

## RANDOM NUMBERS



### What is our GOAL for this MODULE?

In this class, we learned to spawn game objects at random positions for our Trex Game.

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

- Learned to search through a predefined array
- 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 random positions.

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

- Traversing through an array using a 'for - loop'
- Random numbers
- Frame count
- Math function from P5.js
- Modulo ( % ) operator
- Depth of Sprites

### How did we DO the activities?

1. Find and display the marks which are greater than or equal to 45 from the array using for loop and if conditional statement.

```
var marks = [35,38,42,45,43,34,46,41,48,32];

function setup() {
  createCanvas(400,400);

  for(var i = 0; i<marks.length; i++)
  {
    if(marks[i]>= 45)
    {
      console.log(marks[i])
    }
  }
}
```

2. Continue in Trex code to generate a random number between 1 to 100 and store it in a variable called rand.

```
//creating invisible ground
invisibleGround = createSprite(200,390,400,10);
invisibleGround.visible = false;

//generate random numbers
var rand = Math.round(random(1,100))
console.log(rand)

}

function draw() {
  //set background color
  background(220);

  //console.log(trex.y)

  // jump when the space key is pressed
  if(keyDown("space") && trex.y >= 362) {
    trex.velocityY = -10;
  }
}
```

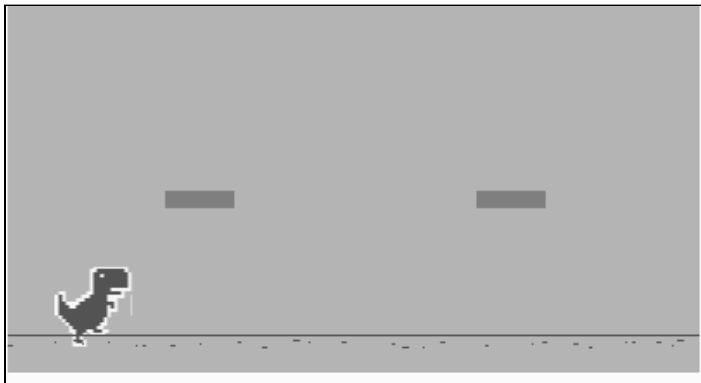
Remember: Every time the code runs, a different random number will be printed on the screen.

3. Write a code to spawn clouds in the game at different random heights.

```
if (ground.x < 0){  
    ground.x = ground.width/2;  
}  
  
//stop trex from falling down  
trex.collide(invisibleGround);  
  
//Spawn Clouds  
spawnClouds()  
  
drawSprites();  
}  
  
//function to spawn the clouds  
function spawnClouds(){  
    // write your code here  
}
```

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. Wrote the code to generate a cloud for every 60 frames using a modulo (%) operator. % return the remainder of a division.

```
//Spawn Clouds  
spawnClouds()  
  
drawSprites();  
}  
  
//function to spawn the clouds  
function spawnClouds(){  
    // write your code here  
    if (frameCount % 60 === 0) {  
        cloud = createSprite(600,300,40,10);  
        cloud.velocityX = -3;  
    }  
}
```

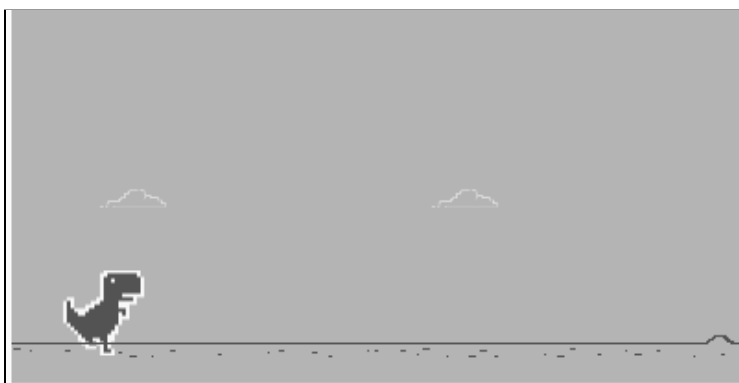


5. Add animation to the cloud:

```
//spawn the clouds
spawnClouds();

drawSprites();
}

function spawnClouds() {
  //write code here to spawn the clouds
  if (frameCount % 60 === 0) {
    cloud = createSprite(600,120,40,10);
    cloud.addImage(cloudImage)
    cloud.scale = 0.4;
    cloud.velocityX = -3;
  }
}
```



6. Allocate different heights to each cloud sprite using Random function.

```
//spawn the clouds
spawnClouds();

drawSprites();
}

function spawnClouds() {
  //write code here to spawn the clouds
  if (frameCount % 60 === 0) {
    cloud = createSprite(600,300,40,10);
    cloud.addImage(cloudImage)
    cloud.y = Math.round(random(280,320))
    cloud.scale = 0.4;
    cloud.velocityX = -3;
  }
}
```



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. This allows T-Rex to jump in front of the cloud and not behind the cloud.

```
function spawnClouds() {  
  //write code here to spawn the clouds  
  if (frameCount % 60 === 0) {  
    cloud = createSprite(600,300,40,10);  
    cloud.addImage(cloudImage)  
    cloud.y = Math.round(random(280,320))  
    cloud.scale = 0.4;  
    cloud.velocityX = -3;  
  
    //adjust the depth  
    cloud.depth = trex.depth  
    trex.depth = trex.depth + 1;  
  }  
}
```

### What's next?

Creating so many sprites in the game could lead to memory leak issues. You will learn about the memory leak issue and its solution in the next class.

### Extend Your Knowledge:

Learn and experiment more about Random numbers' syntax for Code.org:

<https://studio.code.org/docs/gamelab/randomNumber/>