

Javascript Lab 09

Canvas:- sprite

Load and display an image

1. Create a directory called images and put an image into it called howl.png (you can copy the image from the sample project)
2. Create a html page that has a canvas, and javascript functions called drawCanvas and tickAll, call tickAll 60 times a second

```
<body>

<canvas id="board" width="800" height="500"></canvas>
<!--include other js files here -->
<script>
    function drawCanvas() {
        var canvas = document.getElementById("board");
        var ctx = canvas.getContext("2d");
        // draw sprites here
    }
    function tickAll(){
        var canvas = document.getElementById("board");
        // tick sprites here

        drawCanvas();
    }
    setInterval(tickAll,1000/60);
</script>
</body>
```

3. Create a javascript file called simpleWolf that will be used to create an actor (with a draw and tick function). The actor will use an image to draw itself

```
var wolf = {
    x:50,
    y:50,
    ready:false,
    imageUrl: "images/howl.png",
    baseImage: new Image(),
    draw: function(ctx){
        var baseImage = this.baseImage;

        ctx.drawImage(baseImage,this.x,this.y);
    },
    tick: function(canvas){
        console.log("wolf tick does nothing");
    },
    initialise: function(){
        this.baseImage.onload = function() {
            this.ready = true;
        };
        this.baseImage.src = this.imageUrl;
    }
}
```

4. Include simpleWolf in the html page

```
<script src="wolfSimple.js"></script>
```

5. Call the wolf's draw function in drawCanvas.

```
wolf.draw(ctx);
```

6. Test the code.
7. *[optional]* You can call the tick function in the tickAll function and move the image on the screen if you wish.
8. *[optional]* download a different image and display that.

Create a sprite

9. Put the file wolfsheet1.png into the images folder
10. Create a file called WolfSprite.js that is the same as SimpleWolf.js but change the imageUrl to be **wolfsheet1.png** and the x and y to be 0

```
x:0,  
y:0,  
imageUrl: "images/wolfsheet1.png",
```

11. and have the html page include that instead of SimpleWolf.js

```
<script src="WolfSprite.js"></script>
```

12. Add an attribute to the Object called sprites (array)

```
sprites : [],
```

13. in the function initialise modify the onload function for the baseImage so that it breaks down the baseImage into an number of sub images and stores them into the sprites array.

```
this.baseImage.onload = function() {  
    var tempCanvas = document.createElement('canvas');  
    tempCanvas.width = 640; // same as the image  
    tempCanvas.height = 384;  
    var tempCtx = tempCanvas.getContext("2d");  
    console.log(this);  
    tempCtx.drawImage(this, 0, 0); // draw onto temp canvas  
  
    var spritew= 64; // depends on the sprite sheet  
    var spriteh = 32;  
  
    for (var row=0;row<12;row++){  
        wolf.sprites[row] = []; // initialise the array in the array  
        for(var col=0;col<5;col++){  
            var spriteX= 320+col*spritew;  
            var spriteY =row*spriteh;  
            wolf.sprites[row][col] = tempCtx.getImageData(spriteX, spriteY,  
spritew, spriteh);  
        }  
    }  
    wolf.ready = true;  
};
```

14. Modify the draw function so that it gets its image from the sprite array

```
if (this.ready) {  
    ctx.putImageData(this.sprites[0][0], this.x, this.y);  
}
```

15. Test with different sprite numbers.

Animate the sprites

16. Add attribute to the object to deal with animation

```
currentSprite : {col:1, row:4},  
frameCount:0,  
speedFactor:5,
```

17. Modify the draw function so that it takes the sprite to draw from the currentSprite attribute

```
ctx.putImageData(this.sprites[this.currentSprite.row][this.currentSprite.col],  
this.x, this.y);
```

18. Modify the tick function so that it increments the col every tick (if the col >=5) set it back to 0

```
this.currentSprite.col++;  
if (this.currentSprite.col == 5) {this.currentSprite.col=0;}
```

19. Slow down the animation by only incrementing the col every *speedFactor* frames.

```
if (this.frameCount-- <= 0) {  
    this.frameCount = this.speedFactor;  
    this.currentSprite.col++;  
    if (this.currentSprite.col == 5) {this.currentSprite.col=0;}  
}
```

20. make sure that you tick this sprite in the tick all.

```
wolf.tick(canvas);
```

21. Try animating other rows of the sprite

22. [optional] try moving the wolf around the screen.

23. [optional] Try making the wolf bigger, by setting width and height attributes and using them in the draw.