EECS 1012: Introduction to Computer Science

October 24, 2016

October 24-28

Lecture: Client-server programming.

Reading: You are responsible for reading chapter 9.4 of the textbook prior to Monday's class.

Laboratories: There are no laboratories this week.

Note: Fall reading period October 27-30.

October 31-November 4

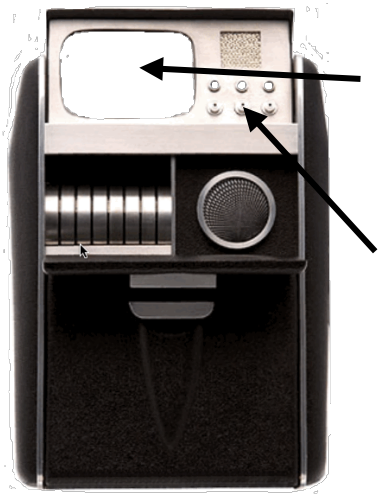
Lecture: Client-server programming.

Reading: You are responsible for reading chapter 12 of the textbook prior to Monday's class.

Laboratories: Lab 5: Pan and Tilt. You can find the lab materials on the jr web site.

Note: The midterm will be held in-class on Monday October 31st (20%)

Lets make a tricorder



Put a video in here

Make these buttons change colour randomly

Many ways of doing this

- Could have a canvas and draw things
  - ok, but is there an easier way?
- Could have specific graphical items and then place them where we want them
  - lets do it that way (today)

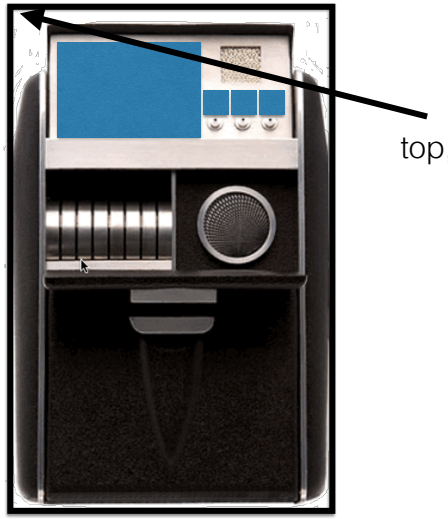
Suppose we draw shapes like
those shown here

Suppose we draw shapes like
those shown here

but draw the tricorder
image in front

Then we just need to “draw” the html elements
in the right place
in the right order

to make everything work



top, left, width, height

top, left, width, height

and so on

```
<!DOCTYPE html>
<html>
<head>
<script type="text/javascript" src="tricorder.js"> </script>
<link rel="stylesheet" href="tricorder.css"/>
</head>
<body>
<img id="tricorder" src="tricorder.gif"></img>
<div id="light1"></div>
<div id="light2"></div>
<div id="light3"></div>
<img id="video1" src="test-pattern.jpg"/>
</body>
</html>
```

Normal layout would be to have the <img> and 's follow each other. We can use css to set locations absolutely

```
body {
  width : 100%;
  height : 100%;
  background-color : blue;
  margin: 0px, 0px, 0px, 0px;
  padding: 0px, 0px, 0px, 0px;
  position: relative;
}

#video1 {
  position : absolute;
  left : 63px;
  top : 25px;
  width : 160px;
  height :120px;
  z-index : 1;
}
```

absolute locations (relative to parent)

```
body {
  width : 100%;
  height : 100%;
  background-color : blue;
  margin: 0px, 0px, 0px, 0px;
  padding: 0px, 0px, 0px, 0px;
  position: relative;
}

#video1 {
  position : absolute;
  left : 63px;
  top : 25px;
  width : 160px;
  height :120px;
  z-index : 1;
}
```

z-index (larger closer)

Lets make the lights flash

- Randomly want to change lights
  - say black and white
- So every n msec, have a random process update the colour of blocks

Random numbers

- Extremely difficult to generate really random numbers
- Very easy to generate pseudo-random numbers
  - Math.random() returns a number between 0..1 uniformly distributed

```
function changeColor(id) {
  var x = document.getElementById(id);
  if(Math.random() > 0.5) {
    x.style.backgroundColor = "white";
  } else {
    x.style.backgroundColor = "black";
  }
}
```

```
function randomizer() {
  for(var i=0;i<3;i++) {
    changeColor("light" + (i+1));
  }
}
```

Now the image

- Could play a video
- Or just randomly choose between different random images (textured, eventually).

Playing with this

- Of course, you can put any picture in the display (or cycle through them in some order)
- Could centre the image
  - Or make it exactly the right size, or both

Take home message

- Locations of DOM objects can be relative or absolute
- Absolute positioning allows the programmer to specify exactly where objects will appear
- This can be exploited to position complex graphical entities relative to each other
  - Can cause the DOM tree to not reflect where things are laid out (the tree still exists)

Midterm test

- Monday October 31st, in class
  - 20%
  - 40 minutes
  - multiple versions
  - multiple choice, marked on Scantron.
  - You will need a pencil, your student card, nothing else
  - Closed book, no aids

Practice Test Questions

- On moodle
- So go there now, and do them (10 minutes, 5 questions)
- Good practice for the real test next week
- Performance on the practice test will be used, in part, to decide on rounding issues when assigning letter grades.