

## RANDOM NUMBERS



### What is our GOAL for this MODULE?

We spawned game objects at different positions for our Trex Game.

### What did we ACHIEVE in the class TODAY?

- Generated random numbers and used them inside a game.
- Used the concept of frameCount to introduce a delay in the game.
- Spawned a sequence of game objects at different positions.

### Which CONCEPTS/ CODING BLOCKS did we cover today?

- Random numbers
- Frame count

### How did we DO the activities?

**Step 1:** Math functions are inbuilt in javascript. Math provides us a random function which we can use to get the random number.

**Step 2:** Write code to generate a random number between 1 to 100 and store it in a variable called rand.

```
27 //creating invisible ground
28 invisibleGround = createSprite(200,390,400,10);
29 invisibleGround.visible = false;
30
31 //generate a random number
32 var rand = Math.round(random(1,100))
33 console.log(rand)
34
35
36 }
37
38 function draw() {
39 //set background color
40 background(220);
41
42
43 // console.log(trex.y)
44
45 //jump when the space key is pressed
46 if(keyDown("space") && trex.y >= 362) {
47   trex.velocityY = -10;
48 }
49 }
```

Remember: Every time we run the code, a different random number will be printed on the screen.

**Step 3:** Write code to spawn clouds in the game at different random heights.

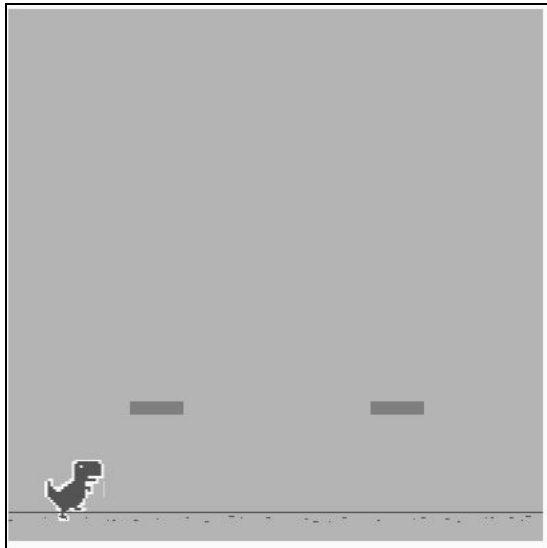
```
50
51 ▼ if (ground.x < 0){
52     ground.x = ground.width/2;
53 }
54
55 //stop trex from falling down
56 trex.collide(invisibleGround);
57
58 //Spawn the clouds
59 spawnClouds();
60
61 drawSprites();
62 }
63
64 ▼ function spawnClouds(){
65     // write code here to spawn the clouds
66 }
67
```

**Step 4:** Write code to create just one small cloud sprite. Generate it outside the screen and give it some x velocity so that it appears to be moving. Write the code to generate a cloud for every 60 frames.

Code:

```
56 //spawn the clouds
57 spawnClouds();
58
59 drawSprites();
60 }
61
62 ▼ function spawnClouds() {
63     //write code here to spawn the clouds
64 ▼ if (frameCount % 60 === 0) {
65     var cloud = createSprite(600,300,40,10);
66     cloud.velocityX = -3;
67 }
68 }
69
70
```

Output:

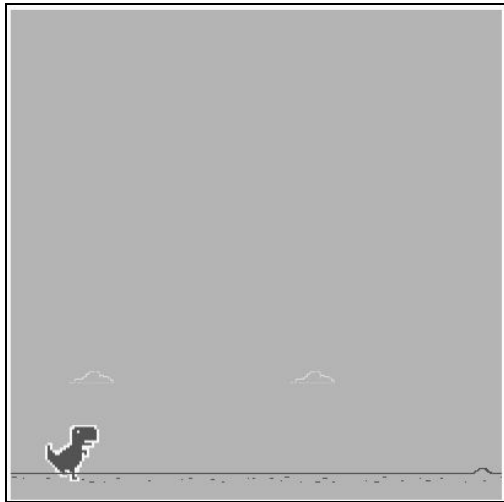


**Step 5:** Add animation to the cloud:

Code:

```
60 //Spawn the clouds
61 spawnClouds();
62
63 drawSprites();
64 }
65
66 function spawnClouds() {
67     //write code here to spawn the clouds
68     if (frameCount % 60 === 0) {
69         var cloud = createSprite(600,120,40,10);
70         cloud.addImage(cloudImage);
71         cloud.scale = 0.4;
72         cloud.velocityX = -3;
73     }
74 }
75
```

Output:

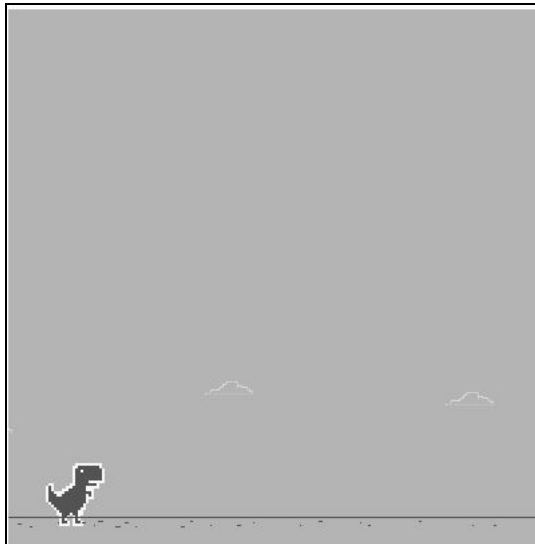


**Step 6:** Change the height of the clouds, make it more random.

Code:

```
56 //spawn the clouds
57 spawnClouds();
58
59 drawSprites();
60 }
61
62 function spawnClouds() {
63 //write code here to spawn the clouds
64 if (frameCount % 60 === 0) {
65     var cloud = createSprite(600,300,40,10);
66     cloud.addImage(cloudImage)
67     cloud.y = Math.round(random(280,320))
68     cloud.scale = 0.4;
69     cloud.velocityX = -3;
70 }
71 }
72
73
```

Output:



**Step 7:** Change the depth of the clouds to be the same as the T-Rex and then increase the depth of the T-Rex by 1. This will ensure that T-Rex has a higher depth than the clouds.

```
61
62 ▾ function spawnClouds() {
63     //write code here to spawn the clouds
64 ▾   if (frameCount % 60 === 0) {
65       var cloud = createSprite(600,300,40,10);
66       cloud.addImage(cloudImage)
67       cloud.y = Math.round(random(280,320))
68       cloud.scale = 0.4;
69       cloud.velocityX = -3;
70
71       //adjust the depth
72       cloud.depth = trex.depth
73       trex.depth = trex.depth + 1;
74     }
75 }
```

### What's next?

We will be fixing memory leaks which make games and apps crash.

**Extend Your Knowledge:**

You can read more about the different functions of p5.play by exploring the examples in the following link:

<https://molleindustria.github.io/p5.play/examples/index.html?fileName=animation.js>

WhiteHat Jr + WhiteHat Jr + WhiteHat Jr