## INSTRUCTIONS:

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Goal of the Project:

In Class 16, you learned about the scope of local and global variables. You also learned to write the reset() function for the t-rex game and rewrote the pong game in the p5 editor.

In this project, you will apply what you have learned in the class to achieve the following goals.

Main Goal	- Create different opponent cyclists. - Add a distance calculating functionality. - Add cycle bell sound.
Additional Goal 1	- Cyclists should not move outside of the road. - Increase the path speed. - Increase the cyclists speed.
Additional Goal 2	Add the game end functionality.
Additional Goal 3	Write a function to reset the game.
Additional Goal 4	Create a challenge, add obstacles.

Story:

Rocky loves cycles. He wants you to create a cycle racing game for him because he knows that you are the best in creating games. Can you create a design for his game?
See a video of this in [action](#).
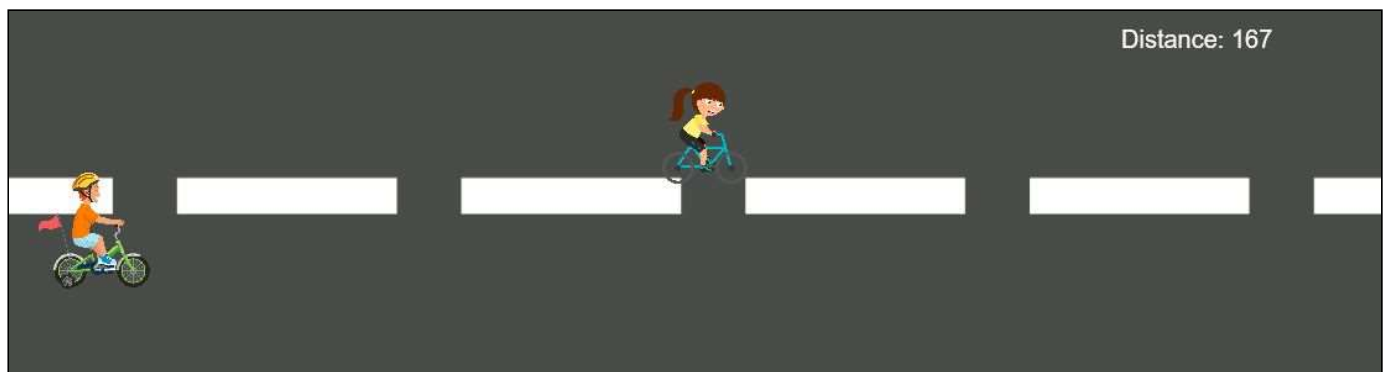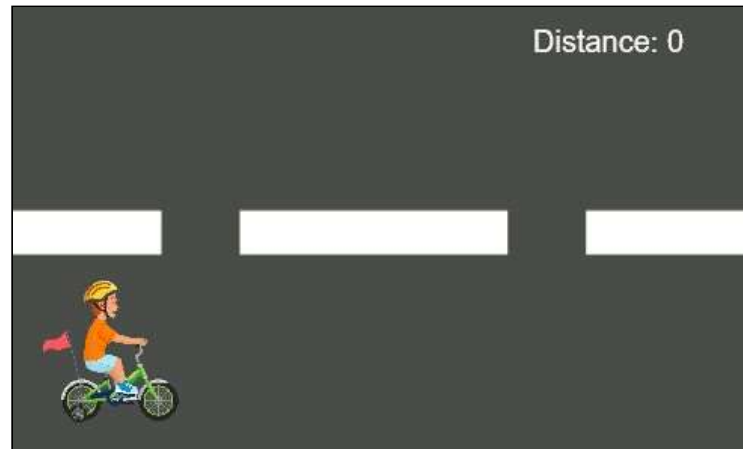
*This is just for your reference. We expect you to apply your own creativity in the project.

Getting Started:

1. Login to p5.js editor.
2. Click on the following link: Project Template.
3. Click on "File".
4. Click on "Duplicate".
5. Rename the project to **Project 16** and click on **Save.**
6. Download images from here.

Specific Tasks to Achieve the Main Goal:

1. Create **global variables** for:
   ● cycleBell
   ● pinkCG (opponent pink cyclists group)
   ● yellowCG (opponent yellow cyclist group)
   ● redCG (opponent red cyclist group)

2. Create **functions for the opponentCyclists (pinkCyclists, yellowCyclists,redCyclists)** outside the draw() function and call it inside the draw() function.
3. Use a **random number** to generate different **opponentCyclists** randomly.
4. In the **draw()** function:
   - When the **space key** is pressed, play the **cycleBell** sound.
5. Increment the **distance** as per the frameRate.
6. Click on **Run** once to check if the code is working.

*Refer to the images given above for reference.

Submitting the Project:

1. **SAVE** all the changes made to the project.
2. Click the "**SHARE**" button to generate a shareable link.
3. Copy this link and submit it in the Student Dashboard Projects panel against the correct class number.

Hints for the Main Goal:

1. To create opponentCyclists randomly, you can use the code shown below:

```
//creating continous opponent players
var select_oppPlayer = Math.round(random(1,3));

if (World.frameCount % 150 == 0) {
  if (select_oppPlayer == 1) {
    pinkCyclists();
  } else {
    redCyclists();
  }
}
```

```
function pinkCyclists(){
        player1 =createSprite(1100,Math.round(random(50, 250), 10, 10));
        player1.scale =0.06;
        player1.addAnimation("opponentPlayer1",oppPink1Img);
        player1.setLifetime=170;
        pinkCG.add(player1);
}
```
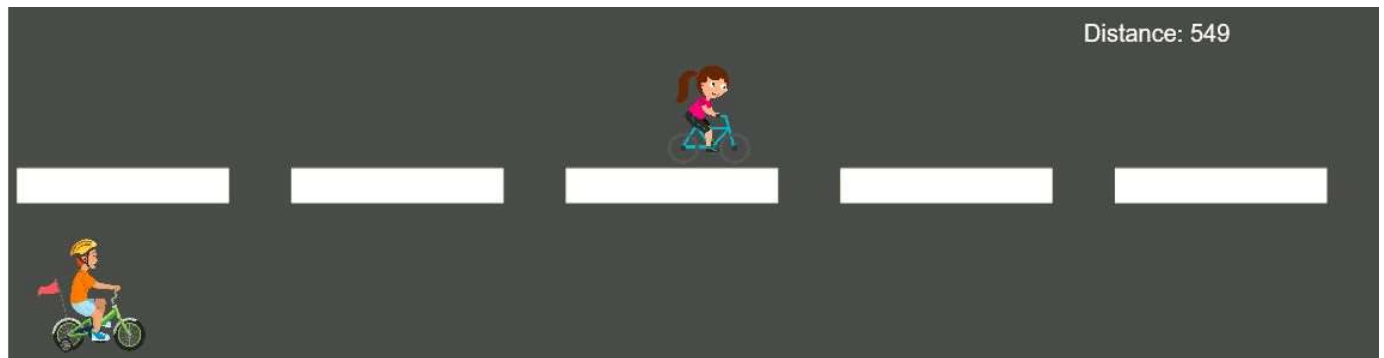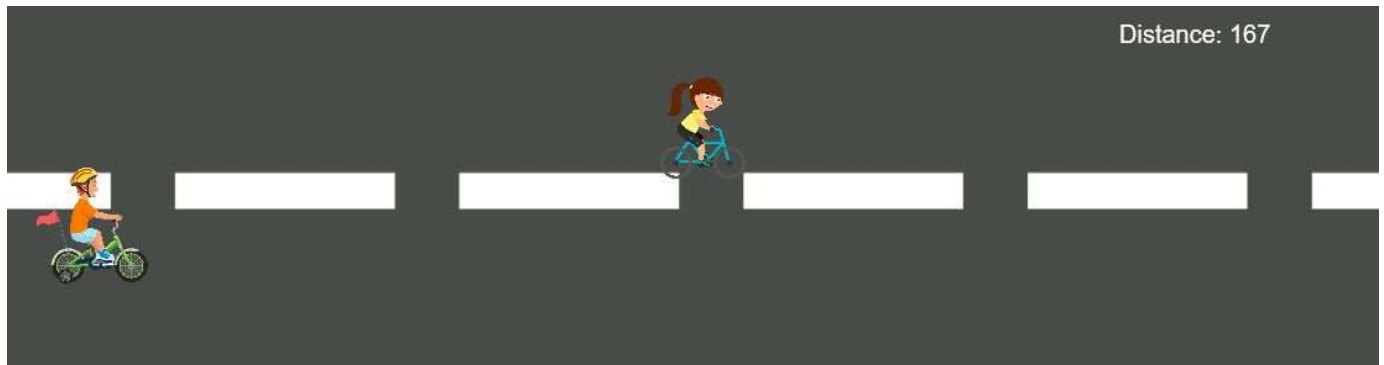
2. Preload the sound in preload( ) and play it when the space key is pressed using **play()**.

3. To calculate the distance you can use the code given below:

```
distance = distance + Math.round(getFrameRate()/50);
```

Additional Goal 1:

Now you have to help Rocky in making his game a bit challenging by increasing the speed of the path and opponentCyclists.

Specific Tasks to Achieve Additional Goal 1:

1. Create edgeSprite( ) to collide mainCyclist from the edges.
2. Now write the code to increase the speed of path and opponentCyclists as per the distance covered by the mainCyclist .
3. Click on "Run" once to check if the code is working correctly.

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Hints for the Additional Goal 1:

1. You can use the below code to increase the path velocity:

```
path.velocityX = -(6 + 2*distance/150);
```

```
pinkCyclists.velocityX = -(6 + 2*distance/150);
```

Additional Goal 2:

Add the game over animation when the cyclist touches any of the opponentCyclists (pink, yellow or red cyclists).

Specific Tasks to Achieve Additional Goal 2:

1. If the mainRacer is touching any pinkCyclists, go to **gameState END**.
   - Destroy the pinkCG.
   - Path velocity X to 0.
   - MainRacer velocity X to 0.
   - Set velocity X for the pinkCG group to 0.
   - Set lifetime for the pinkCG group to -1.
2. Repeat the first step for the other two cyclists group i.e. yellowCyclists and redCyclists.
3. Create a gameOver sprite and give it the **"Game Over" Animation** and reposition it to the center of the game area.
4. Also add the text **"Press Up Arrow to Restart the game!"** below the gameover sprite.
5. Click on "Run" once to check if the code is working correctly.

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Additional Goal 3:

Lastly you have to help Rocky in adding game reset functionality. And then the game for Rocky will be ready.

Specific Tasks to Achieve Additional Goal 3:

1. Create a reset function to restart the game.
2. Go to **gameState END** condition:
   - Write an if condition for pressing UP_ARROW.
   - Call the reset( ).
3. Click on "Run" once to check if the code is working correctly.

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Hints for the Additional Goal 3:

1. You can use the code given below for reset( ):

```
if(keyDown("UP_ARROW")) {
    reset();
}
```

```
function reset(){
    gameState = PLAY;
    gameOver.visible = false;

    pinkCG.destroyEach();
    yellowCG.destroyEach();
    redCG.destroyEach();

    distance = 0;
}
```

Additional Goal 4:

Rocky is now thinking to add obstacles in his racing game. Can you help in adding obstacles in the game?

Specific Tasks to Achieve Additional Goal 3:

1. Create obstacle groups and functions.
2. Give them some random velocity.
3. Increase the speed of obstacles as per the increase in distance.
4. If the mainRacer is touching any obstacles, go to **gameState END**.
   - Destroy the obstacleGroup.
   - Path velocity X to 0.
   - MainRacer velocity X to 0.
   - Set velocity X for the obstacleGroupgroup to 0.
   - Set lifetime for the obstacleGroupgroup to -1.
5. Click on "Run" once to check if the code is working correctly.

*SAVE all the changes made to the project and **SUBMIT** the shareable link in the Student Dashboard Projects panel against the correct class number.

REMEMBER... Try your best, that's more important than being correct.
After submitting your project your teacher will send you feedback on your work.

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