

## Capstone Class: Ghost Runner



### What is our GOAL for this MODULE?

We used our knowledge about functions, loops, game states to create another endless game called Ghost Runner.

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

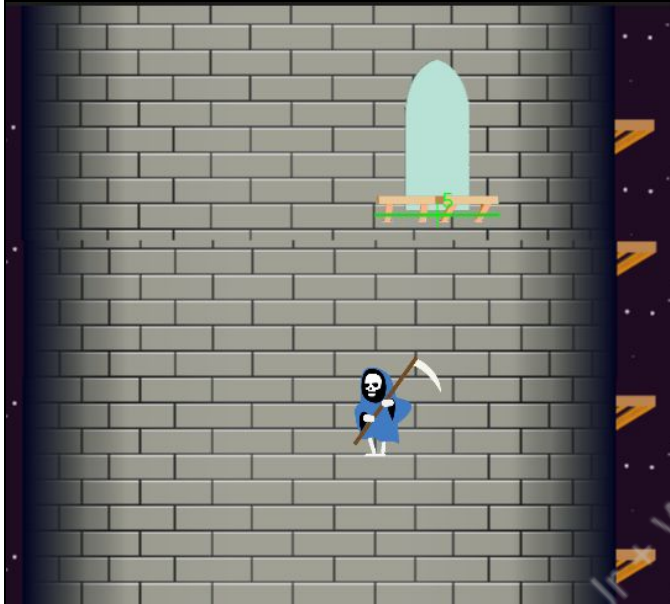
- Built the Ghost Runner Game
- Reviewed the concepts covered in the past few classes.

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

- Functions
- Loops
- Adding Images and Game Sounds
- Concept of Touches

### How did we DO the activities?

1. Observe the ghost game from different angles.



### Code for game.

2. We started by building an infinite vertically scrolling tower.

```
1  var towerImg, tower;
2
3  function preload(){
4    towerImg = loadImage("tower.png");
5  }
6
7  function setup(){
8    createCanvas(600,600);
9    tower = createSprite(300,300);
10   tower.addImage("tower",towerImg);
11   tower.velocityY = 1;
12 }
13
14
15 function draw(){
16   background(0);
17
18   if(tower.y > 400){
19     tower.y = 300
20   }
21
22   drawSprites();
23 }
24 }
25
```

3. Then we coded to:

- load the door image
- create a door group
- write a function to spawn doors

```
1  var towerImg, tower;
2  var doorImg, door, doorsGroup;
3
4
5  function preload(){
6    towerImg = loadImage("tower.png");
7    doorImg = loadImage("door.png");
8
9    doorsGroup = new Group();
10 }
11
12 function setup(){
13   createCanvas(600,600);
14   tower = createSprite(300,300);
15   tower.addImage("tower",towerImg);
16   tower.velocityY = 1;
17
18 }
```

```
25 }
26
27 spawnDoors();
28 drawSprites();
29
30 }
31
32 function spawnDoors() {
33   //write code here to spawn the doors in the tower
34   if (frameCount % 240 === 0) {
35     var door = createSprite(200, -50);
36     door.addImage(doorImg);
37
38     door.x = Math.round(random(120,400));
39     door.velocityY = 1;
40
41     //assign lifetime to the variable
42     door.lifetime = 800;
43
44     //add each door to the group
45     doorsGroup.add(door);
46   }
47 }
48 }
49 }
```

4. Then we added railings below the doors.

```
1  var towerImg, tower;
2  var doorImg, door, doorsGroup;
3  var climberImg, climber, climbersGroup;
4
5
6
7  function preload(){
8    towerImg = loadImage("tower.png");
9    doorImg = loadImage("door.png");
10   climberImg = loadImage("climber.png");
11
12   doorsGroup = new Group();
13   climbersGroup = new Group();
14 }
15
16 function setup(){
17   createCanvas(600,600);
18   tower = createSprite(300,300);
19   tower.addImage("tower",towerImg);
20   tower.velocityY = 1;
21
22 }
23
```

```
36 function spawnDoors() {
37   //write code here to spawn the doors in the tower
38   if (frameCount % 240 === 0) {
39     var door = createSprite(200, -50);
40     door.addImage(doorImg);
41
42     var climber = createSprite(200,10);
43     climber.addImage(climberImg);
44
45
46
47     door.x = Math.round(random(120,400));
48     door.velocityY = 1;
49
50     climber.x = door.x;
51     climber.velocityY = 1;
52
53     //assign lifetime to the variable
54     door.lifetime = 800;
55     climber.lifetime = 800;
56
57     //add each door to the group
58     doorsGroup.add(door);
59     climbersGroup.add(climber);
60
61   }
62 }
```



- Then we created a ghost character with an ability to jump when the space key is pressed and move left and right on the press of arrow keys.

```

3  var climberImg, climber, climberGroup,
4  var ghost, ghostImg;
5
6  function preload(){
7    towerImg = loadImage("tower.png");
8    doorImg = loadImage("door.png");
9    climberImg = loadImage("climber.png");
10   ghostImg = loadImage("ghost-standing.png");
11 }
12
13
14 function setup(){
15   createCanvas(600,600);
16   tower = createSprite(300,300);
17   tower.addImage("tower",towerImg);
18   tower.velocityY = 1;
19
20
21   doorsGroup = new Group();
22   climbersGroup = new Group();
23
24   ghost = createSprite(200,200,50,50);
25   ghost.scale = 0.3;
26   ghost.addImage("ghost", ghostImg);
27
28 }
29

```

```

29
30 function draw(){
31   background(0);
32
33   if(tower.y > 400){
34     tower.y = 300
35   }
36
37   if(keyDown("left_arrow")){
38     ghost.x = ghost.x - 3;
39   }
40
41   if(keyDown("right_arrow")){
42     ghost.x = ghost.x + 3;
43   }
44
45   if(keyDown("space")){
46     ghost.velocityY = -5;
47   }
48
49   ghost.velocityY = ghost.velocityY + 0.8
50
51   spawnDoors();
52   drawSprites();
53
54 }
55

```

6. We added depth so that the ghost character appears on the door.

```
85 door.x = Math.round(random(120,400));
86 climber.x = door.x;
87 invisibleBlock.x = door.x;
88
89 door.addImage(doorImg);
90 climber.addImage(climberImg);
91
92 door.velocityY = 1;
93 climber.velocityY = 1;
94 invisibleBlock.velocityY = 1;
95
96 ghost.depth = door.depth;
97 ghost.depth +=1;
98
99 //assign lifetime to the variable
100 door.lifetime = 800;
101 climber.lifetime = 800;
102 invisibleBlock.lifetime = 800;
103
```

7. We wrote code for the ghost to rest on the railing.

```
38 ghost.x = ghost.x - 3;
39 }
40
41 if(keyDown("right_arrow")){
42 ghost.x = ghost.x + 3;
43 }
44
45 if(keyDown("space")){
46 ghost.velocityY = -5;
47 }
48
49 ghost.velocityY = ghost.velocityY + 0.8
50
51 if(climbersGroup.isTouching(ghost)){
52 ghost.velocityY = 0;
53 }
54
55 spawnDoors();
56 drawSprites();
57
58 }
59
60 function spawnDoors() {
61 //write code here to spawn the doors in the tower
62 if (frameCount % 240 === 0) {
63 var door = createSprite(200, -50);
```

8. We wrote code to end the game when the ghost touches the bottom of the railing.

```
var towerImg, tower;
var doorImg, door, doorsGroup;
var climberImg, climber, climbersGroup;
var ghost, ghostImg;
var invisibleBlockGroup, invisibleBlock;

function preload(){
  towerImg = loadImage("tower.png");
  doorImg = loadImage("door.png");
  climberImg = loadImage("climber.png");
  ghostImg = loadImage("ghost-standing.png");
}

function setup(){
  createCanvas(600,600);
  tower = createSprite(300,300);
  tower.addImage("tower",towerImg);
  tower.velocityY = 1;

  doorsGroup = new Group();
  climbersGroup = new Group();
  invisibleBlockGroup = new Group();

  ghost = createSprite(200,200,50,50);
  ghost.scale = 0.3;
  ghost.addImage("ghost", ghostImg);
}

function draw(){
  background(0);

  if(tower.y > 400){
    tower.y = 300
  }
```

```
if(keyDown("left_arrow")){
    ghost.x = ghost.x - 3;
}

if(keyDown("right_arrow")){
    ghost.x = ghost.x + 3;
}

if(keyDown("space")){
    ghost.velocityY = -5;
}

ghost.velocityY = ghost.velocityY + 0.8

if(climbersGroup.isTouching(ghost)){
    ghost.velocityY = 0;
}

if(invisibleBlockGroup.isTouching(ghost) || ghost.y > 600){
    ghost.destroy();
}

spawnDoors();
drawSprites();
}

function spawnDoors() {
    //write code here to spawn the doors in the tower
    if (frameCount % 240 === 0) {
        var door = createSprite(200, -50);
        door.addImage(doorImg);

        var climber = createSprite(200,10);
        climber.addImage(climberImg);

        var invisibleBlock = createSprite(200,15);
        invisibleBlock.width = climber.width;
        invisibleBlock.height = 2;
```



```
door.x = Math.round(random(120,400));
door.velocityY = 1;

climber.x = door.x;
climber.velocityY = 1;

invisibleBlock.x = door.x;
invisibleBlock.velocityY = 1;

//assign lifetime to the variable
door.lifetime = 800;
climber.lifetime = 800;
invisibleBlock.lifetime = 800;

//add each door to the group
doorsGroup.add(door);
climbersGroup.add(climber);

invisibleBlock.debug = true;
invisibleBlockGroup.add(invisibleBlock);

ghost.depth = door.depth;
ghost.depth +=1;

}
}
```

9. We added game state and created the game over screen.

```
var towerImg, tower;
var doorImg, door, doorsGroup;
var climberImg, climber, climbersGroup;
var ghost, ghostImg;
var invisibleBlockGroup, invisibleBlock;
var gameState = "play"

function preload(){
  towerImg = loadImage("tower.png");
  doorImg = loadImage("door.png");
  climberImg = loadImage("climber.png");
  ghostImg = loadImage("ghost-standing.png");
  spookySound = loadSound("spooky.wav");
}

function setup(){
  createCanvas(600,600);
  spookySound.loop();
  tower = createSprite(300,300);
  tower.addImage("tower",towerImg);
  tower.velocityY = 1;

  doorsGroup = new Group();
  climbersGroup = new Group();
  invisibleBlockGroup = new Group();

  ghost = createSprite(200,200,50,50);
  ghost.scale = 0.3;
  ghost.addImage("ghost", ghostImg);
}

function draw(){
  background(0);
  if (gameState === "play") {
    if(keyDown("left_arrow")){
      ghost.x = ghost.x - 3;
    }

    if(keyDown("right_arrow")){
```

```
    ghost.x = ghost.x + 3;
  }

  if(keyDown("space")){
    ghost.velocityY = -10;
  }

  ghost.velocityY = ghost.velocityY + 0.8

  if(tower.y > 400){
    tower.y = 300
  }
  spawnDoors();

  //climbersGroup.collide(ghost);
  if(climbersGroup.isTouching(ghost)){
    ghost.velocityY = 0;
  }
  if(invisibleBlockGroup.isTouching(ghost) || ghost.y > 600){
    ghost.destroy();
    gameState = "end"
  }

  drawSprites();
}

if (gameState === "end"){
  stroke("yellow");
  fill("yellow");
  textSize(30);
  text("Game Over", 230,250)
}

}

function spawnDoors() {
  //write code here to spawn the doors in the tower
  if (frameCount % 240 === 0) {
    var door = createSprite(200, -50);
    var climber = createSprite(200,10);
```

```
var invisibleBlock = createSprite(200,15);
invisibleBlock.width = climber.width;
invisibleBlock.height = 2;

door.x = Math.round(random(120,400));
climber.x = door.x;
invisibleBlock.x = door.x;

door.addImage(doorImg);
climber.addImage(climberImg);

door.velocityY = 1;
climber.velocityY = 1;
invisibleBlock.velocityY = 1;

ghost.depth = door.depth;
ghost.depth +=1;

//assign lifetime to the variable
door.lifetime = 800;
climber.lifetime = 800;
invisibleBlock.lifetime = 800;

//add each door to the group
doorsGroup.add(door);
invisibleBlock.debug = true;
climbersGroup.add(climber);
invisibleBlockGroup.add(invisibleBlock);
}
}
```

10. We added the sounds to the game.

```
7
8 function preload(){
9   towerImg = loadImage("tower.png");
10  doorImg = loadImage("door.png");
11  climberImg = loadImage("climber.png");
12  ghostImg = loadImage("ghost-standing.png");
13  spookySound = loadSound("spooky.wav");
14 }
15
16 function setup(){
17   createCanvas(600,600);
18   spookySound.loop();
19   tower = createSprite(300,300);
20   tower.addImage("tower",towerImg);
21   tower.velocityY = 1;
22
23   doorsGroup = new Group();
24   climbersGroup = new Group();
25   invisibleBlockGroup = new Group();
26 }
```

### What's next?

We will finish up rewriting the trex game and learn how we can host it online so that our friends and family can play the game.