MIS3690 WEB TECHNOLOGIES

BABSON COLLEGE

TOIM DIVISION

ANIMATION WITH JAVASCRIPT

KEY CONCEPTS IN ANIMATION

- Array variable

- We can declare an array variable as:

  ```
  let colors= new Array("green", "yellow", "blue", "pink", "red", "orange");
  ```

- Random number generator

  ```
  Math.random()
  ```

KEY CONCEPTS IN ANIMATION

- `setTimeout()` – function

  - Allows you to call and execute the same function over and over again, in preset time intervals

  - E.g., `setTimeout("animate()", 1000)`

  - The function animate() is called over and over every 1000 micro-seconds, i.e., 1 second)

- It is placed inside the same function that it calls

  - `setTimeout("animate(), 1000)` is placed inside the "`animate()`" function!

  - Known as a "**recursive**" call.

KEY CONCEPTS IN ANIMATION

- Global variables

  - Variables that are declared "OUTSIDE" a given function.

  - Used to maintain values that should not get reset.

```
function doThis()        var counter = 0;

{                        function doThat()

    let counter;          {

    counter = 0;              ++ counter;

    ++ counter;           }

}
```

  - Every time we call doThis(), the counter will be set to 0 and then increased by 1.

  - Every time we call doThat(), the counter will NOT BE RESET TO 0, it will be incremented by 1, based on its previous value.

KEY CONCEPTS IN ANIMATION

■ Array variable and preloading

■ We can declare an array variable as:

```
var slides = new Array ("tiger1.jpg", "tiger2.jpg");
```

■ We have an array variable that contains two images in its first 2 index positions.

■ Declaring the array variable as a "global" variable and pre-loading the content (images, text, etc.) makes the animation faster (web page loads and works faster).

CREATING A SLIDE-SHOW

- Set up a place holder for the image using the `<img>` tag in HTML.

- Use the `onload` event in the `<body>` tag to start the animation (typical implementation).

- Define the global array variable to hold the images in the slideshow

- Write the function to change the image

- Use `setTimeout()` to recursively call the function.

- Use CS17-InClass1.htm to implement this using the four tiger images (also provided).

CREATING A SLIDE-SHOW – THE FUNCTION

```
var slides = new Array("tiger1.jpg", "tiger2.jpg", "tiger3.jpg",
"tiger4.jpg");
var i = 0;
function slideShow() {
    let img = document.getElementById("tigerImage");
    if (i == slides.length) {
      i = 0;
      }
    img.src = slides[i];
    i++;
    setTimeout("slideShow()", 1000);
}
```

EXTENDING THE SLIDE-SHOW

- Can we add a border that changes color with the changing image?

- Add another array variable for the colors

- Add another variable to act as the "counter" for colors.

- Can you modify the function to change border colors?

- When done, save it as CS17-InClass1.htm.

CHANGING MESSAGES

- Same concept as the slide show.

- Substitute message strings for images

- Use "`innerHTML`" to change the message on the web page!

CHANGING MESSAGES – THE FUNCTION

```
var counter=0;

var messageList = new Array ("Hey Jude, don't make it bad", "Take a
sad song and make it better", "remember to let her into your heart",
"Then you can start to make it better");


function messUp()

    {

        document.getElementById("msg").innerHTML = messageList[counter];

        counter++;

        if (counter == messageList.length)

            counter = 0;

        setTimeOut("messUp()", 2000);

    }
```

SCROLLING TEXT

- Same concept, except we now have to move the text from right to left like a marquee

- We need a place holder for the message line – it must have an `id`

- We need to decide what our starting point is and where we should end the movement.

- Let us assume that we start at `300px` from the left edge and we stop when the text has moved to the 700th pixel from the left edge.

- We will use the "`onload`" event to load our function.

- We will call the function "`doScroll()`"

- We will use an array to preload the message lines

- We will use a variable to keep track of the position and another variable for our counter

```javascript
var p = 300; k = 0;
var messageList = new Array ("Hey Jude, don't make it bad", "Take a sad
song and make it better", "remember to let her into your heart", "Then
you can start to make it better");

function doScroll()
   {
      document.getElementById("msg").style.left = p + "px";
      if ( p > 700)
         {
            p = 300;
            k++;
            if ( k == messageList.length)
              {
                 k = 0;
              }
            document.getElementById("msg").innerHTML = messageList[k];
            document.getElementById("msg").style.left = p + "px";
         }
      else
        {
            p = p + 5;
        }
      setTimeOut("doScroll()", 100);
   }
```

SCROLLING TEXT

- The most important piece here is the positioning.

- Use CSS to position the text using the "absolute" positioning command.

- This is IMPORTANT, because, without this, moving the text will not work!