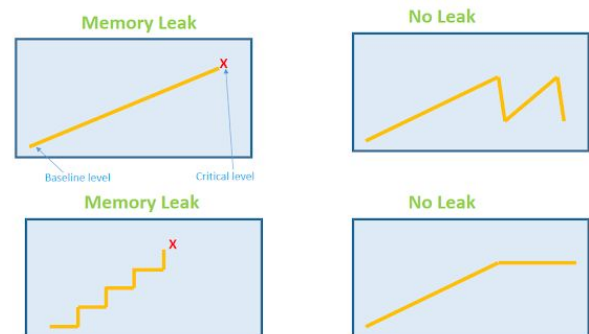


## Memory leak and String concatenation



### What we did:

- Correct the memory leak problem in the code.
- Use string concatenation to randomly spawn the different kinds of obstacles in the game.
- Design a simple scoring system

### How we did it:

**Step 1:** Spawn different kinds of obstacles on the way in the T-Rex runner game.

Assign lifetime to each cloud variable which is getting created. (Formula: Time = Distance/Speed;  $400 / 3 = 134$ )

```

50 function spawnClouds() {
51   //write code here to spawn the clouds
52   if (World.frameCount % 60 === 0) {
53     var cloud = createSprite(400,320,40,10);
54     cloud.y = randomNumber(280,320);
55     cloud.setAnimation("cloud");
56     cloud.scale = 0.5;
57     cloud.velocityX = -3;
58
59     //assign lifetime to the variable
60     cloud.lifetime = 134;
61
62     //adjust the depth
63     cloud.depth = trex.depth;
64     trex.depth = trex.depth + 1;
65   }

```

**Step 2:** Print a string on the console

When any text information is stored in a computer, it is written inside quotes "\_" and called a String.

**Step 3:** String Concatenation

Two strings can be joined together using + sign. Like this: "Hello" and "World".

```
14 var invisibleGround = createSprite(200,385,400,5);
15 invisibleGround.visible = false;
16
17 console.log("Hello" + "World");
18
19
20
21 function draw() {
22   //set background to white
23   background("white");
24
25   ground.velocityX = -2;
26
27   //console.log(trex.y);
28 }
```

Debug Console    Debug Sprites: Off    Clear    Wat

HelloWorld    Variable / Prop

A word and number can also be used together.

```
14 var invisibleGround = createSprite(200,385,400,5);
15 invisibleGround.visible = false;
16
17 console.log("Hello" + 5);
18
19
```

**Step 4:** Create an empty function called spawnObstacles and use it inside the draw function.

```

44 //spawn the clouds
45 spawnClouds();
46
47 //spawn obstacles on the ground
48 spawnObstacles();
49
50 drawSprites();
51 }
52
53 function spawnObstacles() {
54   |
55 }
56
57 function spawnClouds() {
58   //write code here to spawn the clouds

```

**Step 5:** Create an obstacle sprite every 60 frames or so.

Give the obstacle the same velocity as the ground. The obstacles need to move with the ground.

```

45 spawnClouds();
46
47 //spawn obstacles
48 spawnObstacles();
49
50 drawSprites();
51 }
52
53 function spawnObstacles() {
54   if(World.frameCount % 60 === 0) {
55     var obstacle = createSprite(400,365,10,40);
56     obstacle.velocityX = -6;
57   }
58 }
59
60 function spawnClouds() {
61   //write code here to spawn the clouds
62   if (World.frameCount % 60 === 0) {

```

**Step 6:** Generate and store a random number between 1 to 6.

Use string concatenation to randomly assign different obstacle animations for the obstacle sprites.

```

53 function spawnObstacles() {
54   if(World.frameCount % 60 === 0) {
55     var obstacle = createSprite(400,365,10,40);
56     obstacle.velocityX = -6;
57
58     var rand = randomNumber(1,6);
59     obstacle.setAnimation("obstacle" + rand);
60   }
61 }

```

Scale the obstacles by half and give them a lifetime.

```

52
53 function spawnObstacles() {
54   if(World.frameCount % 60 === 0) {
55     var obstacle = createSprite(400,365,10,40);
56     obstacle.velocityX = -6;
57
58     var rand = randomNumber(1,6);
59     obstacle.setAnimation("obstacle" + rand);
60
61     obstacle.scale = 0.5;
62     obstacle.lifetime = 70;
63   }
64 }
65

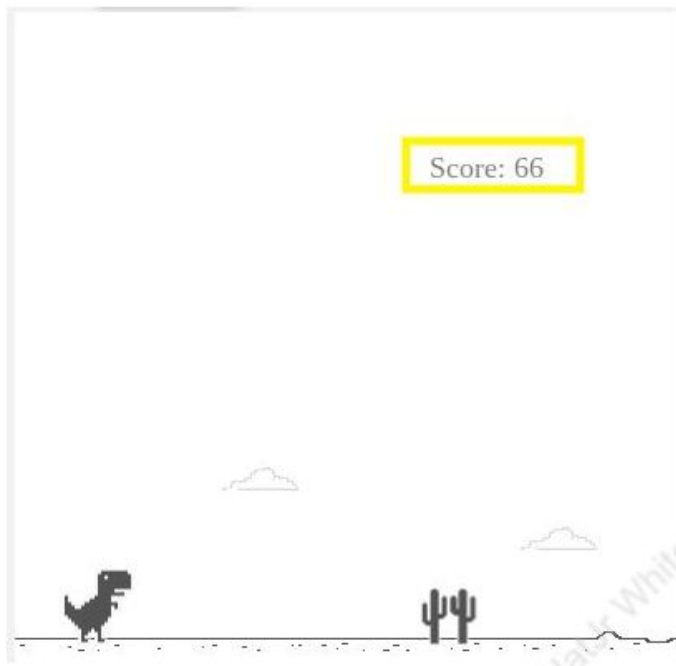
```

Build a simple scoring system. We can use the frameCount as the score.

```

20
21 //set text
22 textSize(18);
23 textFont("Georgia");
24
25 function draw() {
26   //set background to white
27   background("white");
28
29   ground.velocityX = -6;
30
31   //scoring
32   var count = World.frameCount;
33   text("Score: "+ count, 250, 100);
34

```

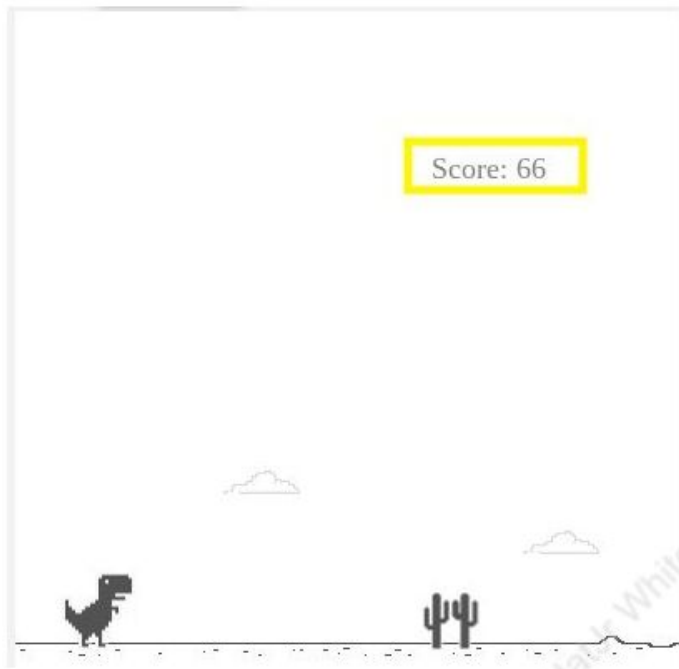


**Step 7:** Take one fourth of the frameCount as the score.

Code:

```
29 ground.velocityX = -6;  
30  
31 //scoring  
32 var count = Math.round(World.frameCount/4);  
33 text("Score: "+ count, 250, 100);  
34  
35 //console.log(trex.y);  
36  
37 if (ground.x < 0){  
38   ground.x = ground.width/2;
```

Output:



**What's next? :** Build collision with the obstacles and using game states