CSIT884:
Web Development

JavaScript Animation

School of Computing and Information Technology
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Objectives

- *var* vs *let*

- Template literals

- use JavaScript to generate animation on your web site

var vs *let*

- JavaScript is loosely typed programming language

- Variable scope

    - locally scoped
    - globally scoped

- Variables declared with var are globally or locally scoped

    - or scoped to the body of the containing function
    (no matter how deeply nested they are inside that function)

- Variables declared with let (ES6 and later) are block scoped

    - defined within the block of code (within a set of curly braces)

- Hoisting

    - variables declared with var can be used anywhere in the enclosing
      function (without error)

Template Literals

- String literals can be delimited with backticks (ES6 and later)

- Template literals can include arbitrary JavaScript expressions

```
var name = "CSIT884";
var message = `This is ${ name } subject.`;
alert (message);
```

The final value of a string literal (in backticks) includes the values of all expressions (converted to strings) combined with the given strings

Animation

Start an animation

```
var animationSchedule = setInterval(animationFunction, milisecs);
```

specify 2 things:

- ***what need to be done***: write a function to do the task

- ***how often***: how often this task need to be done

Stop the animation

```
clearInterval(animationSchedule);
```

Digital Clock - animation

When the "Start Clock" button is clicked, the clock animation displays the current time every 1 second. When the "Stop Clock" button is clicked, the clock stop.

```
start animation
  1000 milisec       showClock()
  1000 milisec       showClock()
  1000 milisec       showClock()
  1000 milisec       showClock()
  1000 milisec       showClock()
  ......

             stop animation
```

| Start Clock | Stop Clock |

14:55:24

Digital Clock - animation

```
<button onClick="startClockAnimation()">
Start Clock
</button>

<button onClick="stopClockAnimation()">
Stop Clock
</button>

<br /><br />

<span id="clock"></span>
```
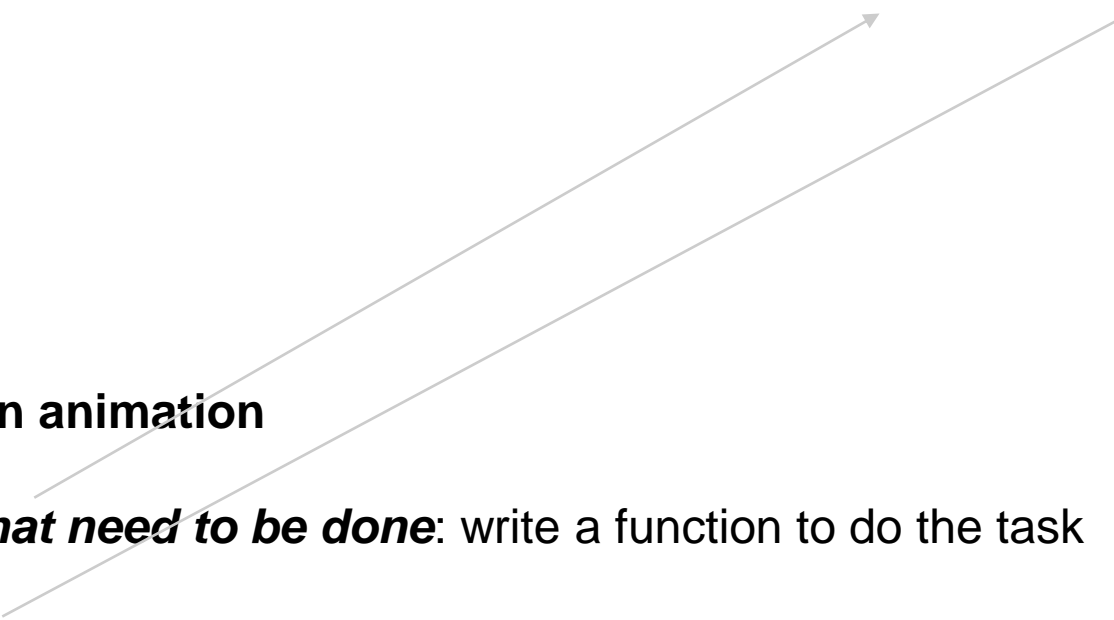
Start Clock   Stop Clock

14:55:24

Digital Clock - animation

```
var clockAnimation;

function startClockAnimation(){

  // start the clock animation
  clockAnimation = setInterval(showClock, 1000);

}
```

Start an animation

- *what need to be done*: write a function to do the task

- *how often*: how often this task need to be done

Start Clock   Stop Clock

14:55:24

Digital Clock - animation

what need to be done:
write a function to do the task of the animation

```
function showClock(){
  // get current date and time
  var now = new Date();


  // formulate the clock Hour:Minute:Second
  var clock = now.getHours() + ":" + now.getMinutes() + ":" + now.getSeconds();

  // show the clock
  var clockSpan = document.getElementById("clock");
  clockSpan.innerHTML = clock;
}
```

| Start Clock | Stop Clock |

14:55:24

Digital Clock - animation

```
function stopClockAnimation(){

    clearInterval(clockAnimation);

}
```

Start Clock   Stop Clock

14:55:24

*What can be done so only one animation can run at any given time?

Slideshow - animation

When the "Start Slideshow" button is clicked, random images will be displayed every 1 second. When the "Stop Slideshow" button is clicked, the slide show stops.

```
start animation
    1000 milisec        showImage()
    1000 milisec        showImage()
    1000 milisec        showImage()
    1000 milisec        showImage()
    1000 milisec        showImage()
    ......


                  stop animation
```

Slideshow - animation

```
<button onClick="startAnimation()">
Start Slideshow
</button>

<button onClick="stopAnimation()">
Stop Slideshow
</button>

<br /><br />

<img id="imageHolder" height="500px" />
```
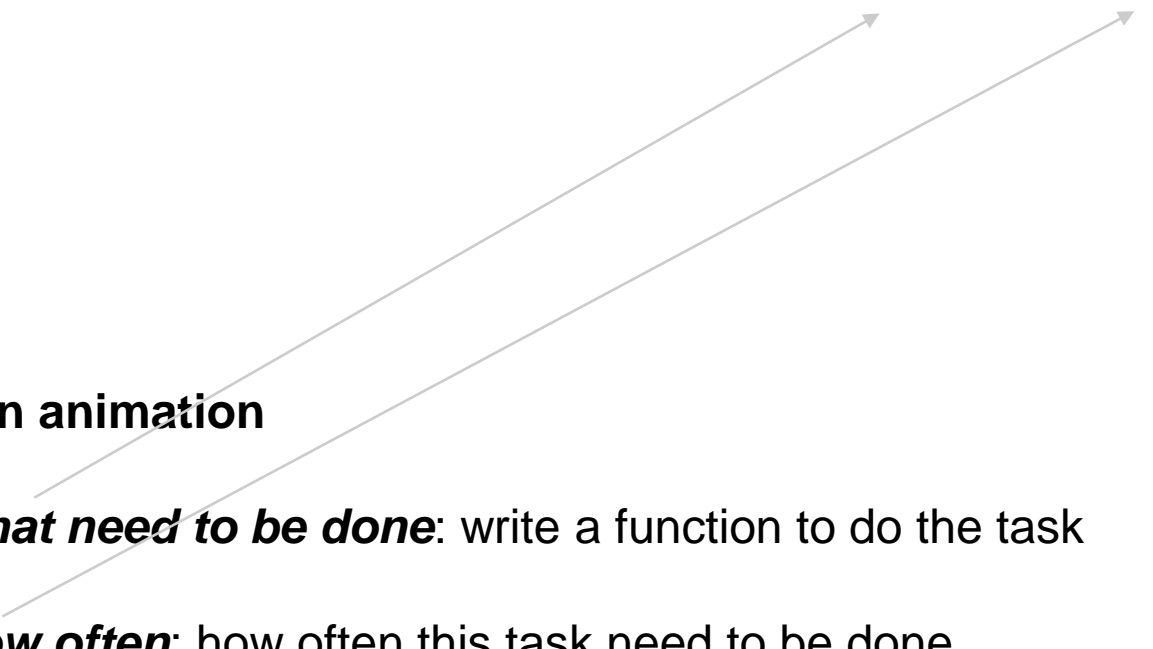
Slideshow - animation

```
var slideshowAnimation;

function startAnimation(){

    // start the slideshow animation
    slideshowAnimation = setInterval(showImage, 1000);

}
```

Start an animation

- ***what need to be done***: write a function to do the task

- ***how often***: how often this task need to be done

Slideshow - animation

```javascript
// list of images for the slideshow animation
var IMAGE_LIST = [
  "cat.png",
  "dog.png",
  "heart.png",
  "help.png",
  "home.png"
];
```

Slideshow - animation

```javascript
// list of images for the slideshow animation
var IMAGE_LIST = [
   .........
];
```

what need to be done:
   write a function to do the task of the animation

```javascript
function showImage(){
   // get a random image index
   var index = Math.floor(Math.random() * IMAGE_LIST.length);

   // show the image
   var imgElement = document.getElementById("imageHolder");
   imgElement.src = IMAGE_LIST[index];
}
```

Slideshow - animation

```
function stopAnimation(){

    clearInterval(slideshowAnimation);

}
```

*What can be done so only one animation can run at any given time

References

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