CODE DEBUGGING AND CODE INDENTATION

What is our GOAL for this MODULE?

In this class, we learned to indent code to make it more readable. Also used the method of displaying messages on the console to debug the program.

What did we ACHIEVE in the class TODAY?

- Learned the use of for loops to access arrays.
- Indented the code correctly to make it more readable.
- Resolved the bug; where the Trex was jumping in the air, with an addition of a condition.
- Created an invisible ground sprite to make the Trex run below the ground.

Which CONCEPTS/ CODING BLOCKS did we cover today?

- For Loop
- Code indentation
- Identifying bugs in the program
- Debugging the code
- Sprite Visibility Functions

How did we DO the activities?

1. Use the **for** loop to iterate through the arrays and get the output.

```
var marks = [30,40,45,35];

for(var i = 0; i<marks.length; i= i+1)
{
  console.log(marks[i]);
}

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

function draw() {
  background(150);
}
```

2. Create a function **marks_average()** for finding the average of marks.

```
var marks = [30,40,45,35];

function marks_average()
{
  var sum = 0;
    for(var i = 0; i<marks.length; i= i+1)
      {
        sum = sum + marks[i];
      }
      var avg = sum/marks.length;
    console.log(avg);
}

function setup() {
  createCanvas(400, 400);
  marks_average();
}
```

3. Find the average weight from the array of weight values using for loop.

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

  for(var i = 0; i<weight.length; i++)
  {
    sum = sum + weight[i];
  }

  var average = sum/weight.length;
  console.log(average);

}
```

4. Implement code indentation with the Trex code, written in the previous class,
   - Add space after every meaningful line of code. The computer ignores blank spaces, but it allows users to read the code easily.

```
function setup() {
  createCanvas(600,200);

  //create a trex sprite
  trex = createSprite(50,160,20,50);
  trex.addAnimation("running", trex_running);
  trex.scale = 0.5;

  //create a ground sprite
  ground = createSprite(200,180,400,20);
  ground.addImage("ground",groundImage);
  ground.x = ground.width /2;
  ground.velocityX = -4;

  //creating invisible ground
  invisibleGround = createSprite(200,190,400,10);
  invisibleGround.visible = false;

}

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

  console.log(trex.y)
```

   - Add a right indentation before every instruction line contained inside another block of

code.

```
}

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

  console.log(trex.y)

  //jump when the space key is pressed
  if(keyDown("space") && trex.y >= 100) {
    trex.velocityY = -10;
  }

  //add gravity
  trex.velocityY = trex.velocityY + 0.8

  if (ground.x < 0){
    ground.x = ground.width/2;
  }

  //stop trex from falling down
  trex.collide(invisibleGround);

  drawSprites();
}
```

5. Code Debugging, the first bug: There was a gap between dinosaur's feet and the ground.
    - Create an **invisibleGround** sprite just below the actual ground sprite.

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

  //create a trex sprite
  trex = createSprite(50,380,20,50);
  trex.addAnimation("running", trex_running);
  trex.scale = 0.5;

  //create a ground sprite
  ground = createSprite(200,380,400,20);
  ground.addImage("ground",groundImage);
  ground.x = ground.width /2;
  ground.velocityX = -2;

  //creating invisible ground
  invisibleGround = createSprite(200,390,400,10);
}

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

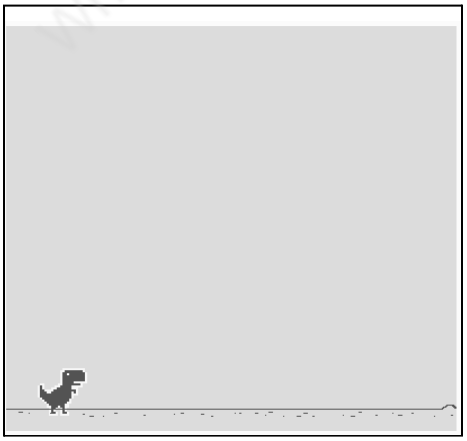
6. Update the Trex collision with the **invisibleGround**.

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

  console.log(trex.y)

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

  //add gravity
  trex.velocityY = trex.velocityY + 0.8

  if (ground.x < 0){
    ground.x = ground.width/2;
  }

  //stop trex from falling down
  trex.collide(invisibleGround);

  drawSprites();
}
```

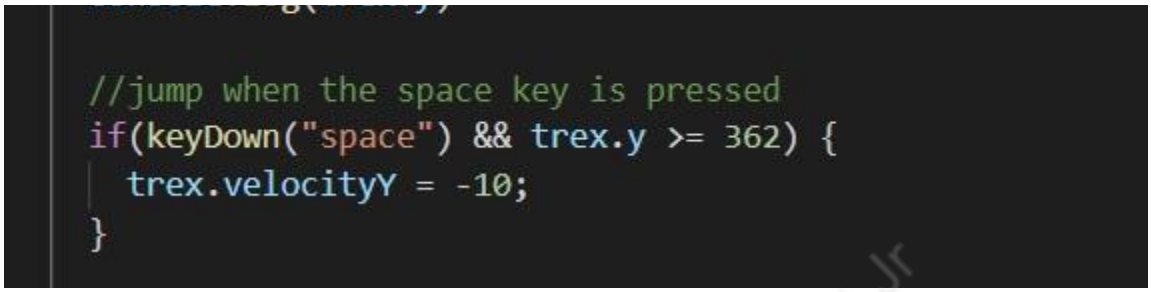
- Add the command **invisibleGround.visible = false;** in the **setup()** function to make lower ground invisible.

```
  //creating invisible ground
  invisibleGround = createSprite(200,190,400,10);
  invisibleGround.visible = false;
}
function draw() {
```

OUTPUT:



7. Fix the second bug: The Trex jumps in the air! Trex should jump only when it is on the ground. There are a couple of ways to achieve this as follows:
    - Restrict its jump while Trex is on the ground by adding the condition, **trex.y > = 362**.
    - Limit the upper level for the Trex to jump, **trex.y >= 100**.



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

What's next?

In the next class, we will look at how to create floating clouds at different heights.

EXTEND YOUR KNOWLEDGE:

1. You can refer to these Tips given by Chrome Developer: 'Kayce Basques' in his blog : "Debug Javascript"