



Animation

*JavaScript can be used for
animating images on a web
page*



The Plan

An animation is the rapid display of a series of still images ... like cartoons

There are three steps to animation

- 1) Place first still image(s) on web page
- 2) Prefetch the series of images and store them
- 3) Setup a timer to cycle through the images

`new0.gif, new1.gif, new2.gif, new3.gif`



Smooth motion requires 30 times/sec display



Creating GIFs

GIF files for animation are progressively different ... make them w/Photoshop

- The series should all have the same size
- Begin with an initial GIF and build all others from it
- Getting the motion to be smooth may take a bit of fiddling

Animated GIFs -- GIFs that automatically cycle use a special format and software



1. Place Still Image(s)

Placing the image uses a standard
 tag

```
<html><head><title>Test Page</title></head>  
<body>  
    
  <script language="JavaScript"> Code here  
  </script>  
</body>  
</html>
```





The `document.images`

When HTML draws a page, the images go in an array: **`document.images`**

- Recall, arrays are names w/ indexes, like `A(1)`
- Each element of **`document.images`** array holds one image
- Pictures are put into `document.images` in the order encountered on page build ... so for Test Page, **`document.images[0]`** \leftrightarrow `new0.gif`
- Changing the **`.src`** property of the array changes the picture

But the images must be prefetched first



2. Prefetch Images I

“Prefetch” means to get the images and save them in (our own) array so they are handy to assign to `doc.im`

- We must declare an array (and probably an index variable, too):

```
var i, pref = new Array(4);
```

- Then we set it up to hold images:

```
for (i=0; i<4; i++) {  
    pref[i] = new Image;  
}
```



Prefetch Images II

Once the array is declared and setup, get the images and assign them to the `.src` field of the array:

```
for (i=0; i<4; i++) {  
    pref[i].src = "new" + i + ".gif";  
}
```

Notice that the names of the images, `new0.gif`, `new1.gif`, `new2.gif`, `new3.gif` are constructed using the index variable



3. Change Image

Once Web page is drawn, nothing happens unless you cause an event

- To animate a series of stills you must cause the computer to “wake-up” and change to the next image 30 times a second
- Set a timer to cause the wake-up

```
setTimeout("animate()", 30);
```

JS Timer Setting Function
Function to change picture
Milliseconds to wait



Animate Function

`animate()` must advance the frame counter, update the image and schedule the next timer ...

```
var frame=0, timeID;
function animate(){
    frame=(frame+1)%4;        //advance
    document.images[0].src
        = pref[frame].src; //update
    setTimeout("animate()",30);
}
```



Initial
Image

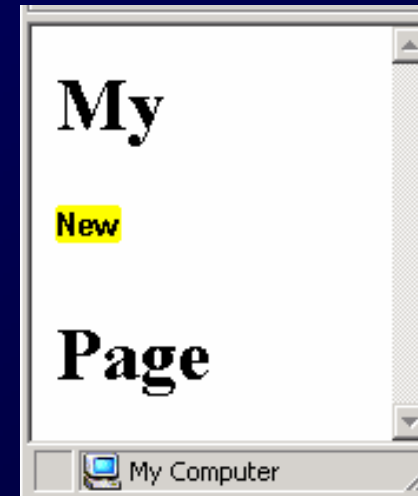
Prefetch

Show a
frame

Watch It Go

```
<h1>My</h1>

<script language='JavaScript'>
var i, pref = new Array(4);
var frame=0;
for (i=0; i<4; i++){
    pref[i] = new Image;
}
for (i=0; i<4; i++){
    pref[i].src="new" + i + ".gif";
}
setTimeout("animate()",2000);
function animate(){
    frame = (frame+1)%4;
    document.images[0].src=pref[frame].src;
    setTimeout("animate()",30);
}
</script><h1>Page</h1>
```



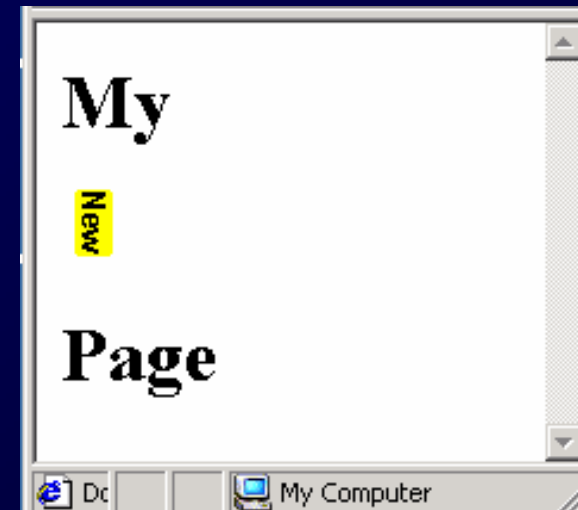
Start
action



```
<h1>My</h1>

<script language='JavaScript'>
var i, pref = new Array(4);
var frame=0, timerID;
for (i=0; i<4; i++){
    pref[i] = new Image;
}
for (i=0; i<4; i++){
    pref[i].src="new" + i + ".gif";
}
setTimeout("animate()",2000);
function animate(){
    frame = (frame+1)%4;
    document.images[0].src=pref[frame].src;
    if (frame == 0)
        timerID = setTimeout("animate()",2000);
    else
        timerID = setTimeout("animate()",30);
}
</script><h1>Page</h1>
```

Watch It Go





Demonstration



Summary

Animation requires a 3 step process

- 1) Place the initial image(s)
- 2) Prefetch the series of images that will be the animation
- 3) Setup the animation function to draw the next item in the series

When creating your own GIFs make sure that the sizes are all the same