Tennis

Workshop Outline

The objective is to build a Tennis game in Scratch where one Player plays against the computer. The first player who reaches 5 points wins the game.

Learning Objectives:

- Familiarity with the Scratch environment: sprite, stage and scripts
- Motion: Using the keys to control the main character movements
- Interaction: Sensing a specific sprite

Materials and resources:

- Scratch Account (Recommended) - Scratch info link - Account info link
- Scratch starter project OPTIONAL - LINK
- Scratch completed project - LINK

Let’s Code

Customize the Court

In the provided background what do you think those red and blue rectangles are for?
Coding the Player Paddle Sprite – Blue Paddle

We provided a Blue Paddle Sprite for you to use, but feel free to change it any way you like. This Sprite needs two sets of instructions, the first one to set the starting position and direction of the Sprite and the second one to make the Sprite follow the movement of the mouse up and down.

1. Set the initial position and direction of the Paddle Sprite:

2. Have the Paddle Sprite follow the mouse up and down:
Find the **mouse y** block in the **Sensing** section

**Coding the Computer Paddle Sprite – Red Paddle**

We also provided a Red Paddle Sprite for you to use. Once again, feel free to change it any way you like. This Sprite also needs two sets of instructions, just like the Blue Paddle did. The first one is to set the starting position and direction of the Sprite. The second set of instructions is a bit different as it should be controlled by the computer and not the player. Take a look at the code and we’ll go over some of the details.

1. Set the starting position and direction of the Sprite. This is the same as the Blue Paddle:
2. Blocks to have the computer control the paddle:

These blocks run as long as the game is being played and makes the Paddle face the ball and move up and down without changing the position horizontally. Remove some of the blocks and try to explain what is happening. Once you're done exploring, move to the next step!

Coding the Ball Sprite

1. In this step we are going to set the initial position of the ball and will make it move from left to right, bouncing back when it reaches the edge:
2. The next piece of code will check if the ball is touching the Paddle and bounce back:

3. Now we need to make use of the mysterious red and blue squares we have in the background. The idea is that they will help detect if the player misses hitting the ball, display a message and reset the position.
The colours inside the **touching color** block need to be the same as the colours of the bars at the edges of the court. Use the following values to make sure that the colours match:

- **Red**: Color 0 - Saturation 100 - Brightness 100
- **Blue**: Color 63 - Saturation 100 - Brightness 100
4. Create two variables (RED and BLUE) and add the code on the left to set them to zero when the game starts. Also modify the code we just created to include blocks that increase the score every time the ball hits the red or blue wall as seen below:

5. We are almost done. The game needs to know who won, and for that we need two more sets of blocks that will get a message, stop the game and declare the winner.
6. The last step is to add code to check the score and send a message for the code above to end the game and declare the winner as soon as one player gets 5 points:

Great work! You have created a Tennis game using Scratch. Try some of these extensions:

**Extensions**

1. Add a timer that ends the game after 2 minutes
2. How would you have a friend play with you instead of the computer?
3. What other sport could you represent by changing the images (background, paddles, ball)?