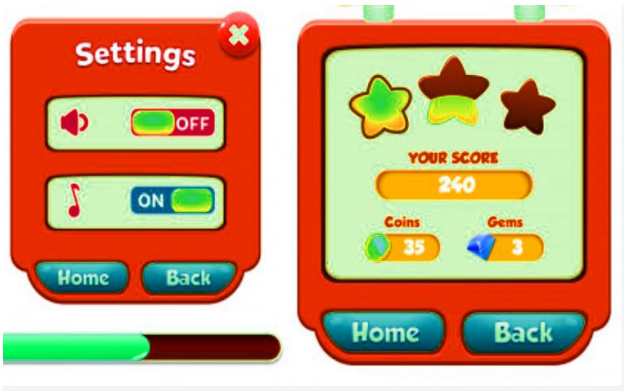
# Game Adaptivity




## What is our GOAL for this MODULE?

We added AI to the game and made the game increasingly complex as the game progresses.

## What did we ACHIEVE in the class TODAY?

- Added sounds to the game.
- Made the game increasingly complex as the game progresses.
- Added AI to the Trex.

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

- Adding sounds
- Concept of AI

## How did we DO the activities?

***Step 1:*** Add sounds to the game
The sounds have been uploaded in the Student Activity Link as:
*jump.mp3* - Trex jump sound
*die.mp3* - Trex dying sound
*checkPoint.mp3* - Trex crossing 100 milestone sound

Jump sound: Play when the user presses space

```
  jumpSound = loadSound("jump.mp3")
  dieSound = loadSound("die.mp3")
  checkPointSound = loadSound("checkPoint.mp3")
}
```

```
82
83  if(gameState === PLAY){
84    //move the ground
85    gameOver.visible = false;
86    restart.visible = false;
87
88    ground.velocityX = -4;
89    //scoring
90    score = score + Math.round(getFrameRate()/60);
91
92    if (ground.x < 0){
93      ground.x = ground.width/2;
94    }
95
96    //jump when the space key is pressed
97    if(keyDown("space")&& trex.y >= 362) {
98        trex.velocityY = -12;
99        jumpSound.play();
100   }
101
102   //add gravity
103   trex.velocityY = trex.velocityY + 0.8
104
105   //spawn the clouds
106   spawnClouds();
107
```

Die Sound: Play when the obstacle touches the trex

```
101
102     //add gravity
103     trex.velocityY = trex.velocityY + 0.8
104
105     //spawn the clouds
106     spawnClouds();
107
108     //spawn obstacles on the ground
109     spawnObstacles();
110
111     if(obstaclesGroup.isTouching(trex)){
112         gameState = END;
113         dieSound.play()
114     }
115   }
116    else if (gameState === END) {
117      gameOver.visible = true;
118      restart.visible = true;
119
120      ground.velocityX = 0;
121      trex.velocityY = 0
122      //change the trex animation
123      trex.changeAnimation("collided",trex_collided);
124
```

Milestone sound: Play every time the trex crosses +100 in score

```
88      ground.velocityX = -4;
89      //scoring
90      score = score + Math.round(getFrameRate()/60);
91
92      if(score>0 && score%100 === 0){
93         checkPointSound.play()
94      }
95
96      if (ground.x < 0){
97        ground.x = ground.width/2;
98      }
99
100     //jump when the space key is pressed
101     if(keyDown("space")&& trex.y >= 362) {
102         trex.velocityY = -12;
103         jumpSound.play();
104     }
105
```

**Step 2:** Increase the speed in the game as the game progresses.
Add ground velocity.

```
if(gameState === PLAY){
  //move the
  gameOver.visible = false;
  restart.visible = false;

  ground.velocityX = -(4 + 3* score/100)
  //scoring
  score = score + Math.round(getFrameRate()/60);

  if(score>0 && score%100 === 0){
     checkPointSound.play()
  }

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

  //jump when the space key is pressed
  if(keyDown("space")&& trex.y >= 362) {
      trex.velocityY = -12;
      jumpSound.play();
  }
```

Add obstacle velocity.

```
function spawnObstacles(){
 if (frameCount % 60 === 0){
   var obstacle = createSprite(400,365,10,40);
   obstacle.velocityX = -(6 + score/100);

    //generate random obstacles
    var rand = Math.round(random(1,6));
    switch(rand) {
      case 1: obstacle.addImage(obstacle1);
              break;
      case 2: obstacle.addImage(obstacle2);
              break;
      case 3: obstacle.addImage(obstacle3);
              break;
      case 4: obstacle.addImage(obstacle4);
              break;
      case 5: obstacle.addImage(obstacle5);
              break;
      case 6: obstacle.addImage(obstacle6);
              break;
      default: break;
    }
```

**Step 3:** Add some AI to the Trex.
Make the T-Rex artificially intelligent so that it jumps on its own when it sees the obstacle.

```
60
61   //create Obstacle and Cloud Groups
62   obstaclesGroup = createGroup();
63   cloudsGroup = createGroup();
64
65   console.log("Hello" + 5);
66
67   trex.setCollider("rectangle",0,0,trex.width,trex.height);
68
69
70   score = 0;
71
72 }
```

```
111
112     //spawn obstacles on the ground
113     spawnObstacles();
114
115     if(obstaclesGroup.isTouching(trex)){
116         trex.velocityY = -12;
117         jumpSound.play();
118         // gameState = END;
119         // dieSound.play()
120
121     }
122   }
123    else if (gameState === END) {
124       gameOver.visible = true;
125       restart.visible = true;
126
127       ground.velocityX = 0;
128       trex.velocityY = 0
129       //change the trex animation
130       trex.changeAnimation("collided",trex_collided);
131
132       //set lifetime of the game objects so that they are
    never destroyed
133     obstaclesGroup.setLifetimeEach(-1);
134     cloudsGroup.setLifetimeEach(-1);
```

## What's next?

We will learn the meaning of "scope" in programming.

## Extend Your Knowledge:

You can read more about the different functions their usage of p5.play by exploring the examples in the following link:
https://molleindustria.github.io/p5.play/examples/index.html?fileName=animation.js