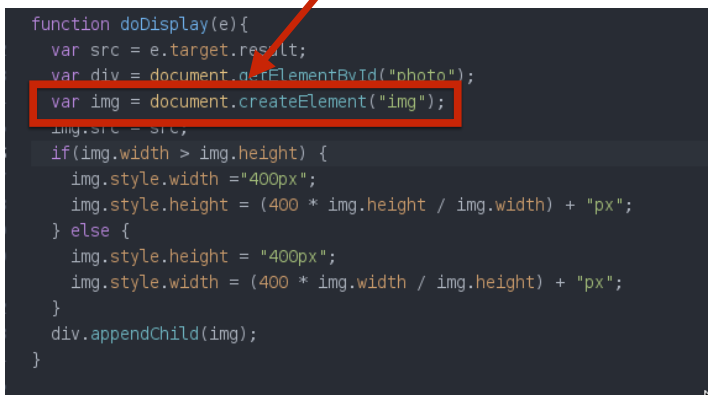
```
function display() {
  var x = document.getElementById('userImage');
  var f = x.files;
  if(f.length > 0) {
    var reader = new FileReader();
    reader.onload = doDisplay;
    reader.readAsDataURL(f[0]);
  }
}
```

get the result (sequence of bytes)



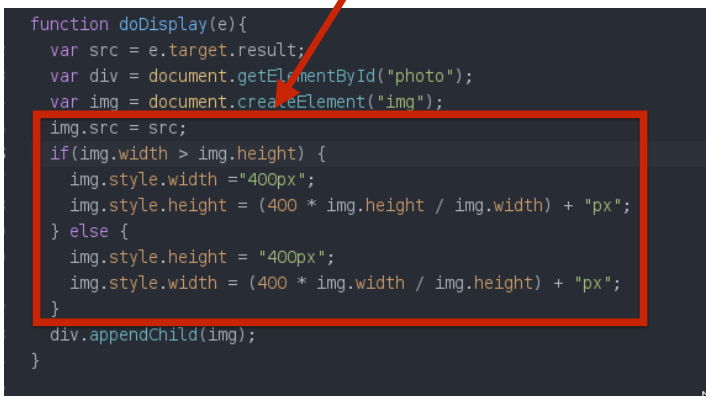
```
function doDisplay(e){
  var src = e.target.result;
  var div = document.getElementById("photo");
  var img = document.createElement("img");
  img.src = src;
  if(img.width > img.height) {
    img.style.width ="400px";
    img.style.height = (400 * img.height / img.width) + "px";
  } else {
    img.style.height = "400px";
    img.style.width = (400 * img.width / img.height) + "px";
  }
  div.appendChild(img);
}
```

create a new img tag



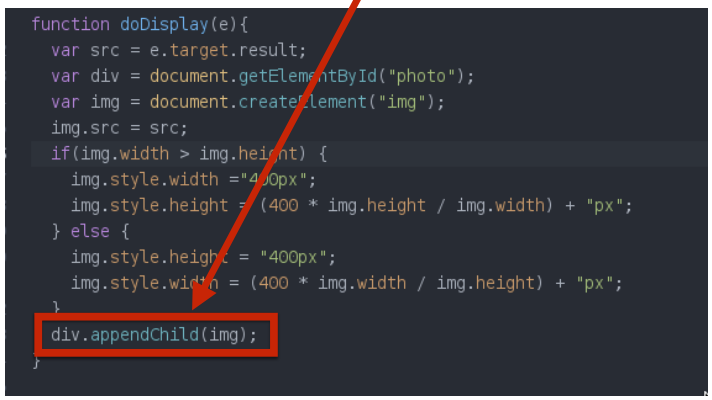
```
function doDisplay(e){
  var src = e.target.result;
  var div = document.getElementById("photo");
  var img = document.createElement("img");
  img.src = src;
  if(img.width > img.height) {
    img.style.width ="400px";
    img.style.height = (400 * img.height / img.width) + "px";
  } else {
    img.style.height = "400px";
    img.style.width = (400 * img.width / img.height) + "px";
  }
  div.appendChild(img);
}
```

style the new ‘img’ and set its src



```
function doDisplay(e){
  var src = e.target.result;
  var div = document.getElementById("photo");
  var img = document.createElement("img");
  img.src = src;
  if(img.width > img.height) {
    img.style.width ="400px";
    img.style.height = (400 * img.height / img.width) + "px";
  } else {
    img.style.height = "400px";
    img.style.width = (400 * img.width / img.height) + "px";
  }
  div.appendChild(img);
}
```

and add under div (which was empty to start)



```
function doDisplay(e){
  var src = e.target.result;
  var div = document.getElementById("photo");
  var img = document.createElement("img");
  img.src = src;
  if(img.width > img.height) {
    img.style.width ="400px";
    img.style.height = (400 * img.height / img.width) + "px";
  } else {
    img.style.height = "400px";
    img.style.width = (400 * img.width / img.height) + "px";
  }
  div.appendChild(img);
}
```