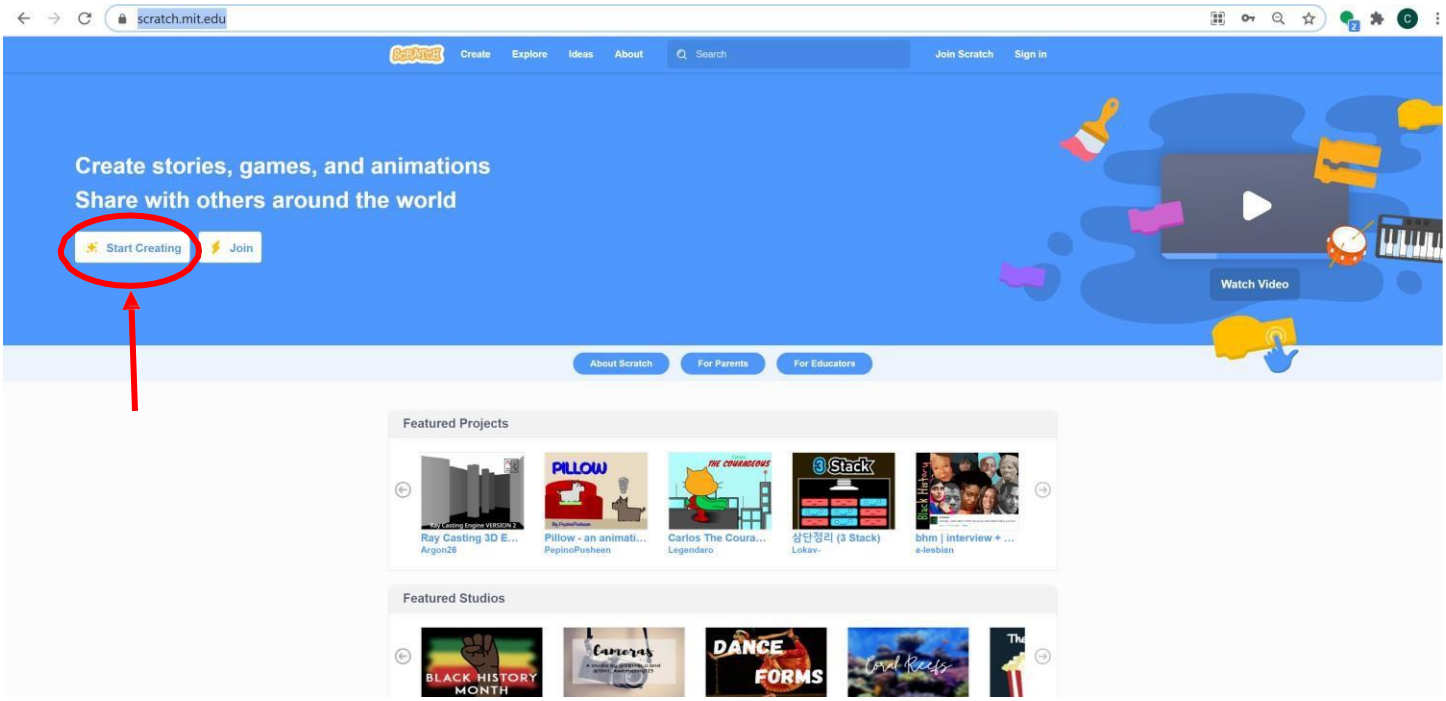
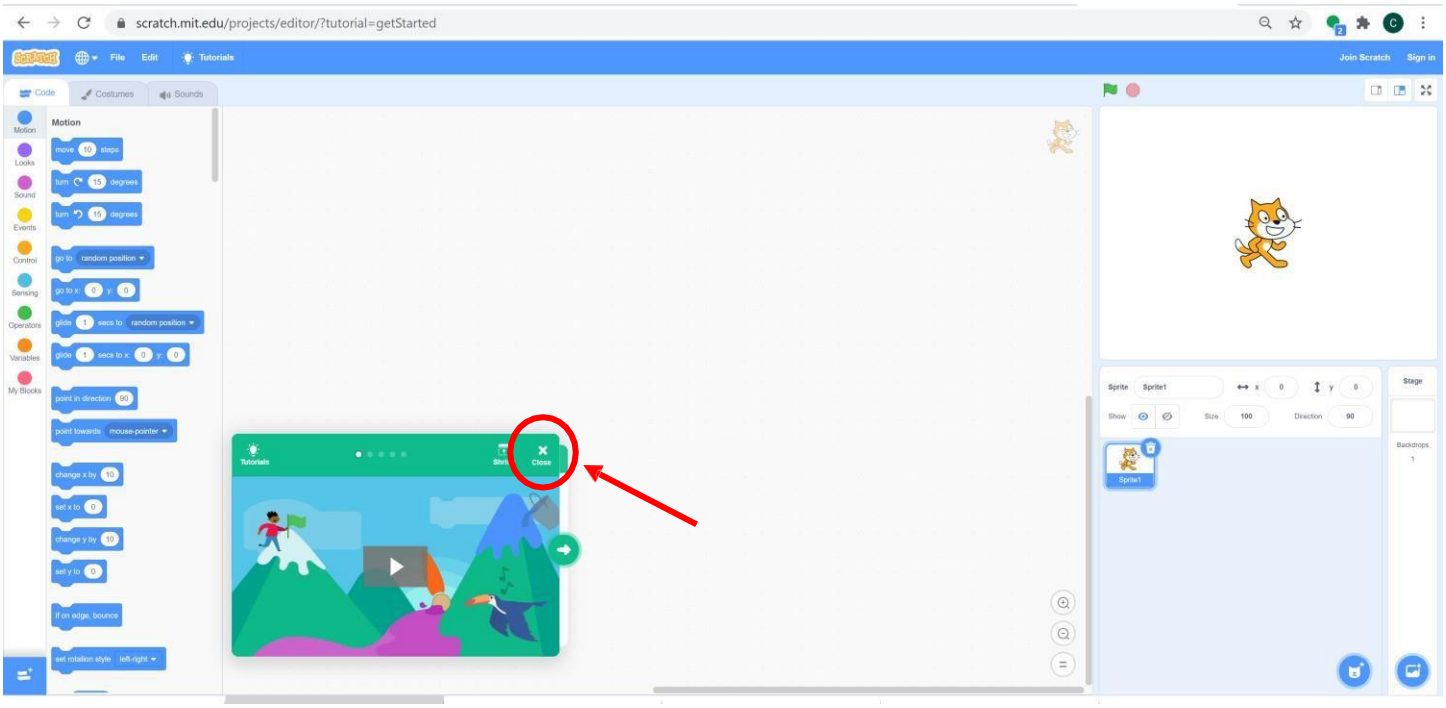
Programming Step-by-Step Walkthrough

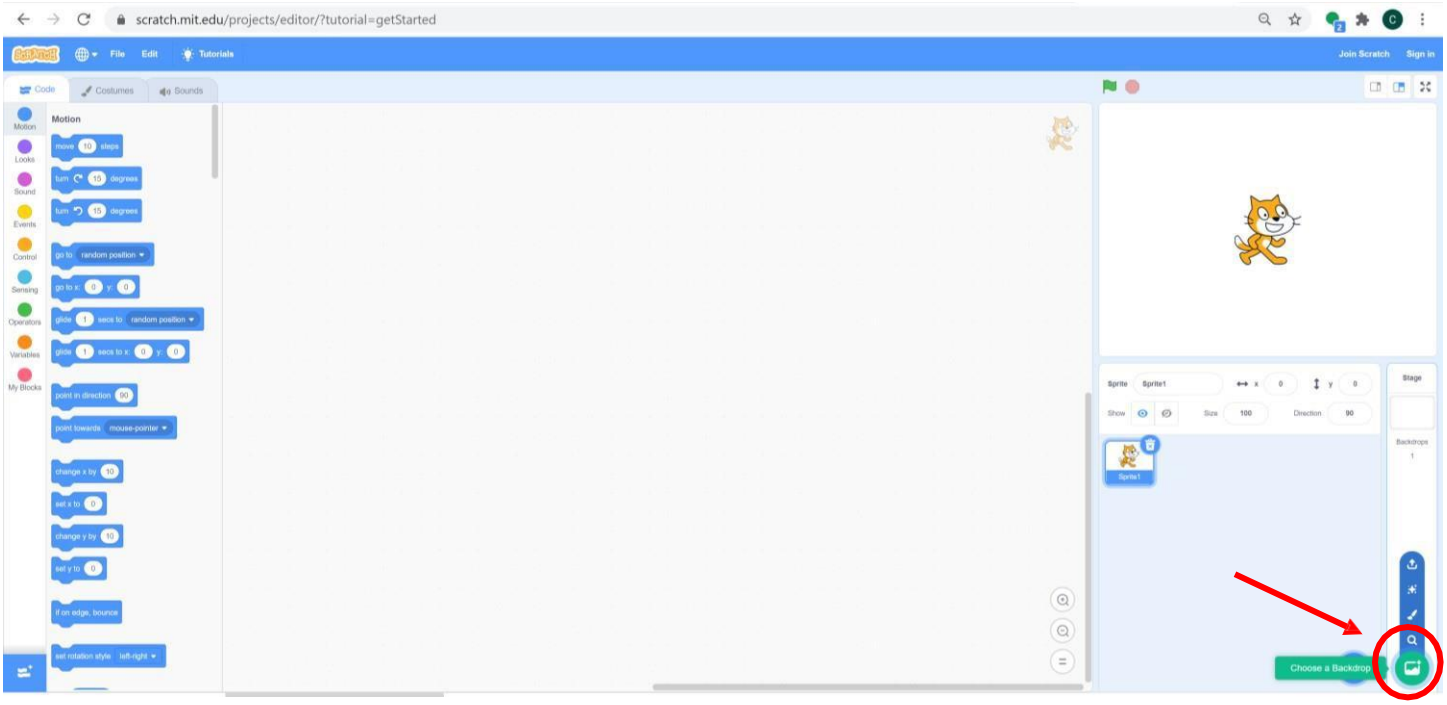
1) **Go to the Scratch website: https://scratch.mit.edu/**
2) **Click on "Start Creating."**



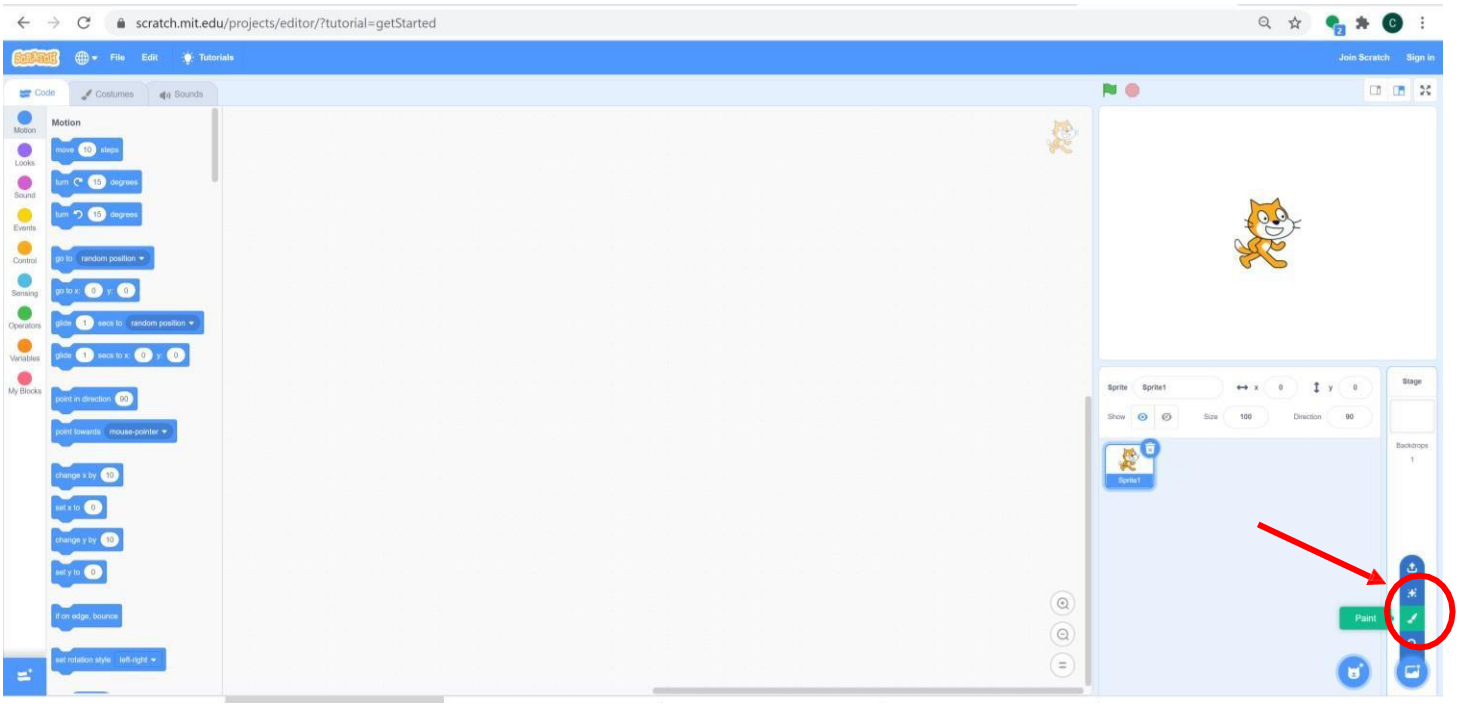
3) **Click on the "x" to close out the tutorial.**



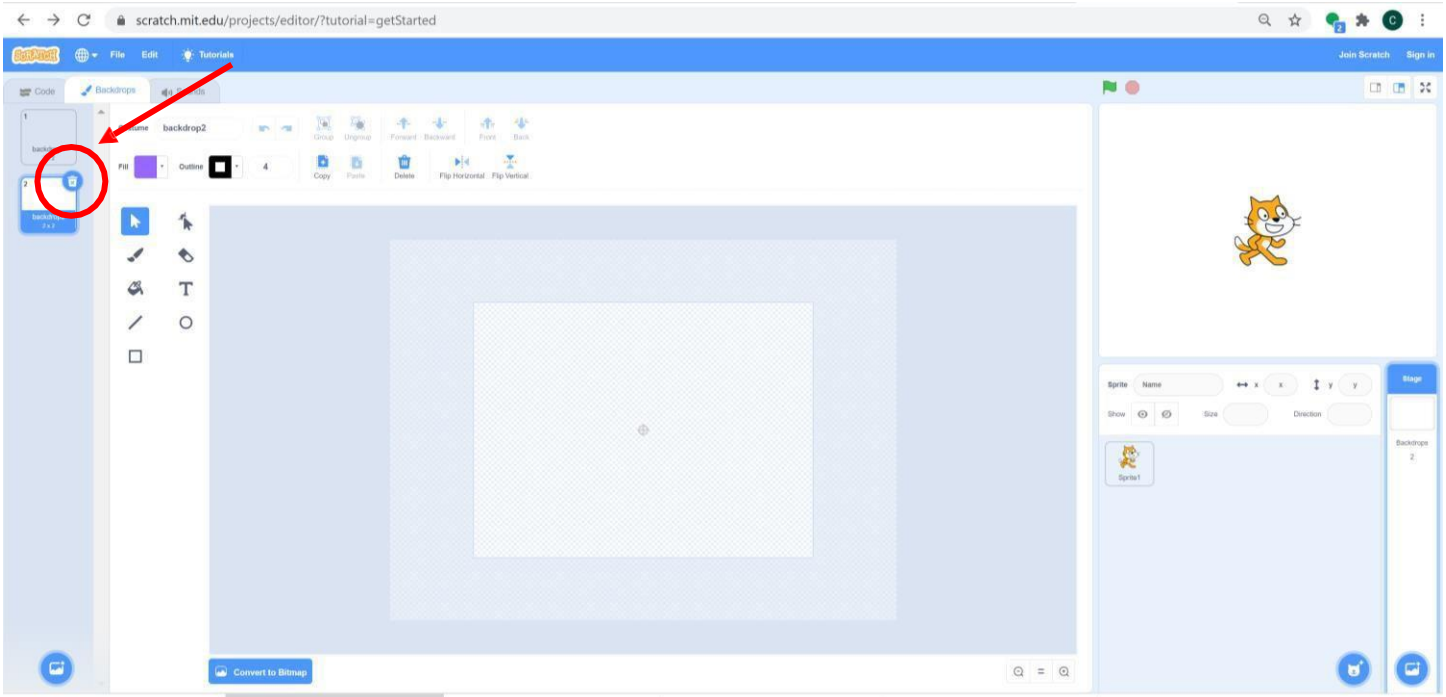
4) Hover over "Choose a Backdrop"



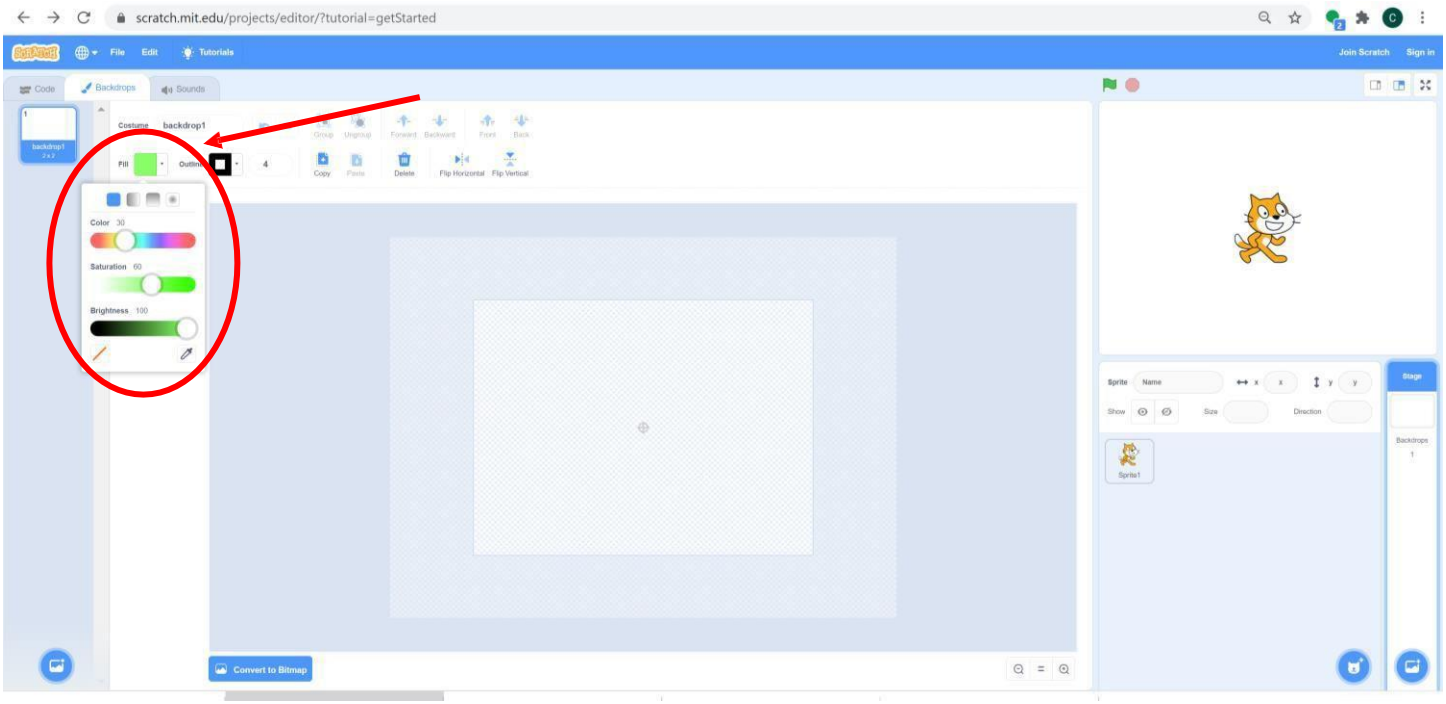
5) Move your mouse up and select "Paint."



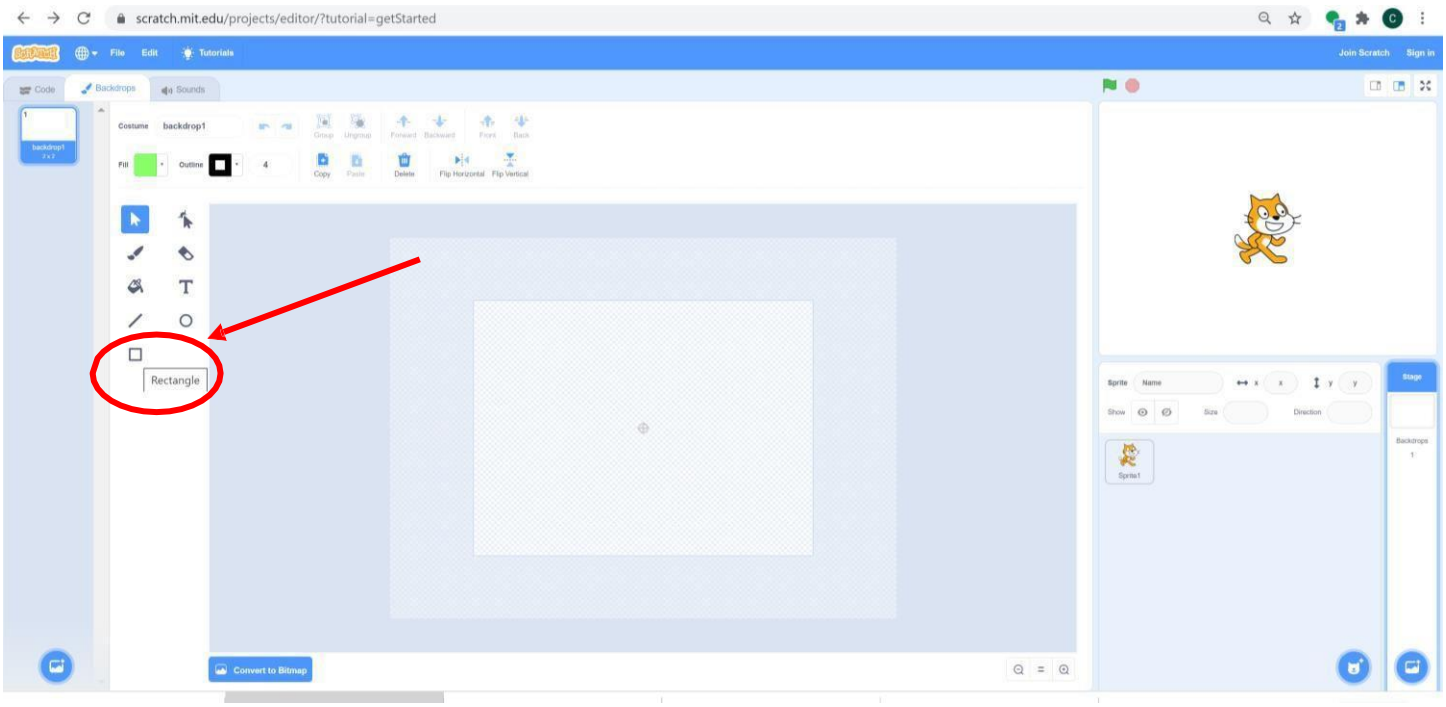
6) **Click the "x" to delete backdrop2.**



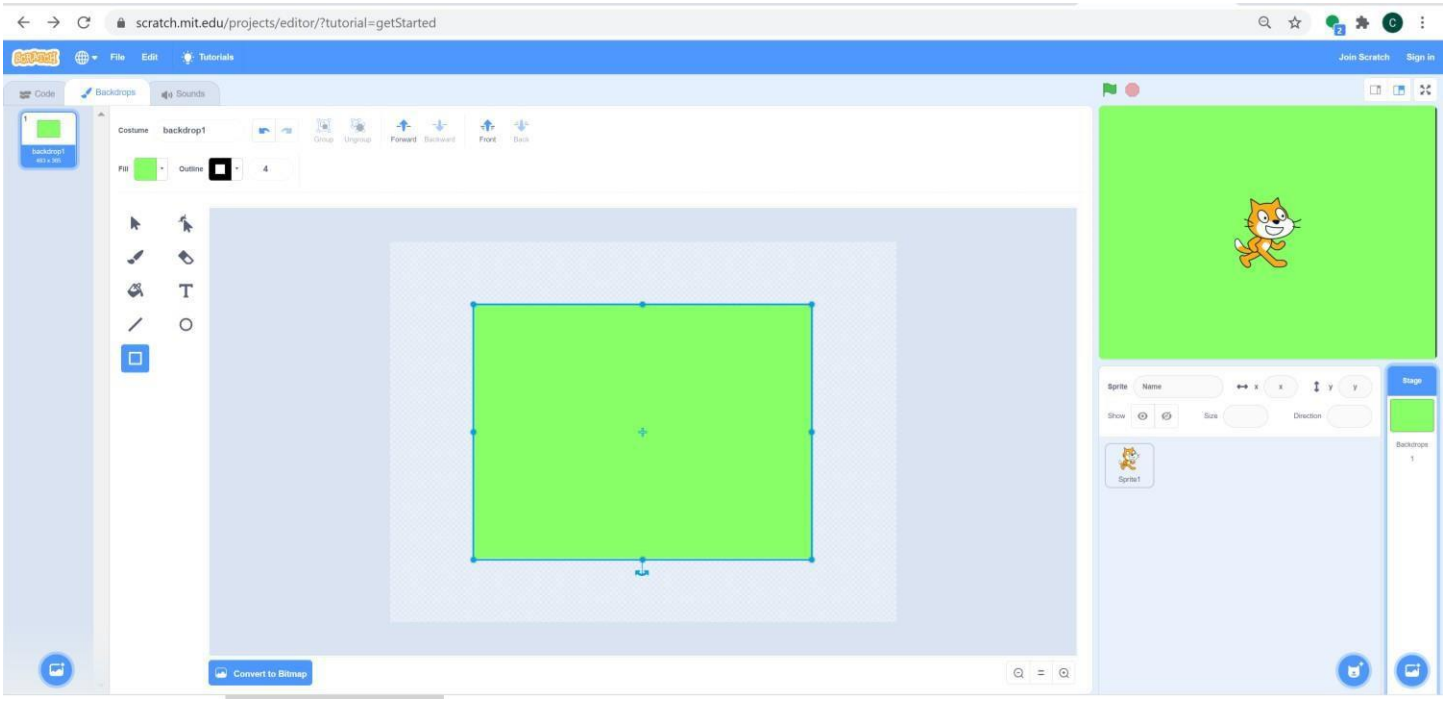
7) **Change the Fill color to a green color.**



8) Click on the rectangle tool.



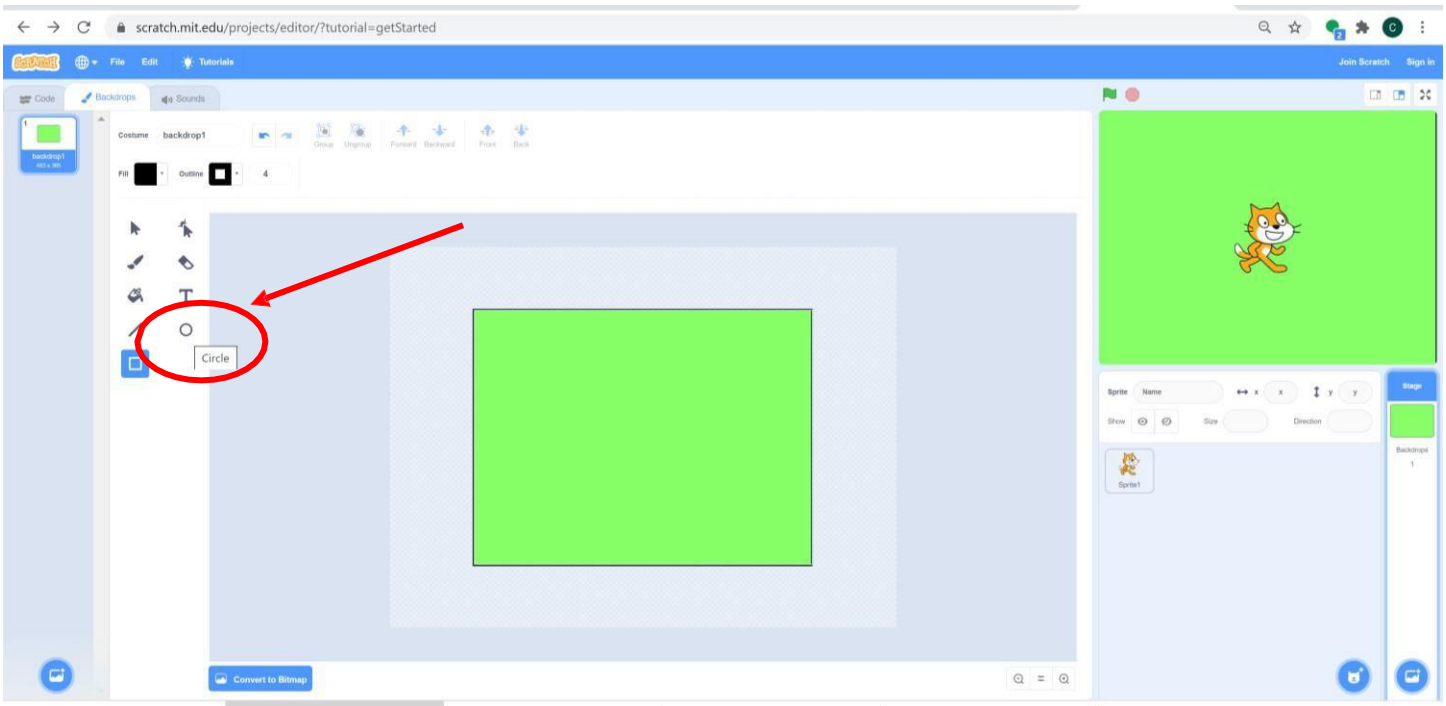
9) Draw a rectangle that fills in inner light-colored rectangle. This will be the grass.



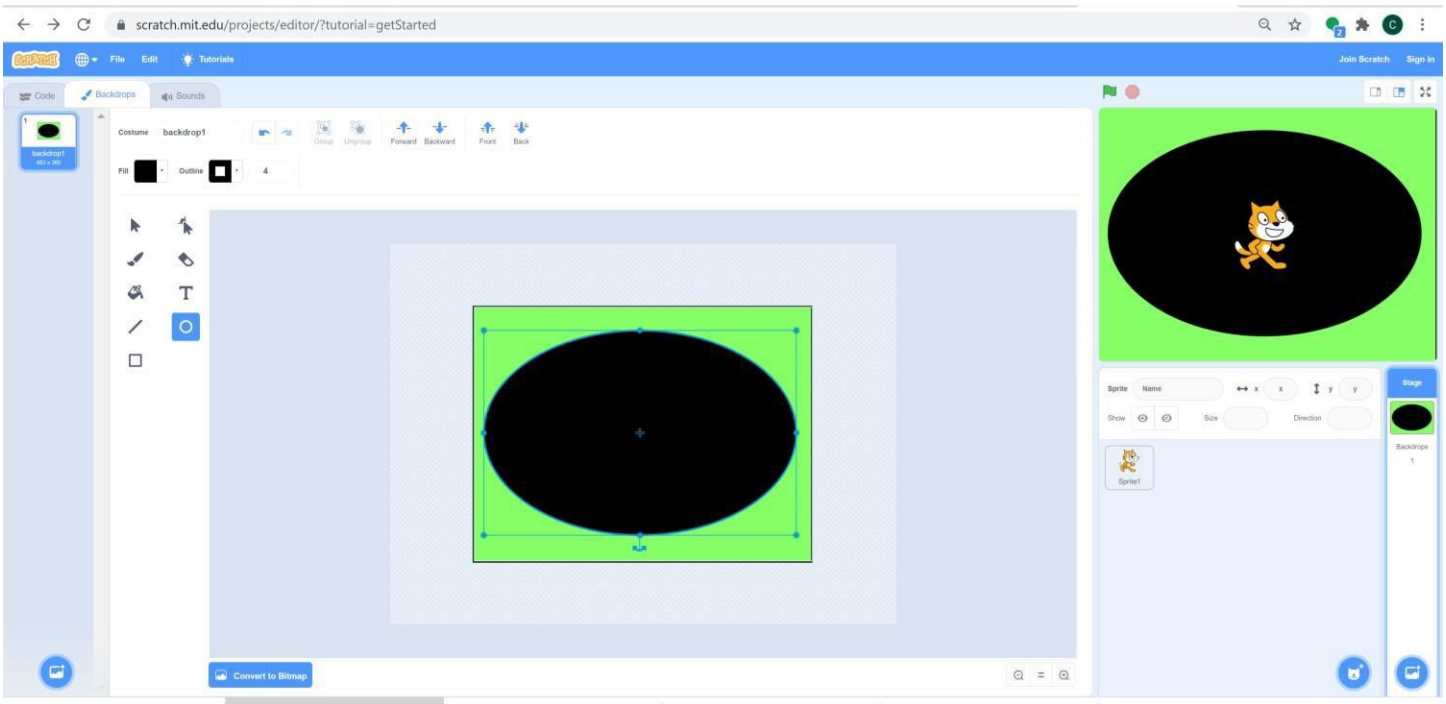
10) Click somewhere else on the screen to deselect the rectangle.

11) Change the fill color to black by moving the brightness attribute scroll bar all the way over to the left.

12) Click on the circle tool.

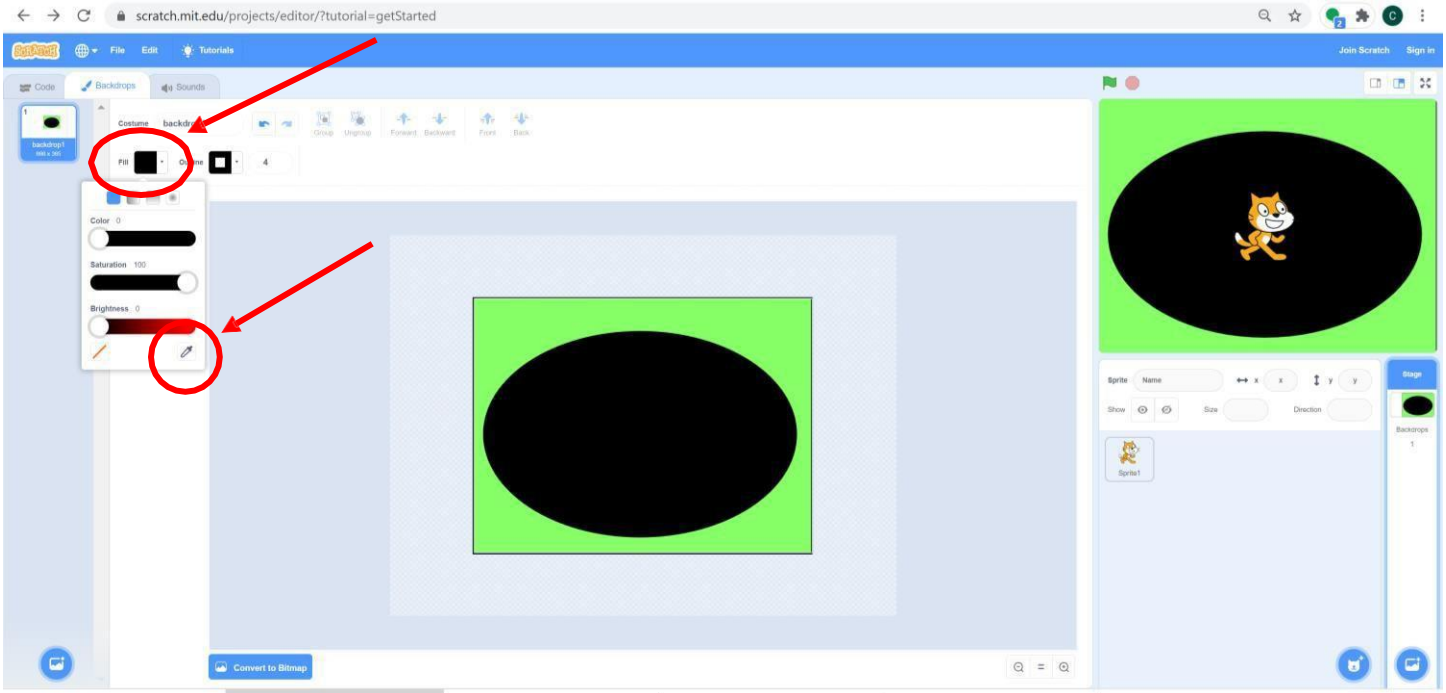


13) Draw a large oval in the middle of the green rectangle. This will be the outside of your racetrack.

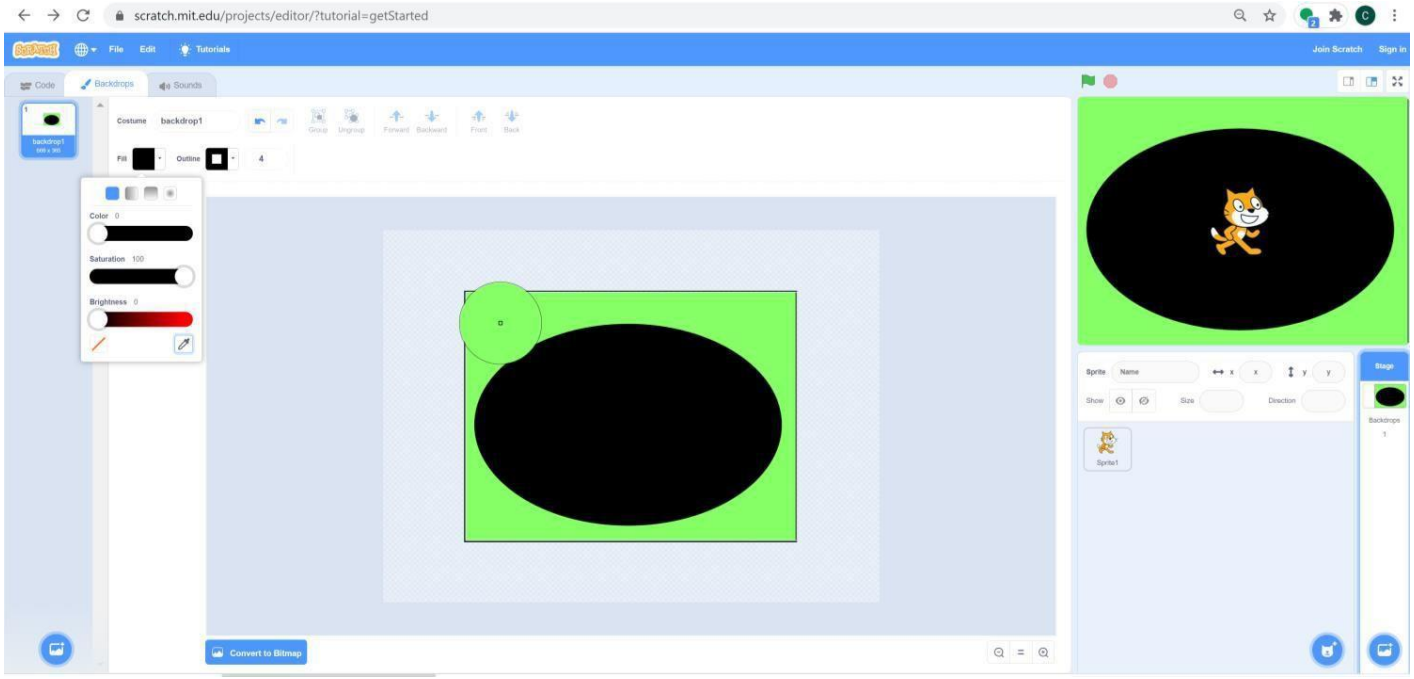


14) Click somewhere on the screen to deselect the rectangle.

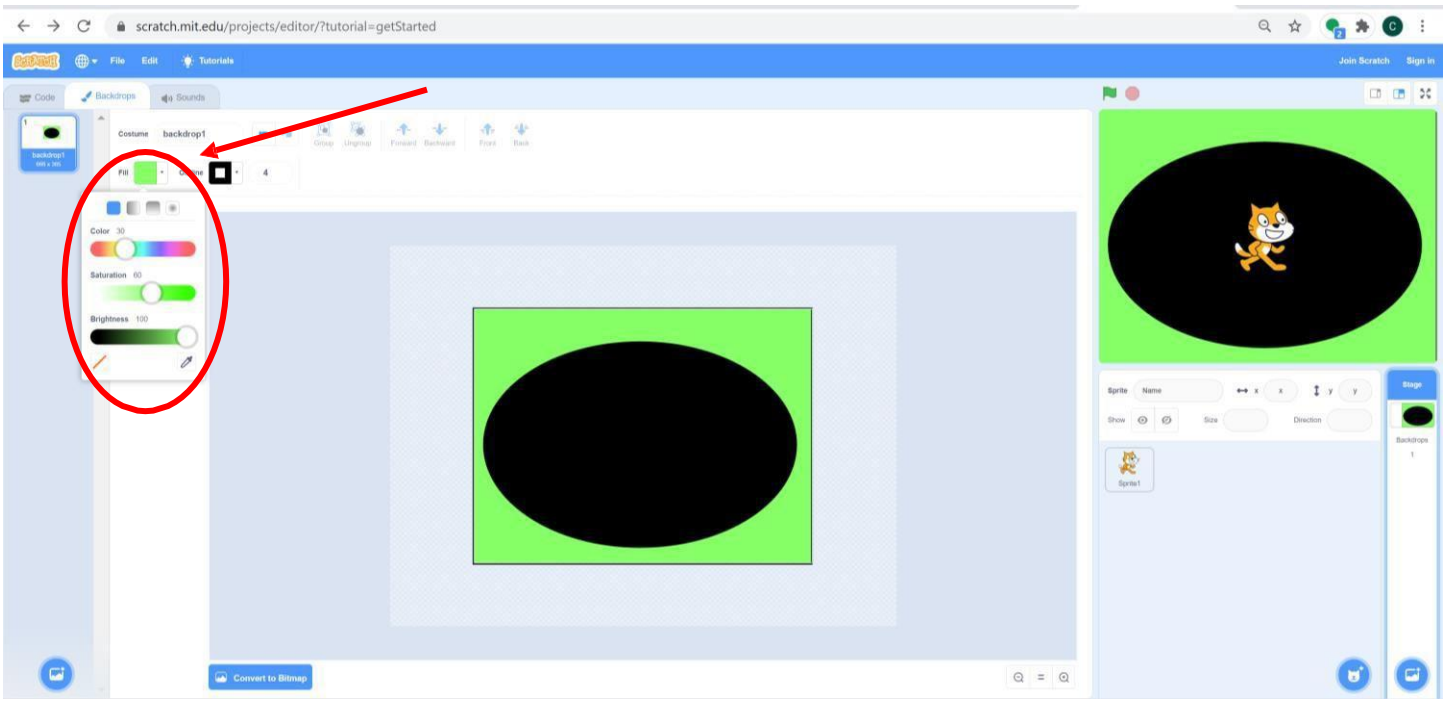
15) Click on the Fill button and then click on the dropper tool. You will use this to copy the green color of your rectangle.



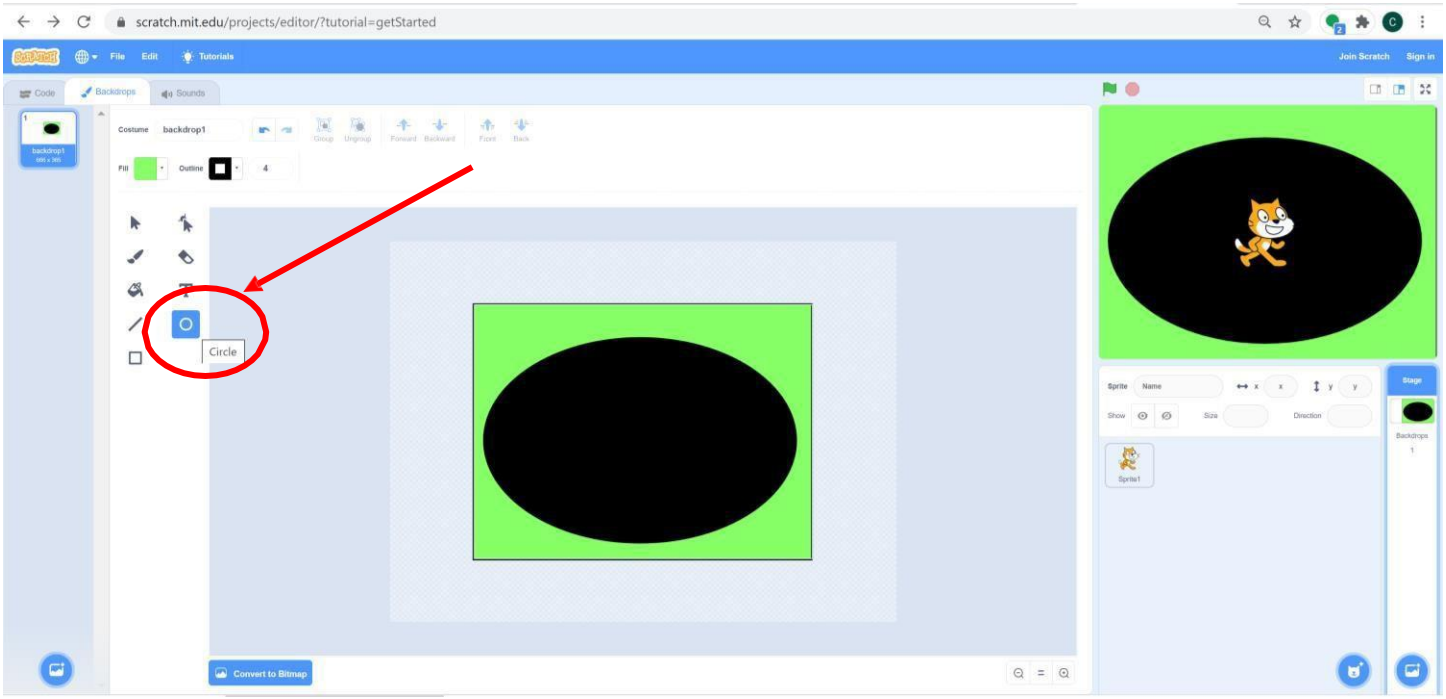
16) Click on the green rectangle.



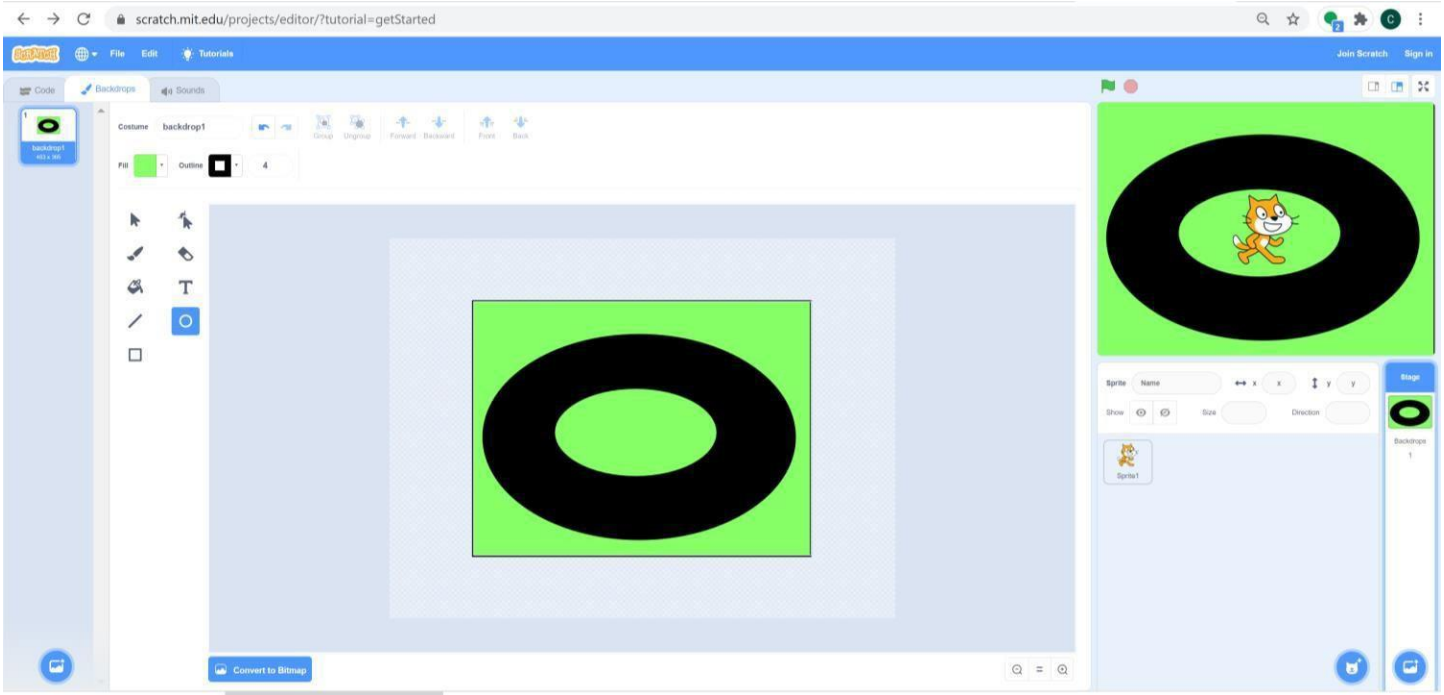
17) You will see the fill color change to the green color of your rectangle.



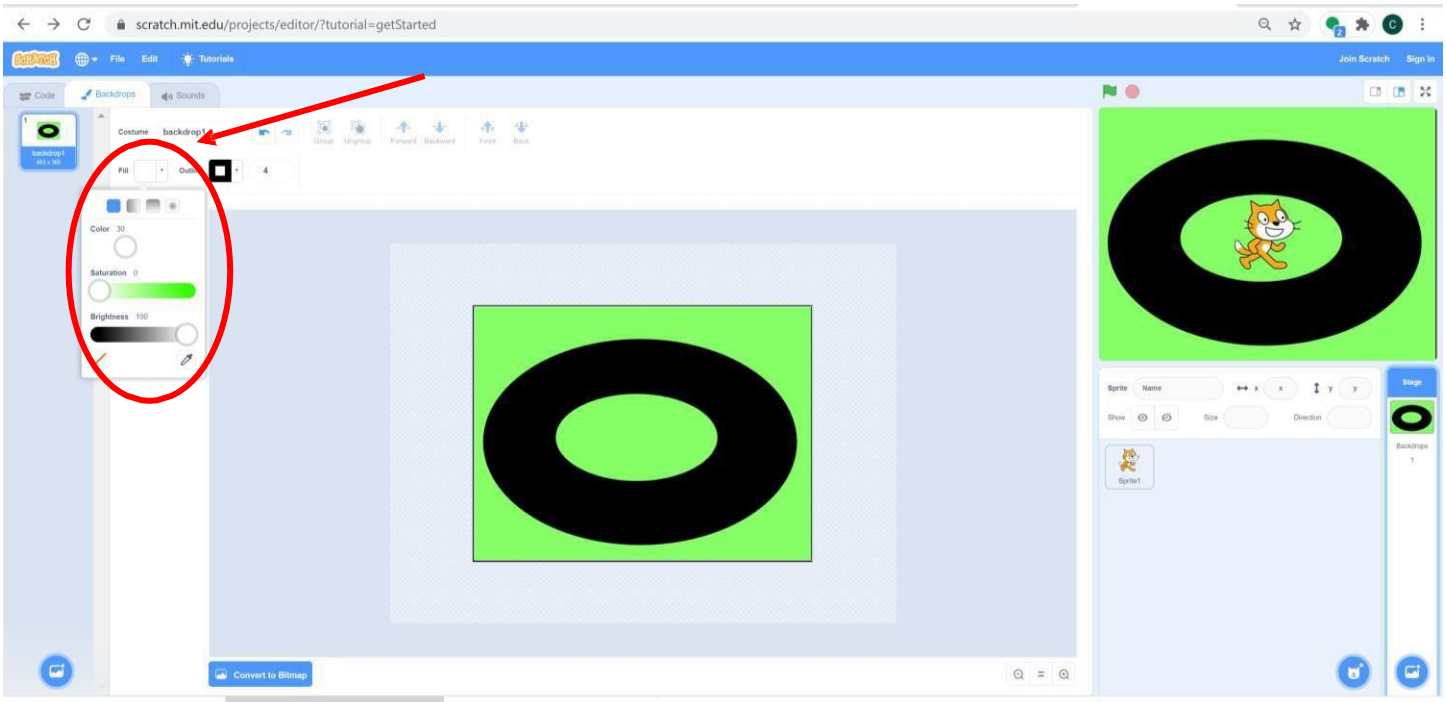
18) Click on the circle tool.



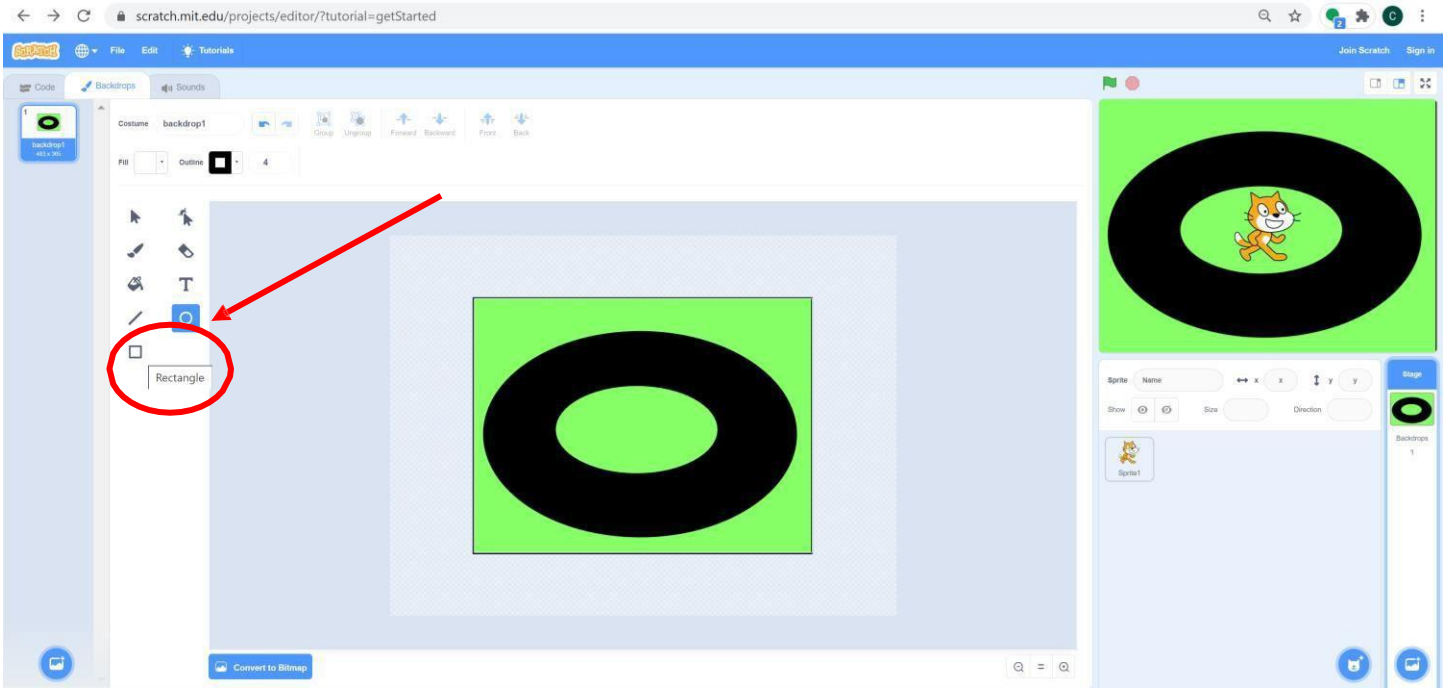
19) Draw a green oval inside the black oval and then click somewhere on the screen to deselect the oval. This will be the grass inside your racetrack.



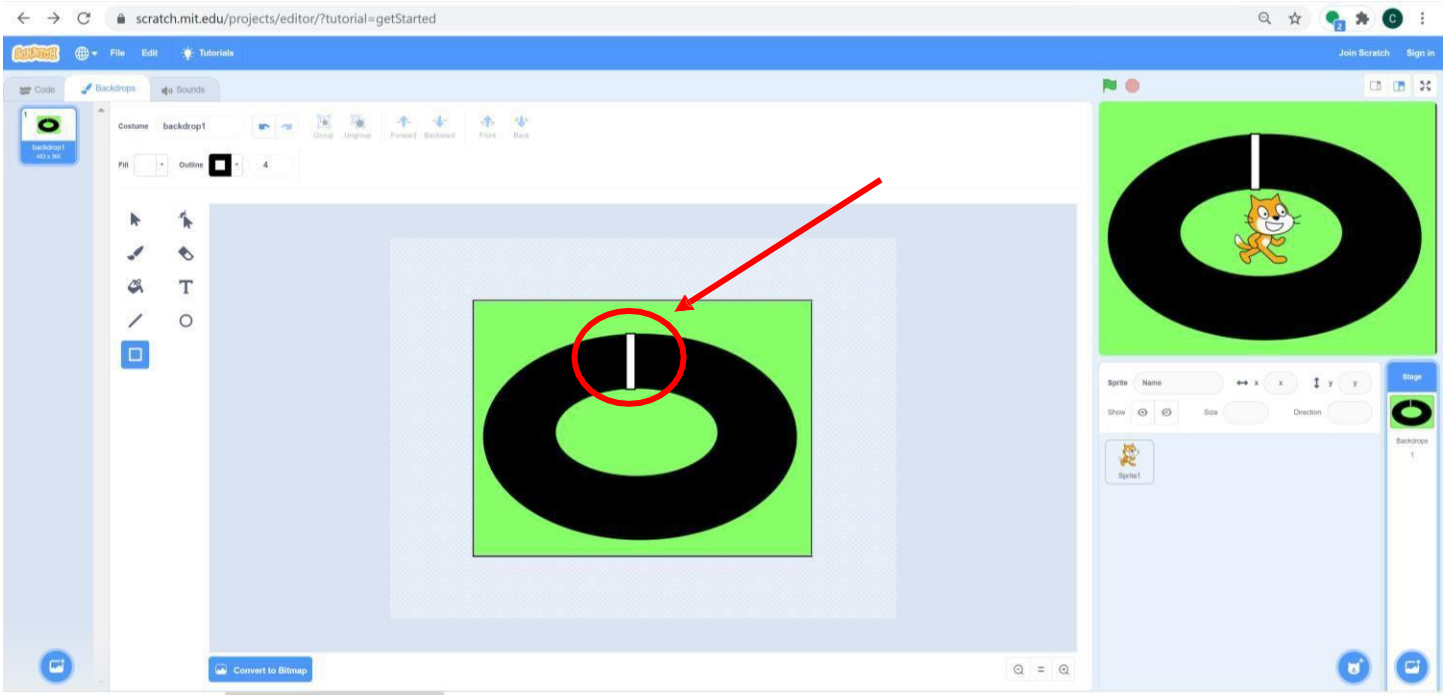
20) Click on Fill and move the Saturation scroll bar all the way over to the left to make the fill color white.



21) Click the rectangle tool.

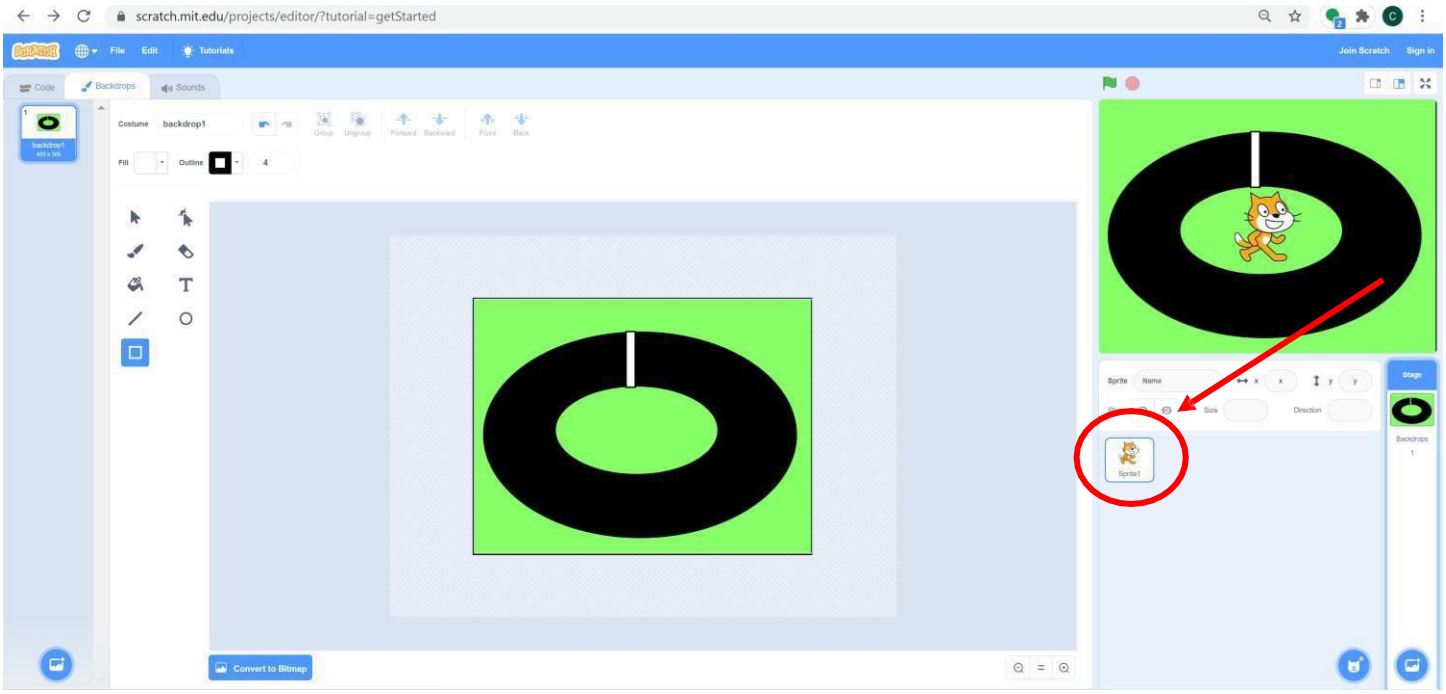


22) Draw a rectangle at the top of your black oval. This will be the starting line for your racetrack.

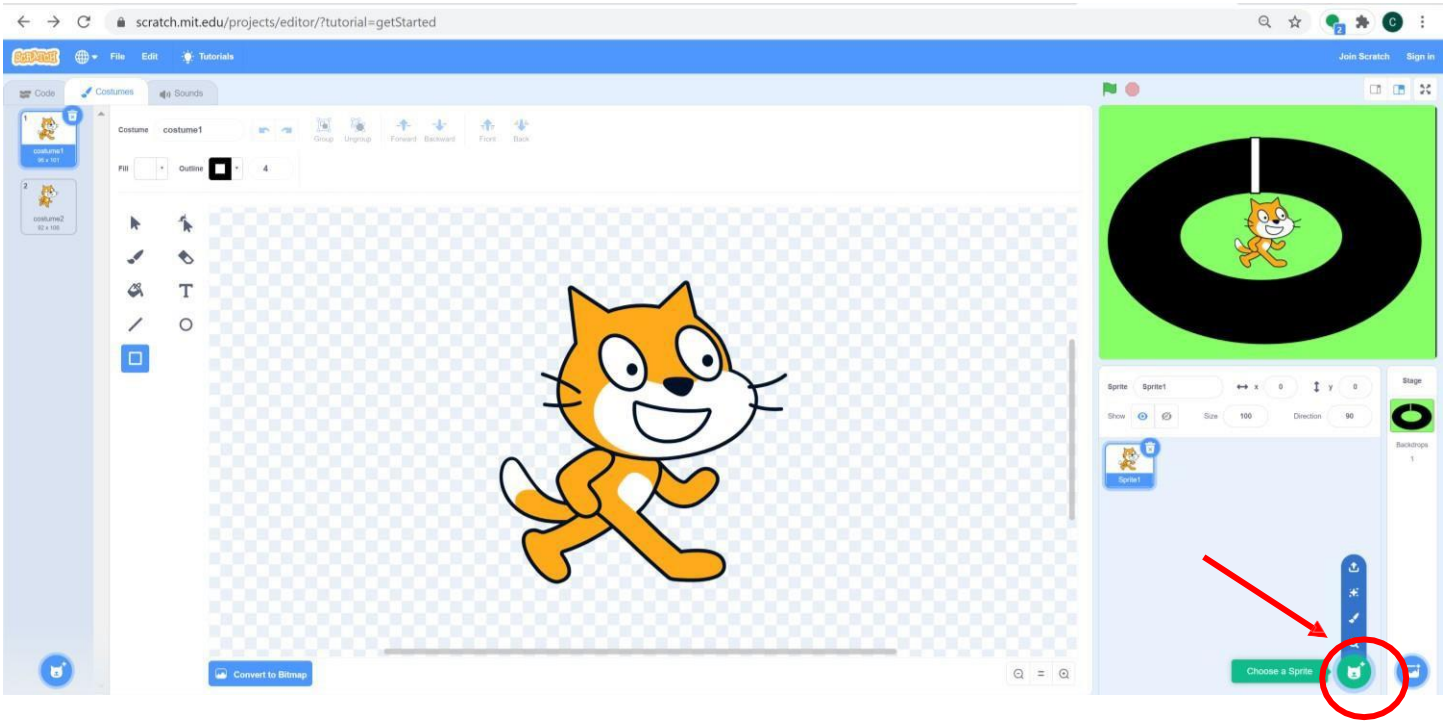


23) Now we are done creating our racetrack. Now we will select the object that we want to race around the track.

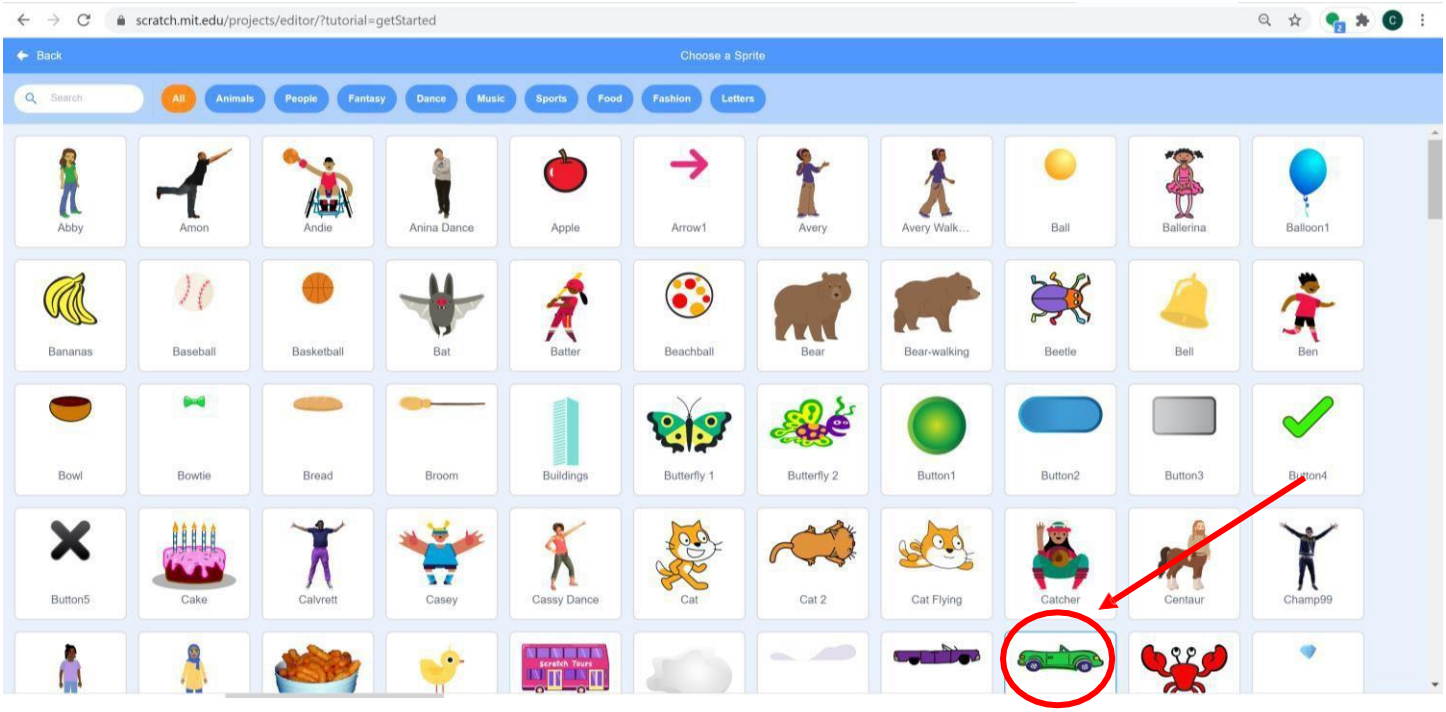
24) Click on the cat sprite.



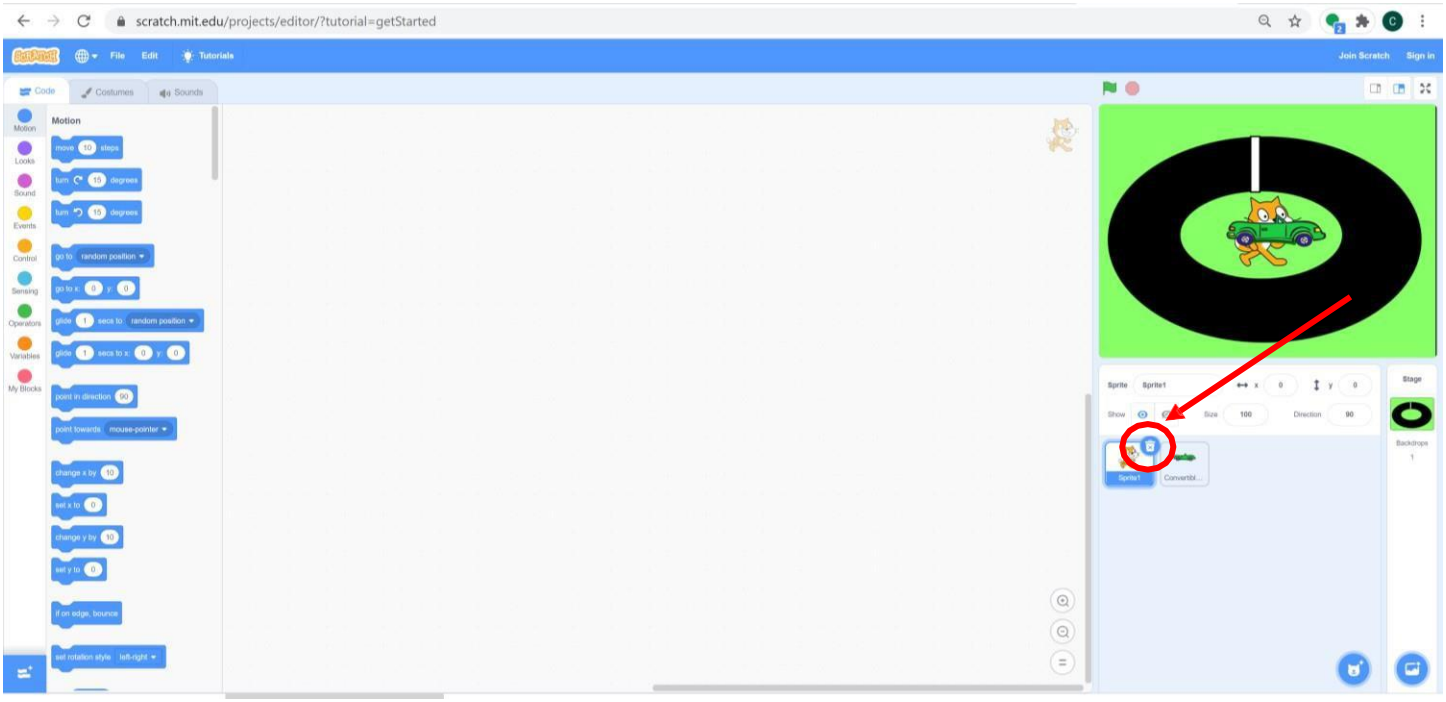
25) Select "Choose a Sprite."



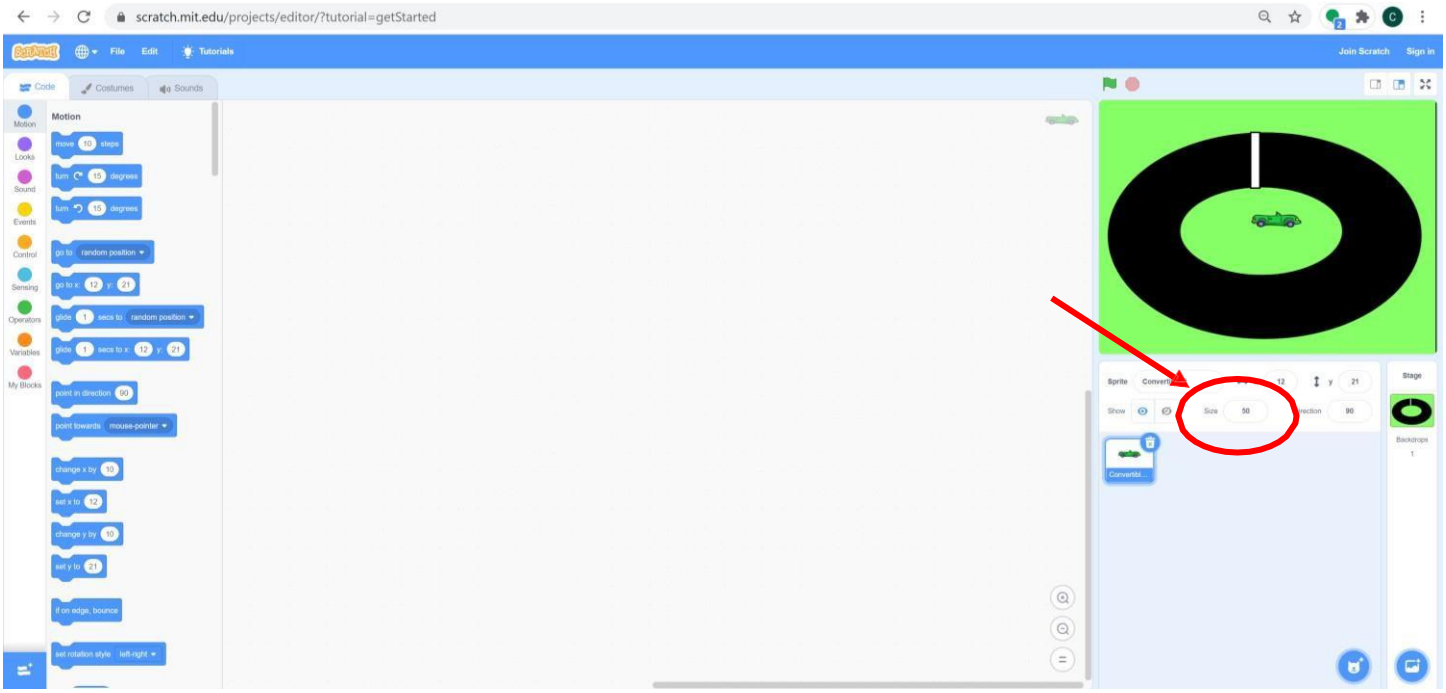
26) Pick a car to race around your track.



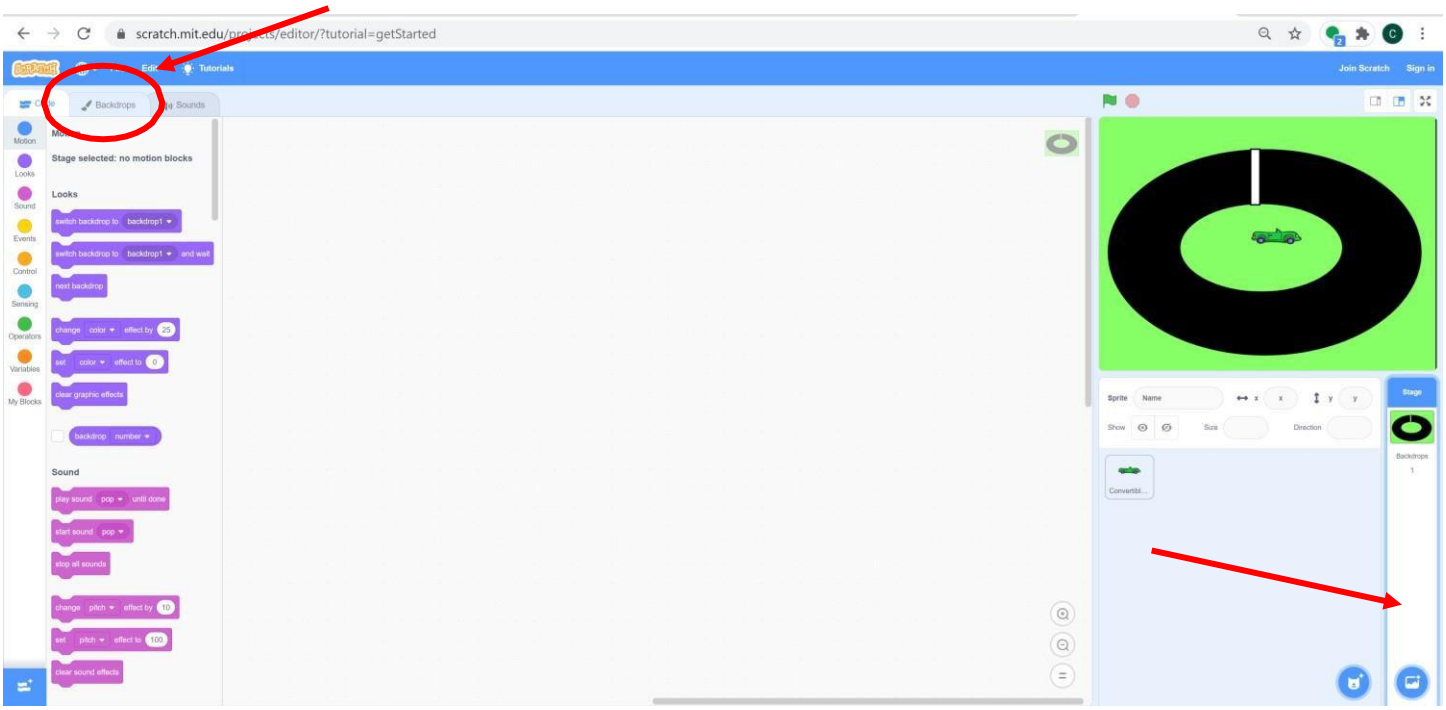
27) Click on the cat sprite and click the "x" to delete it.



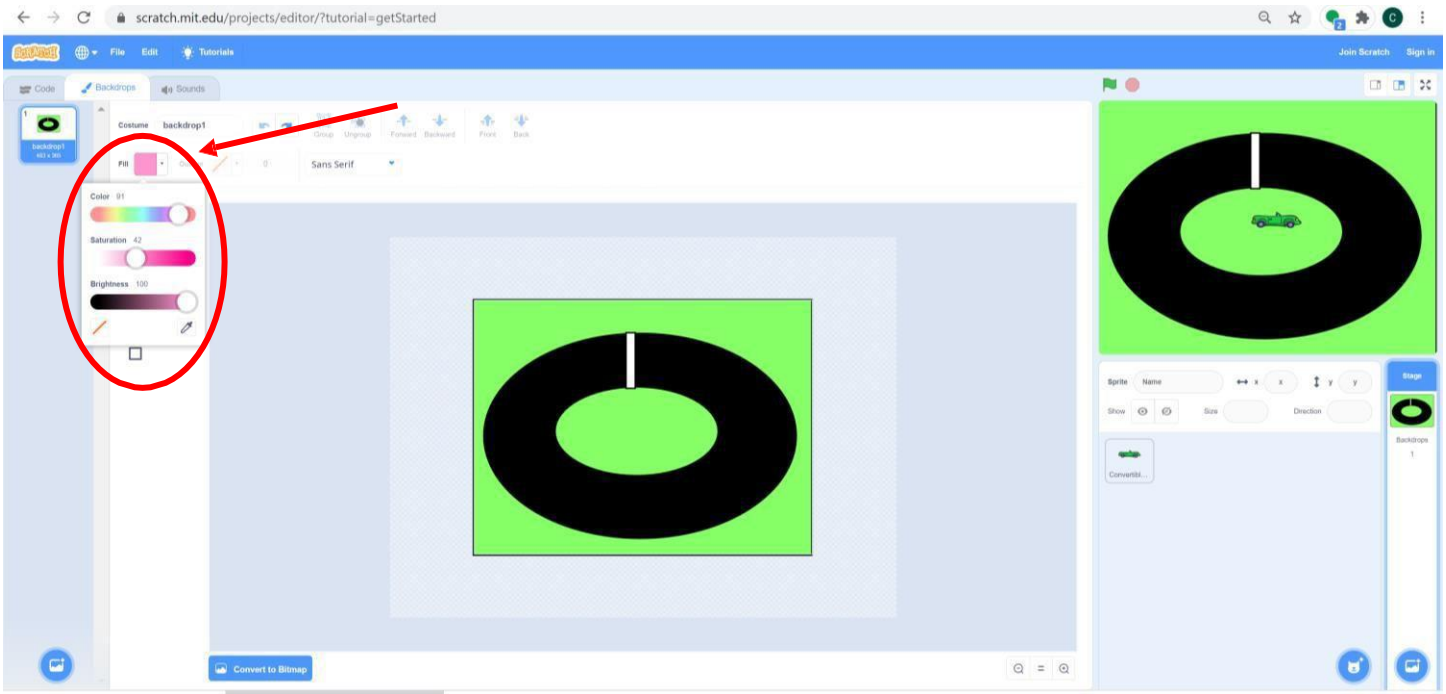
28) Change the size of the convertible to 50.



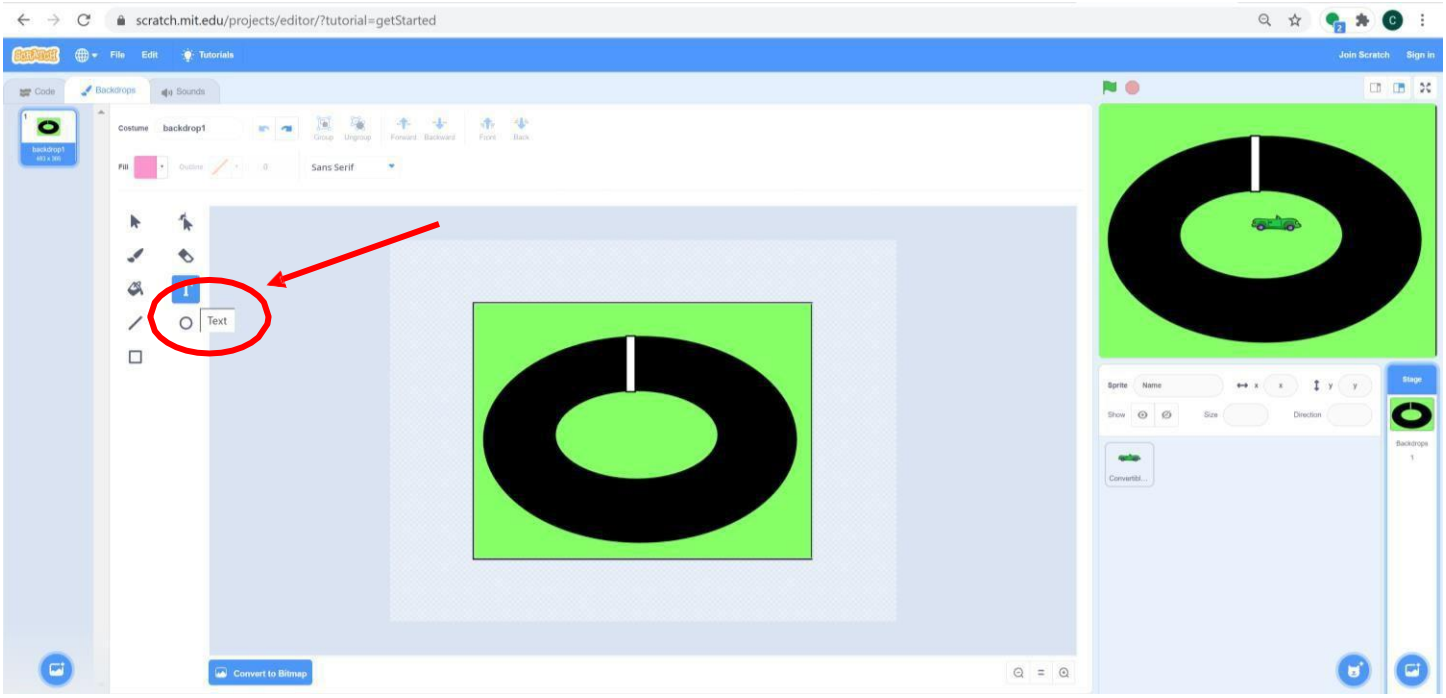
29) Click in the stage area on the bottom right of the window and then click on the Backdrops tab.



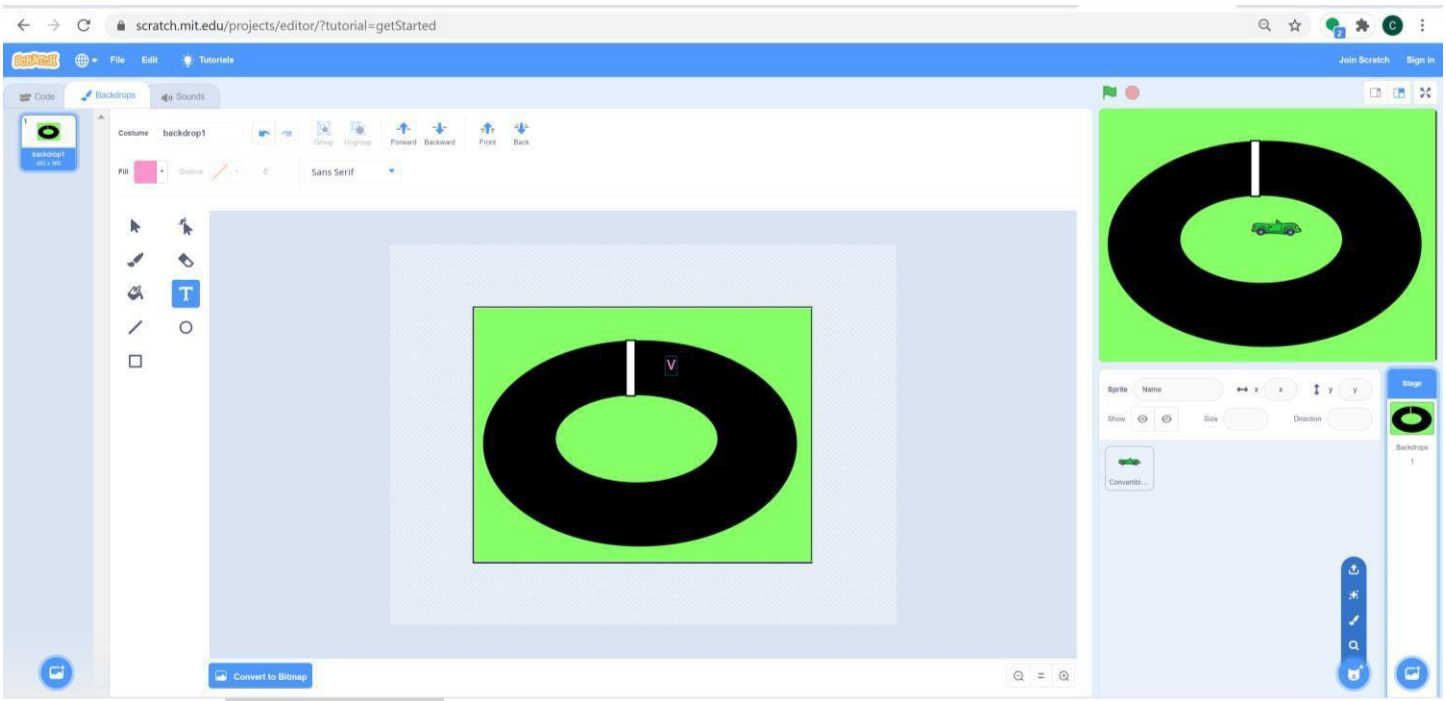
30) Change the fill color to any color of your choice.



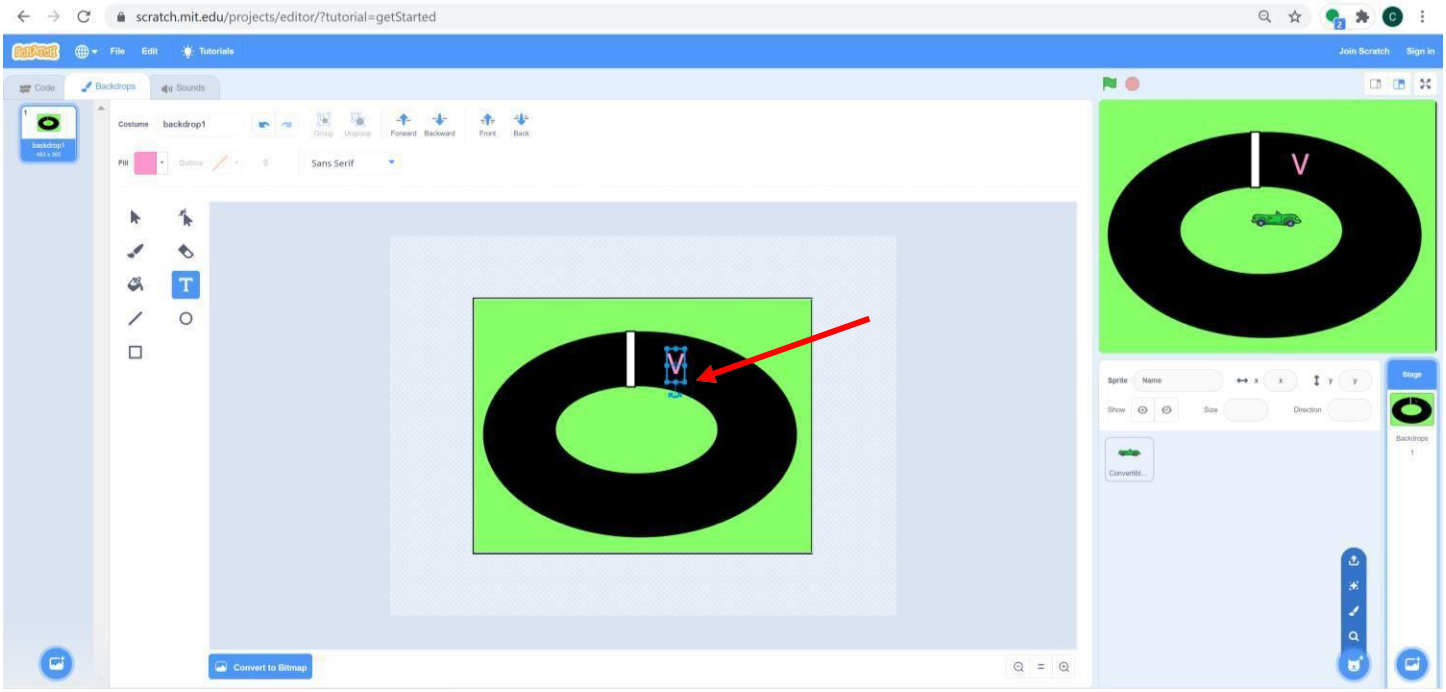
31) Click on the text tool.



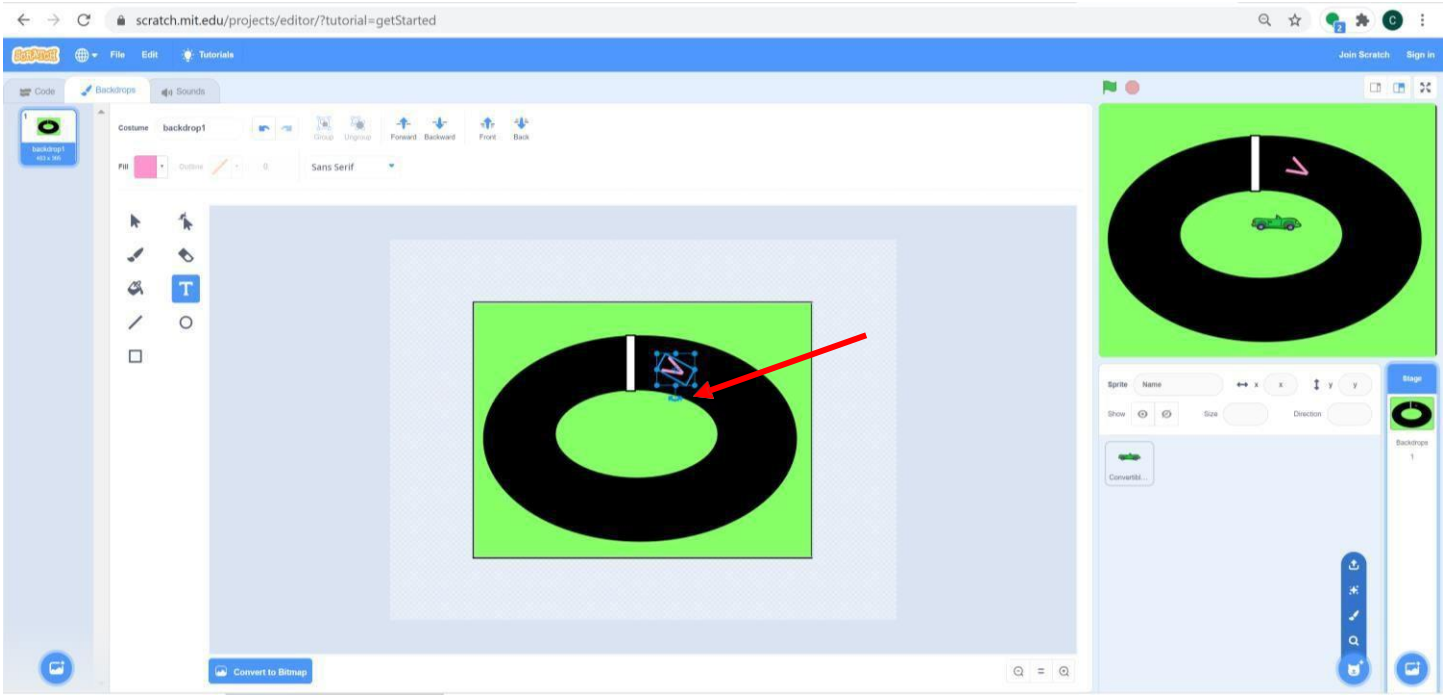
32) Place the cursor on the black track and type a capital V.



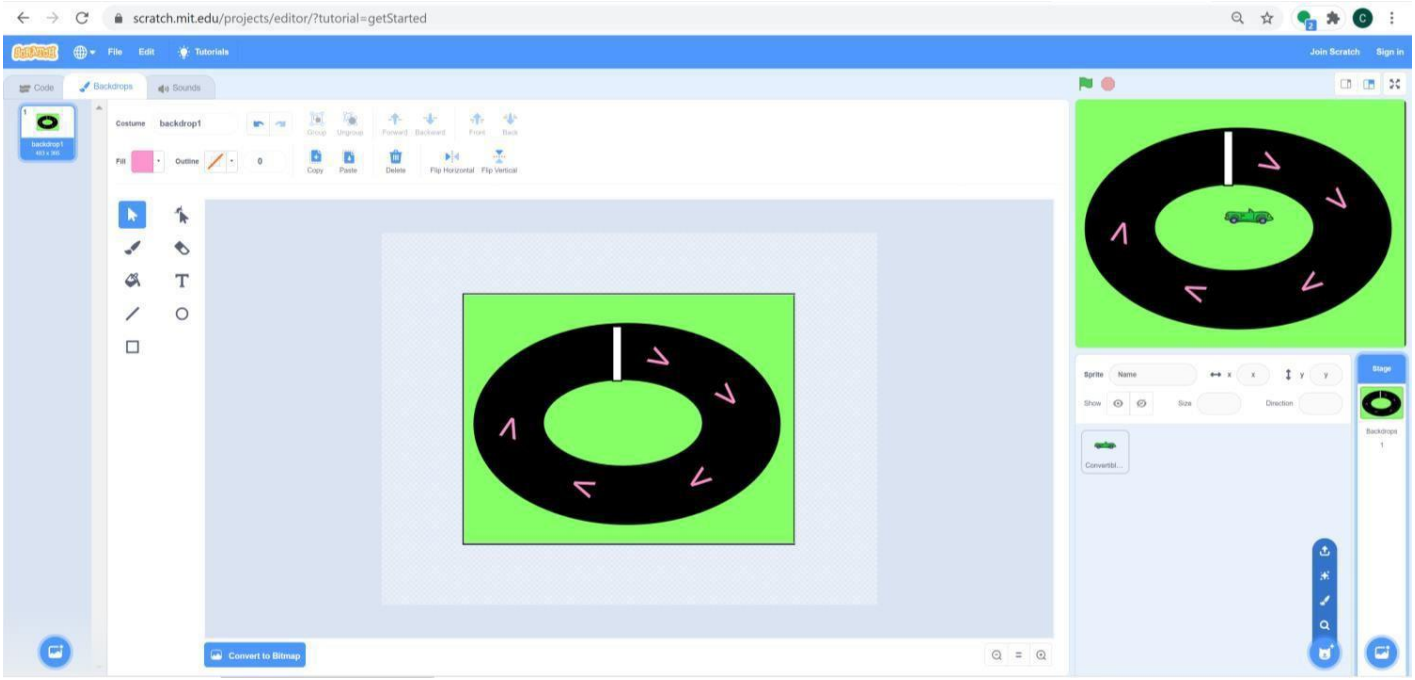
33) Increase the size of the "V" by pulling the lower left corner of the blue box surrounding it out.



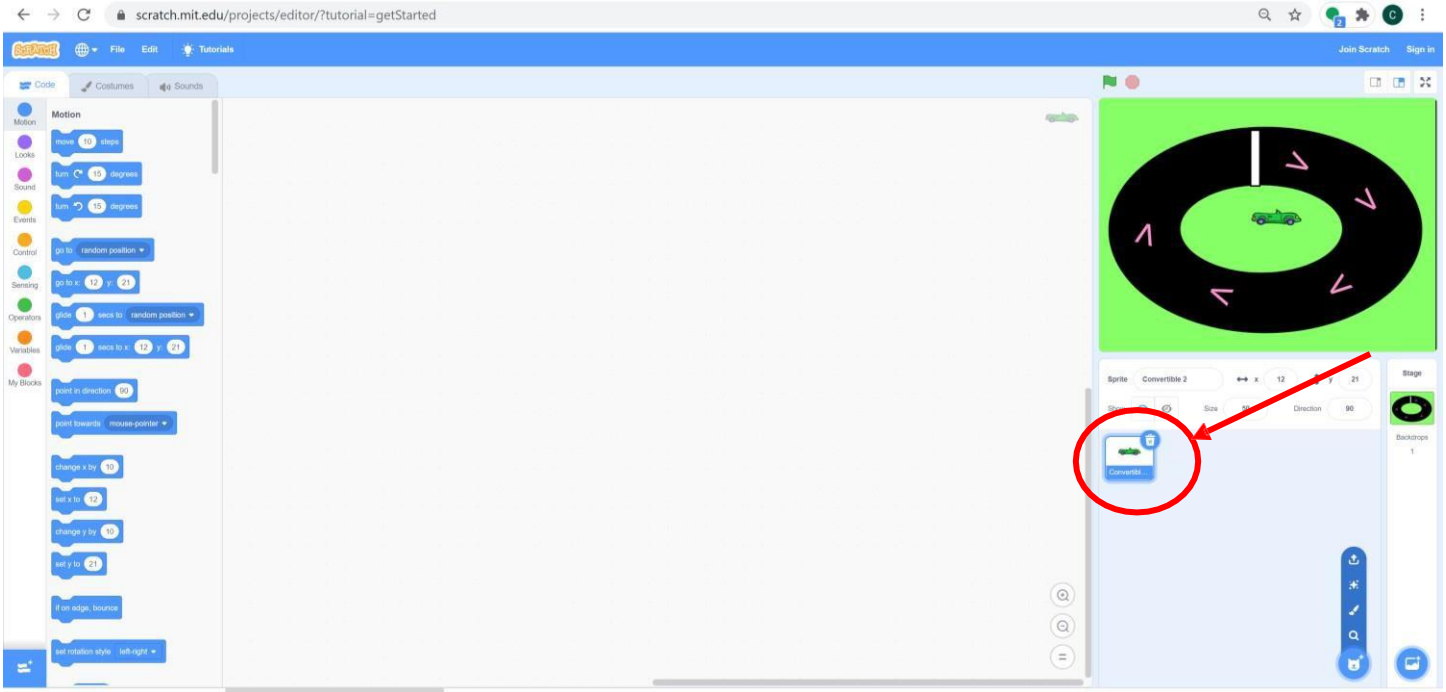
34) Rotate the "V" by clicking on the blue arrows below the V and moving them left or right.



35) Repeat steps 31-34 to create as many Vs as you would like. These Vs will boost your car and cause it to speed up when it hits them.

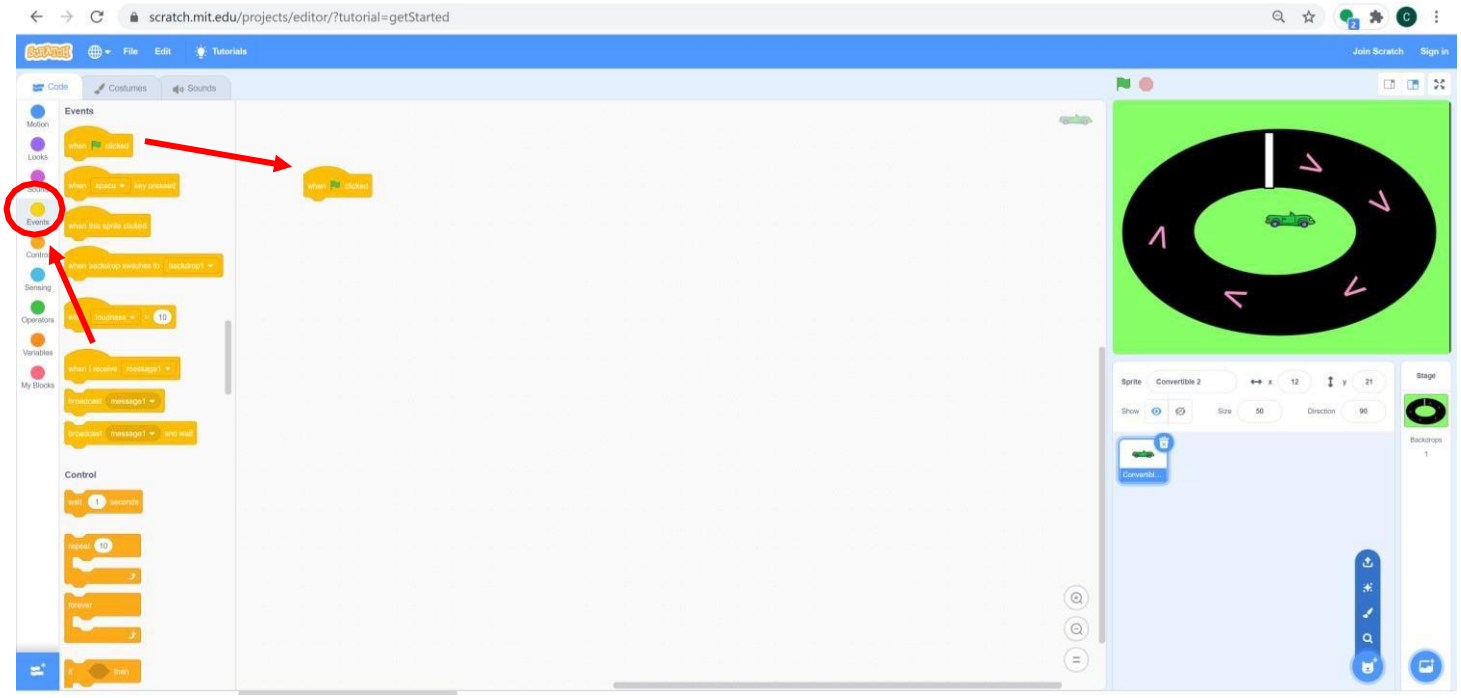


36) Click on the convertible in your sprite section.

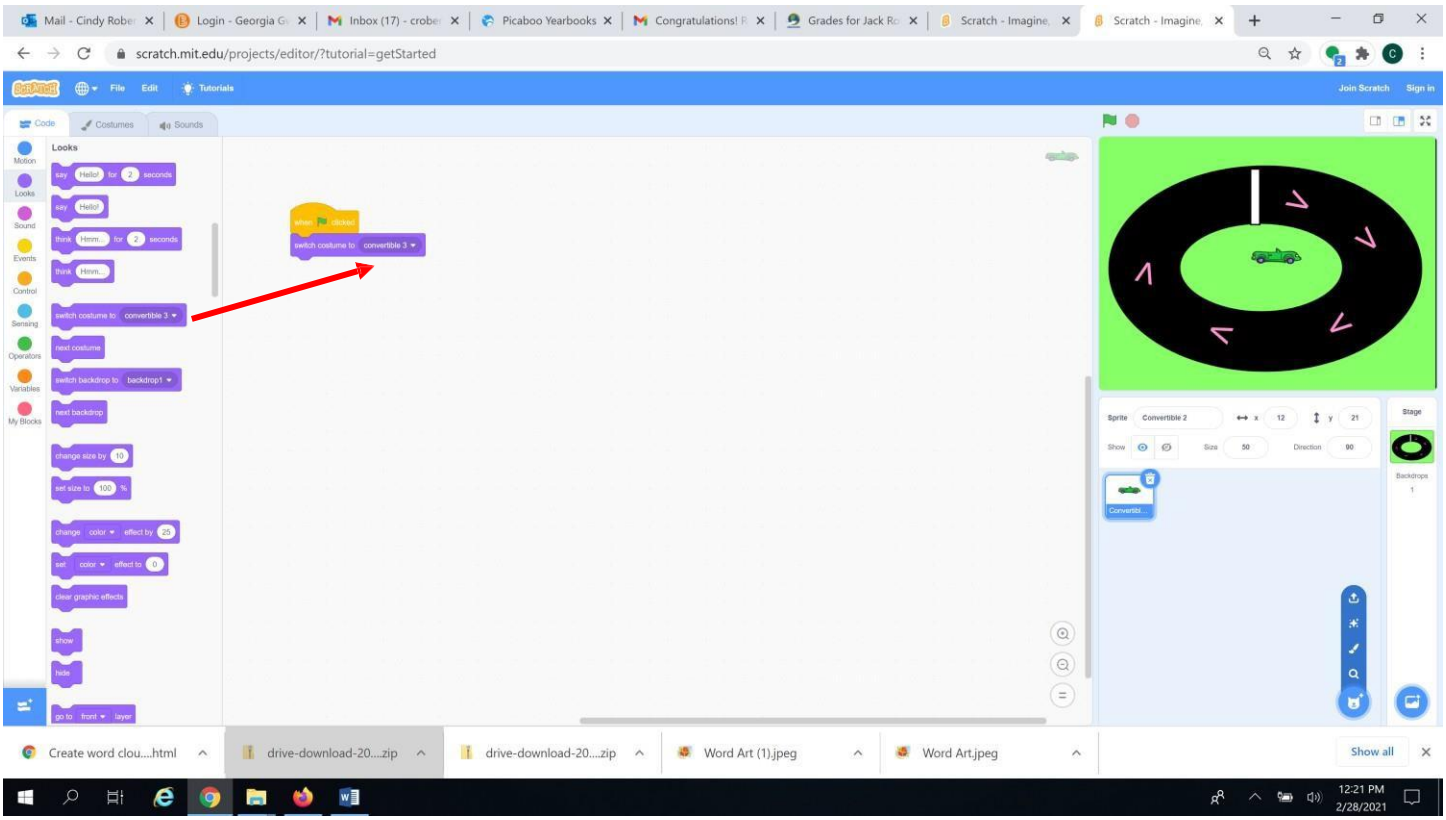


NOW WE ARE READY TO CODE!

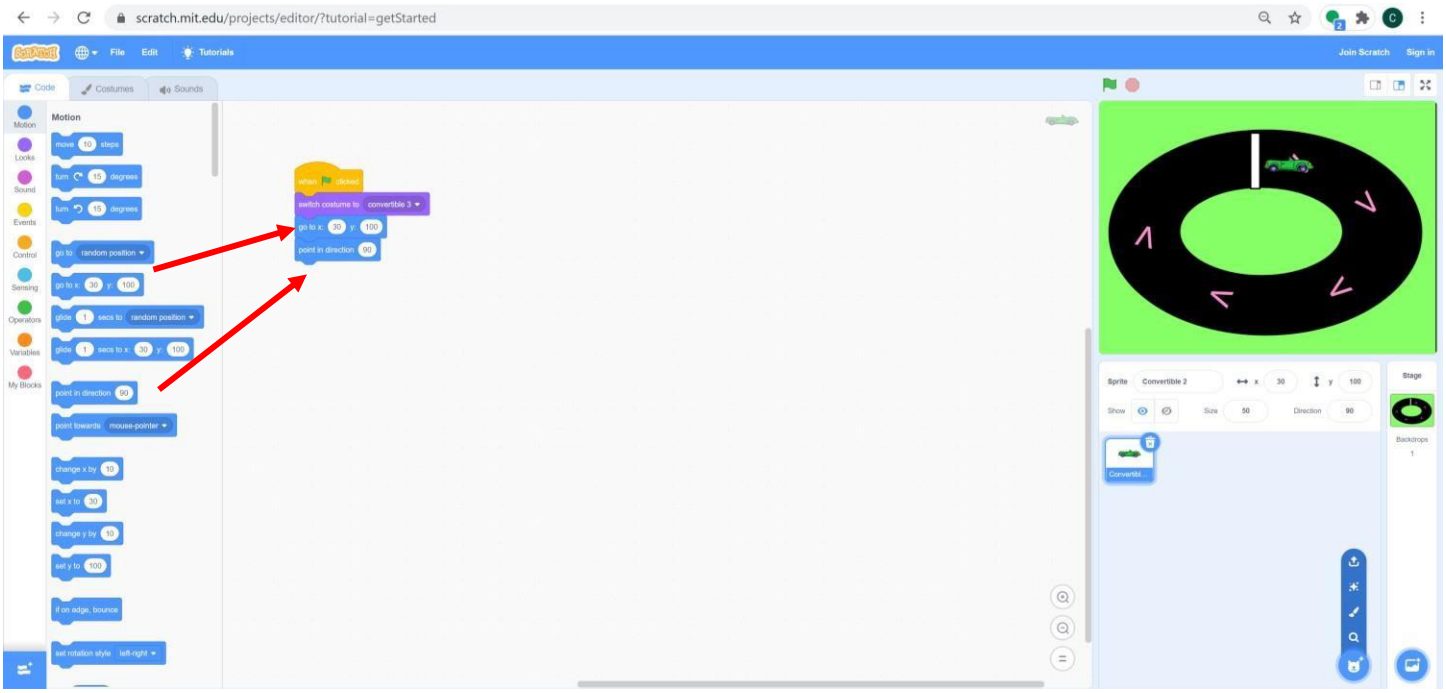
37) Click on Events and then drag "When [Flag] Clicked" over to the white code area.



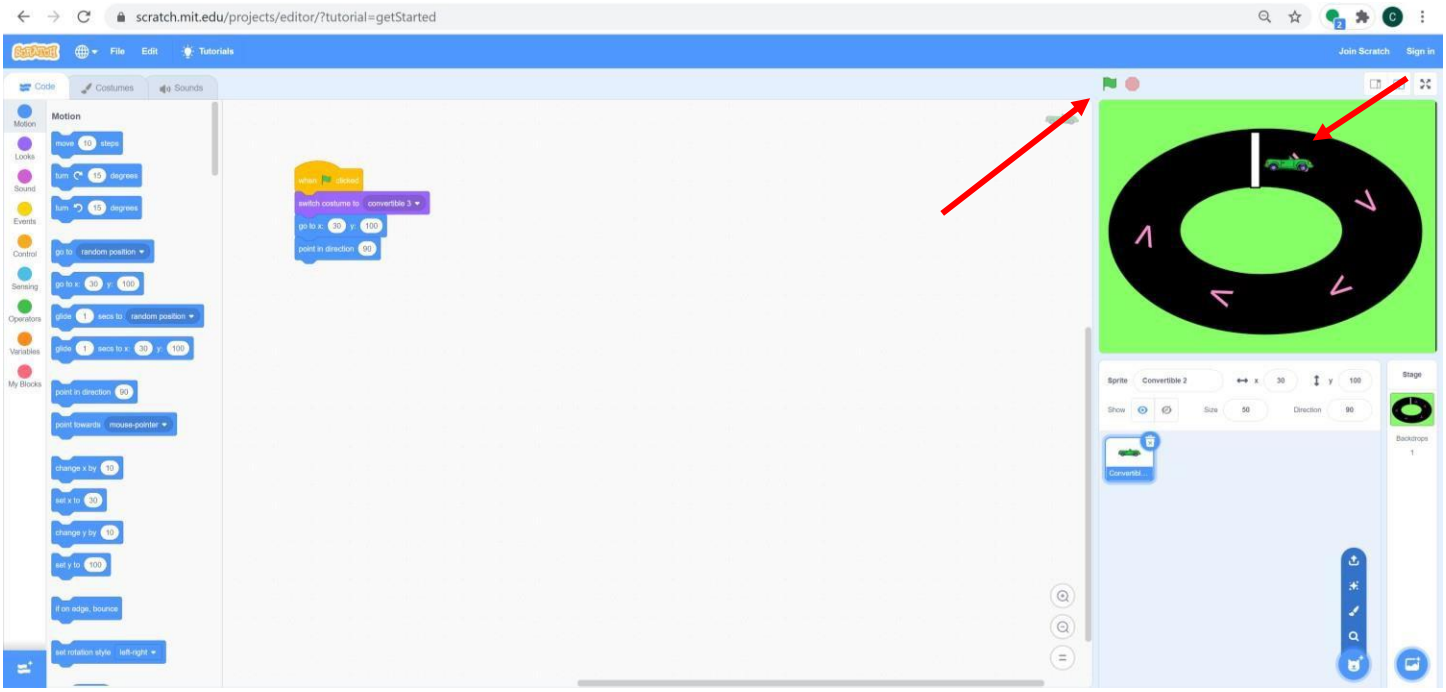
38) Click on Looks -> Switch costume to [convertible3]



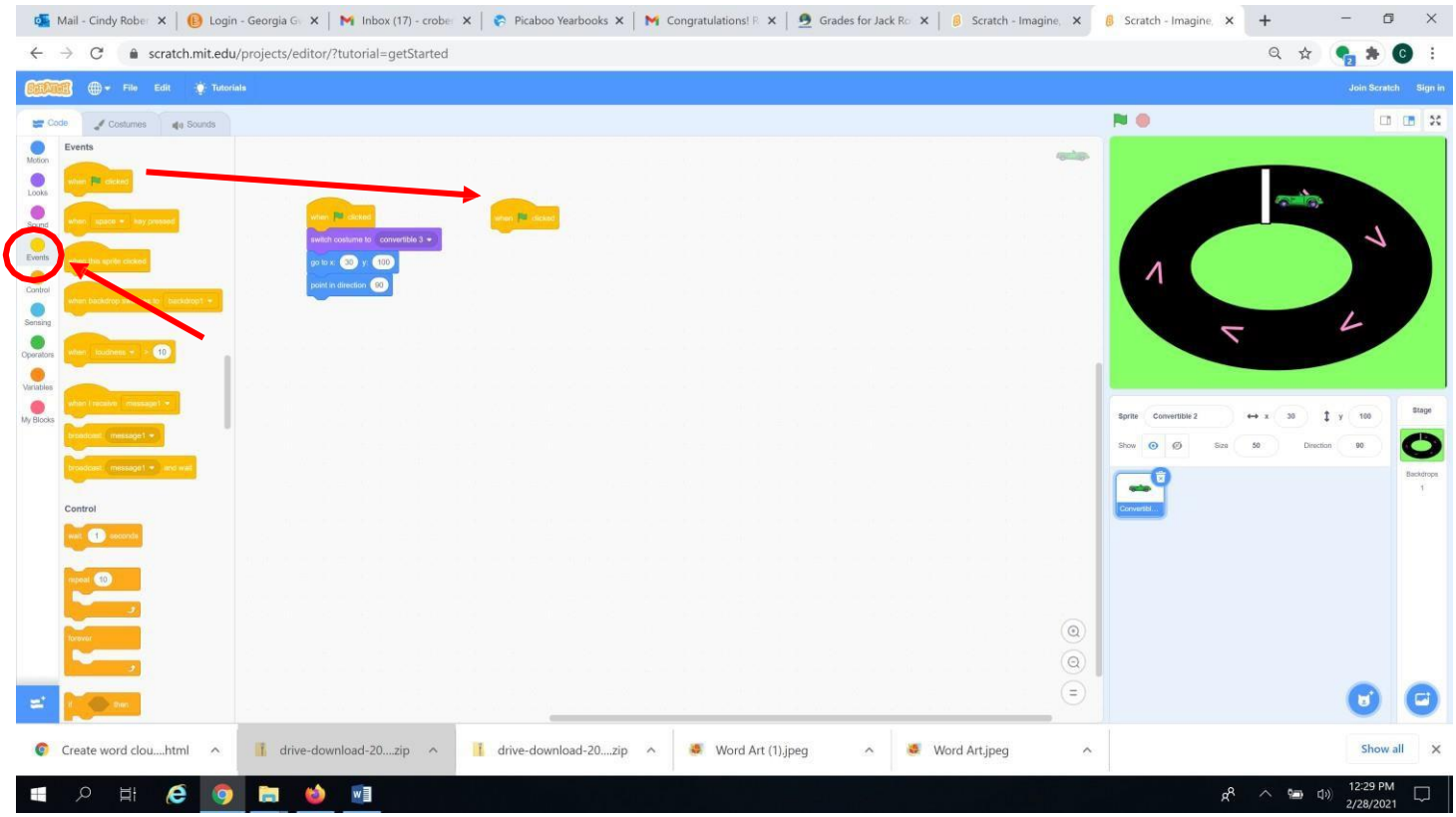
39) Click Motion -> go to x/y coordinates and then Motion -> Point in direction 90 (right). Change the x to 30 and the y to 100.



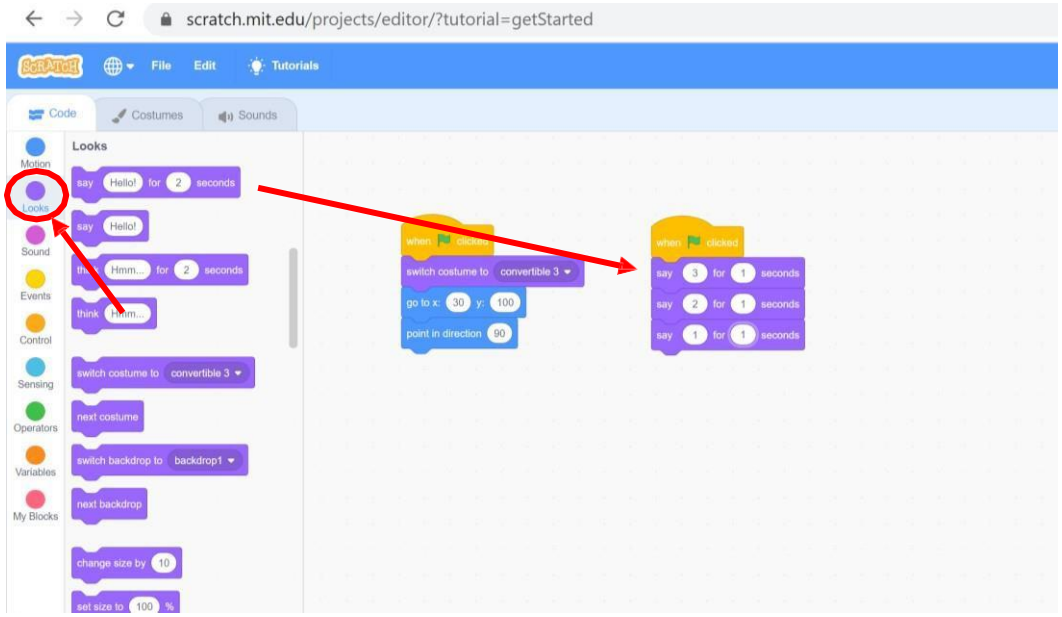
40) Click on the green flag to make sure your car is to the right of the starting line. If your car is not where you want it to start, change the value of x and y. Increasing x moves the car right and increasing y moves the car up.



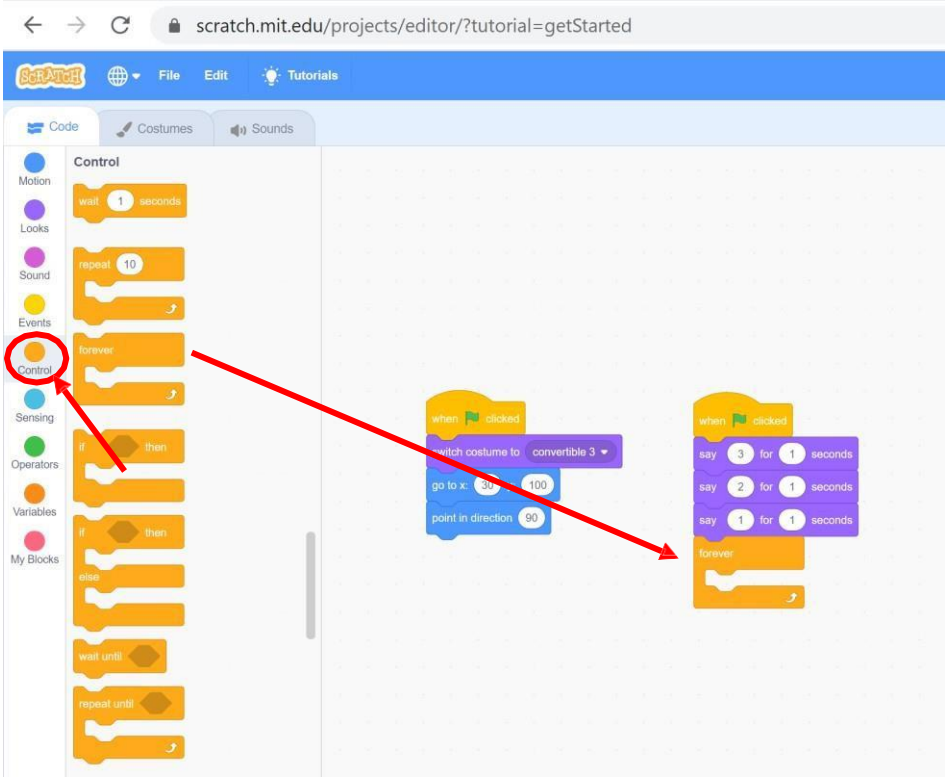
41) Click on events -> When [Flag] Clicked



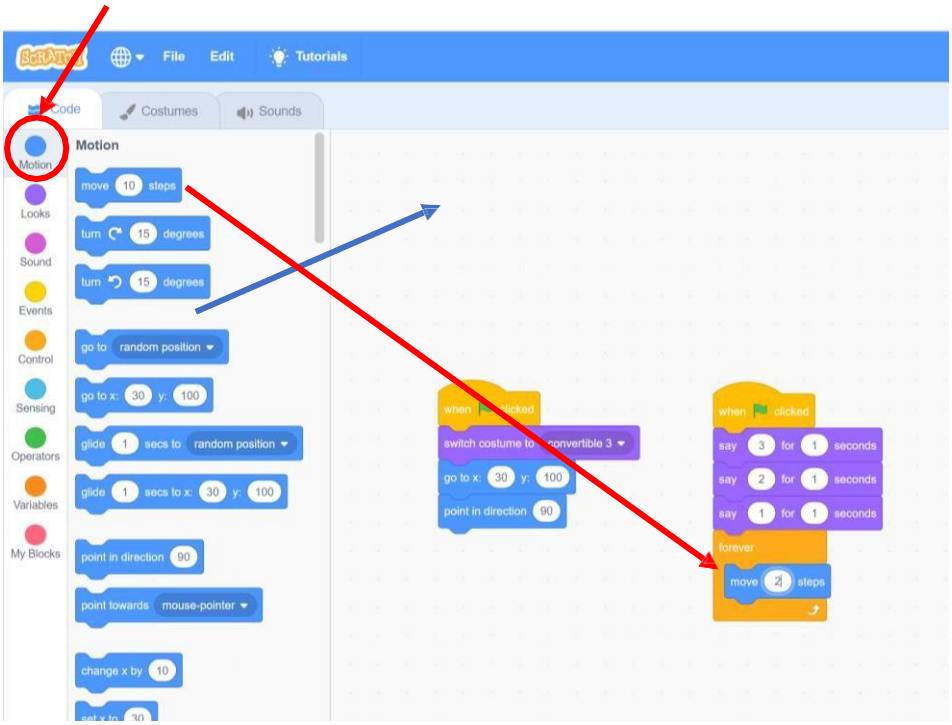
42) Click Looks -> say [Hello!] for 2 seconds (drag three times). Change the "Hello!" in the top one to 3, the middle one to 2 and the bottom one to 1 and change the seconds to 1 in all 3.



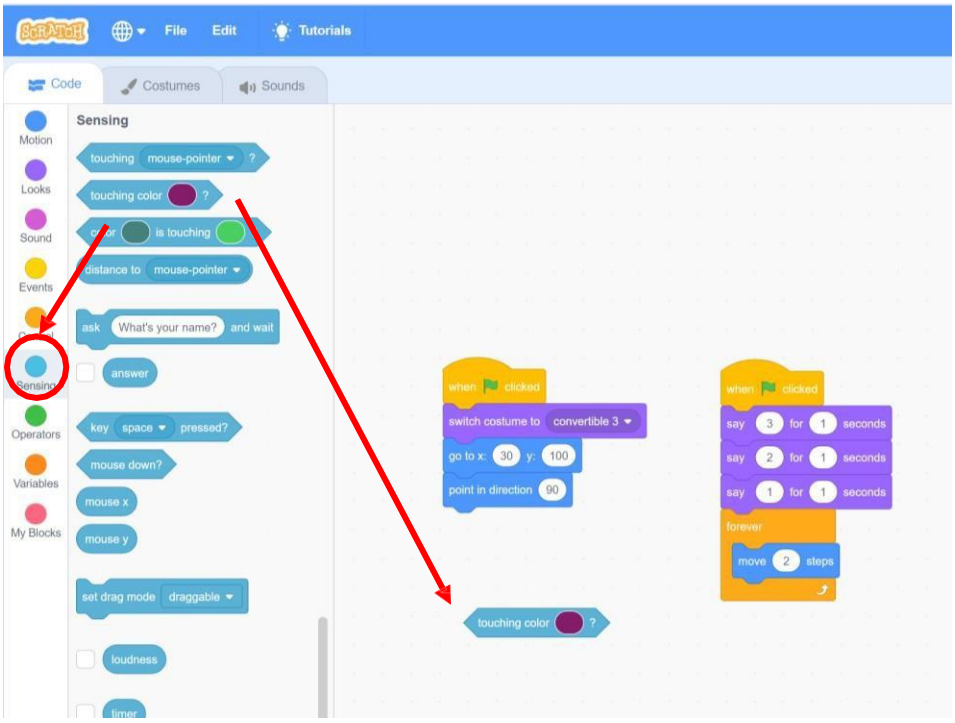
43) Click Control -> Forever



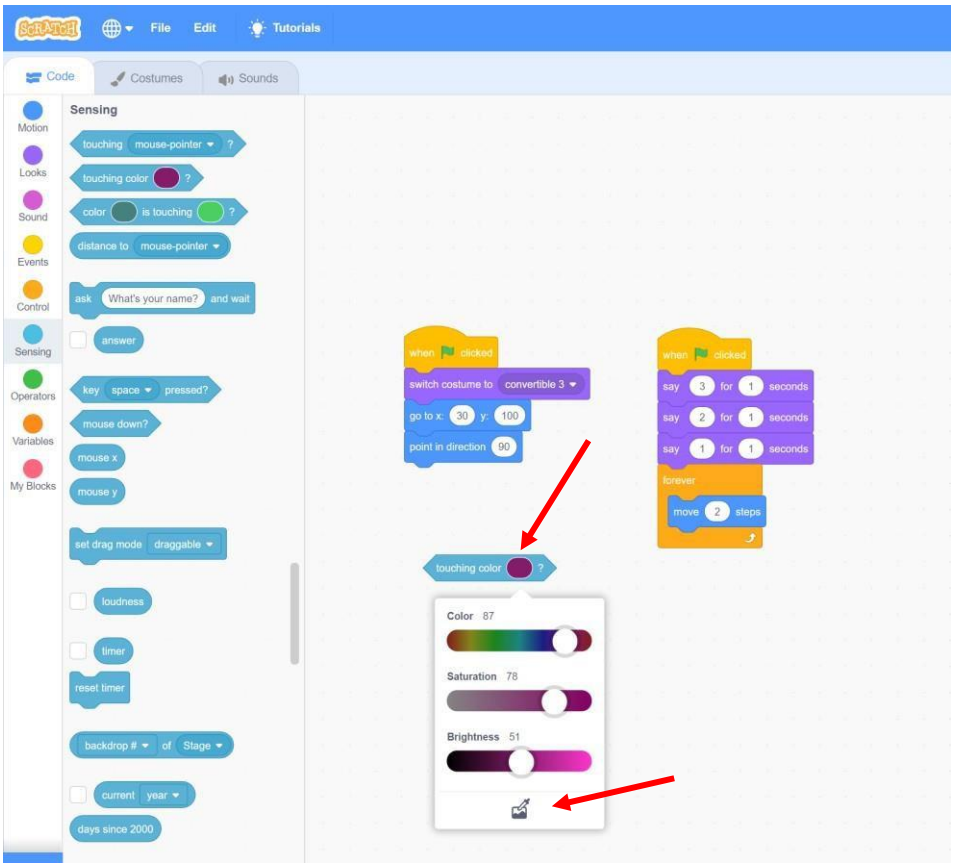
44) Click Motion -> Move 10 steps. Change the number of steps to 2.



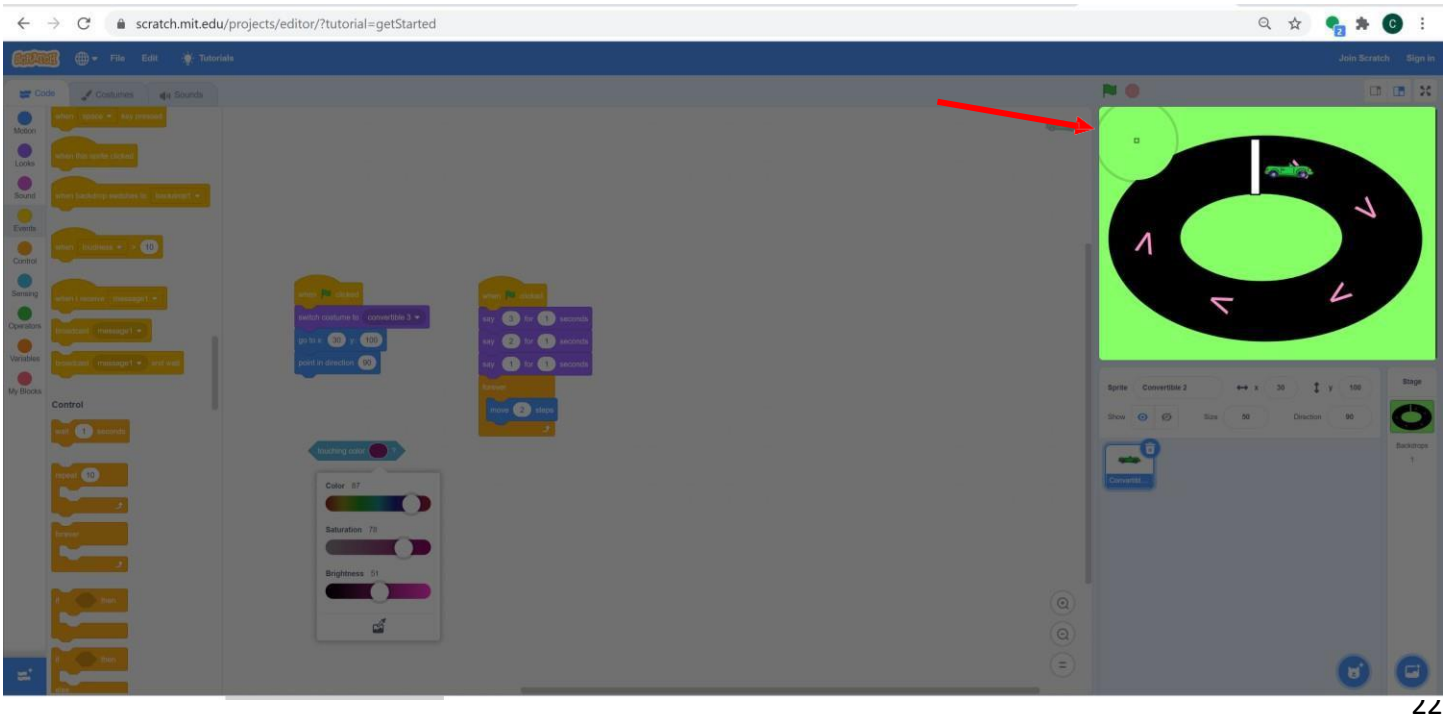
45) Click Sensing -> Touching color ()



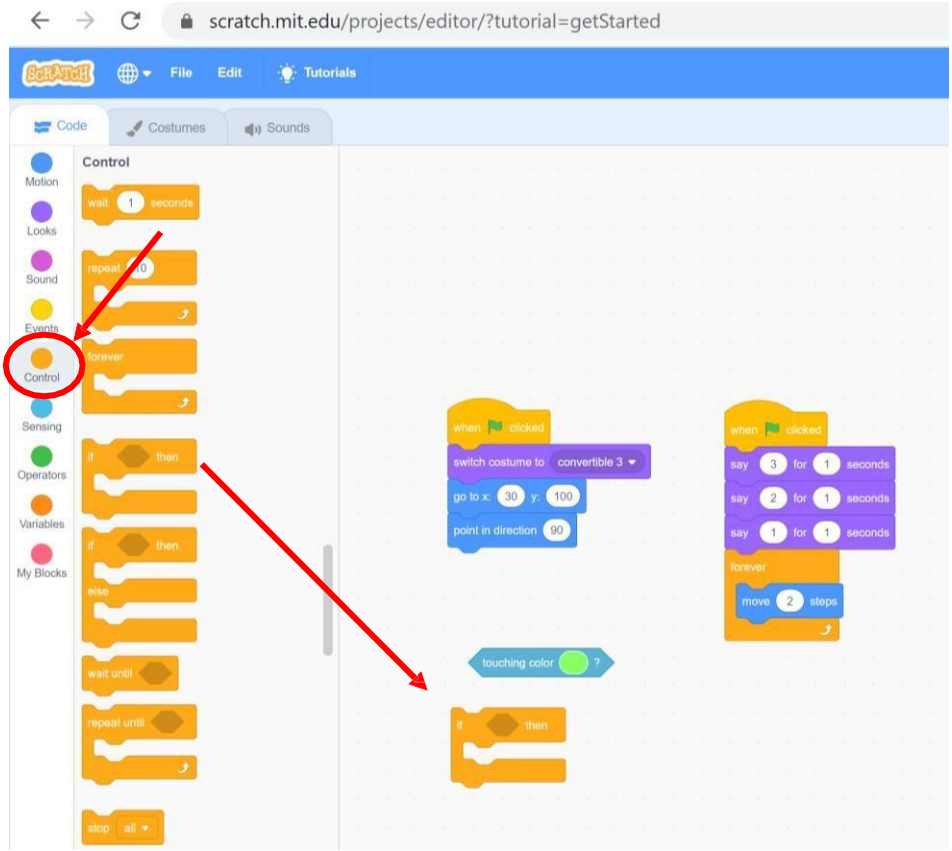
46) Select the color box and click on the dropper.



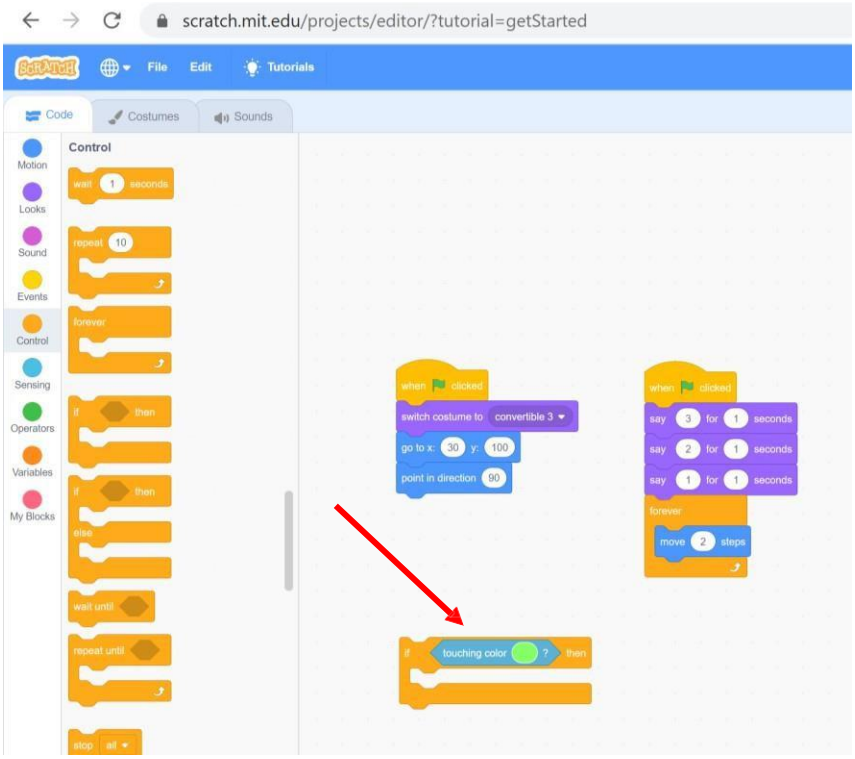
47) Drag the cursor over and click on the green background of the racetrack. You will see the purple color in the color box change to green.



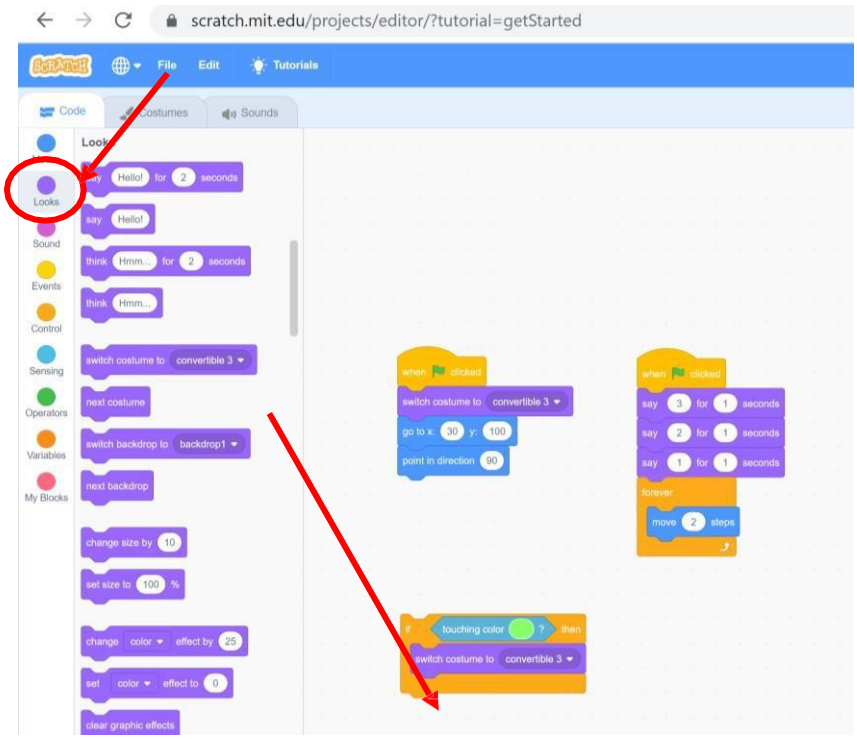
48) Click Control -> If / then



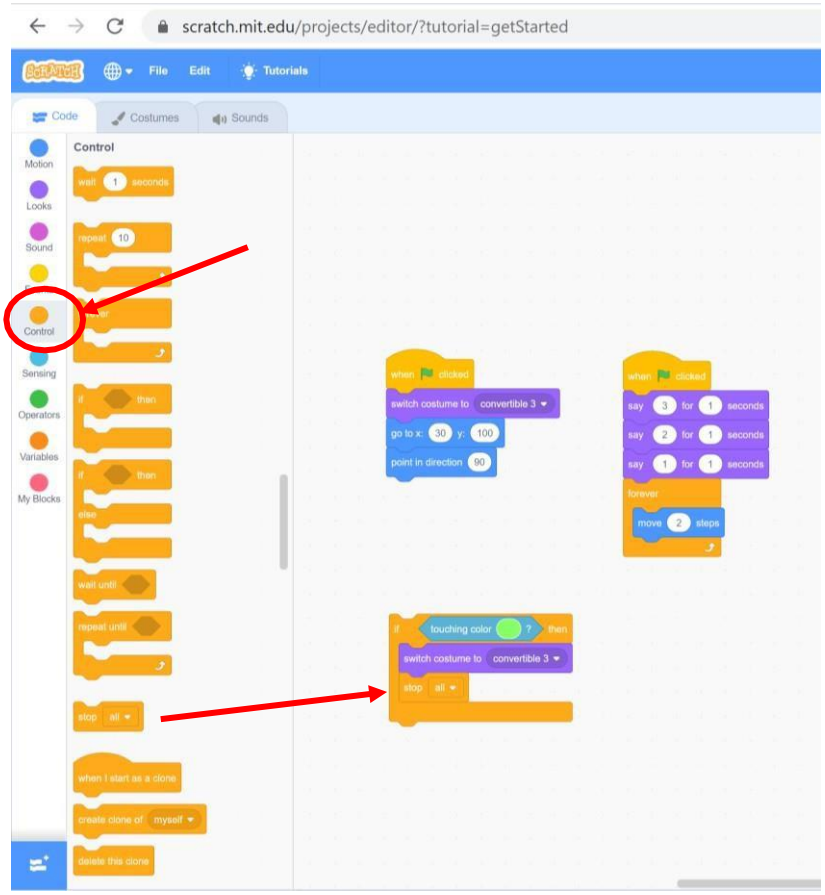
49) Drag the touching color block over to the hexagon on the if / then block and drop it in the hexagon.



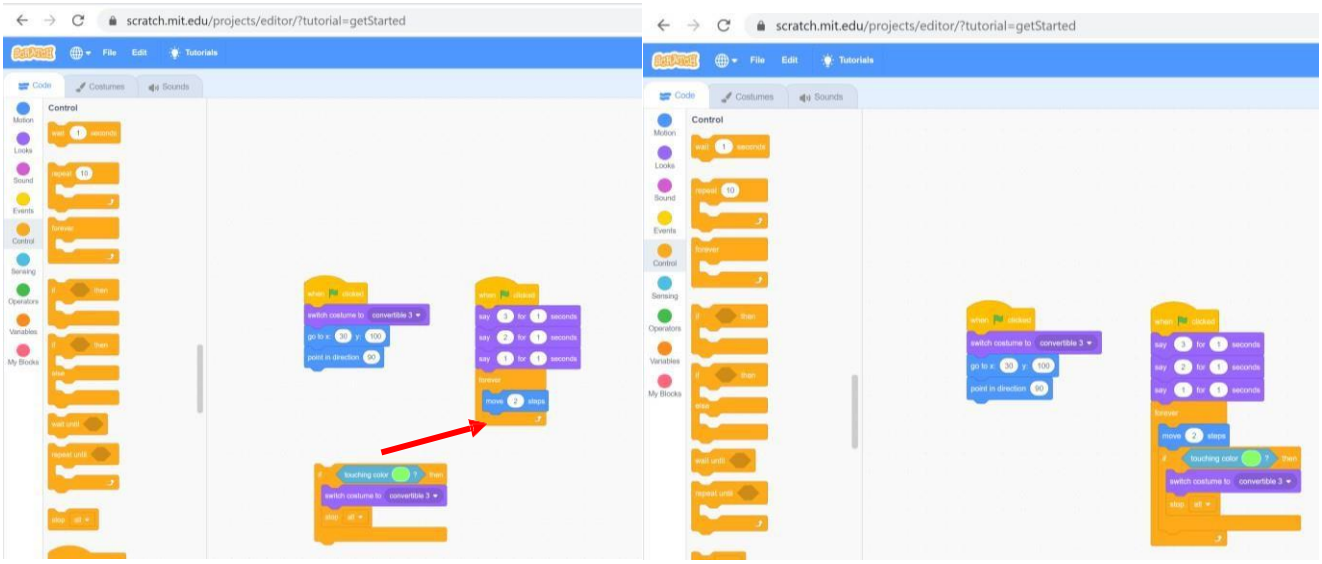
50) Looks -> Switch costume to [convertible3]



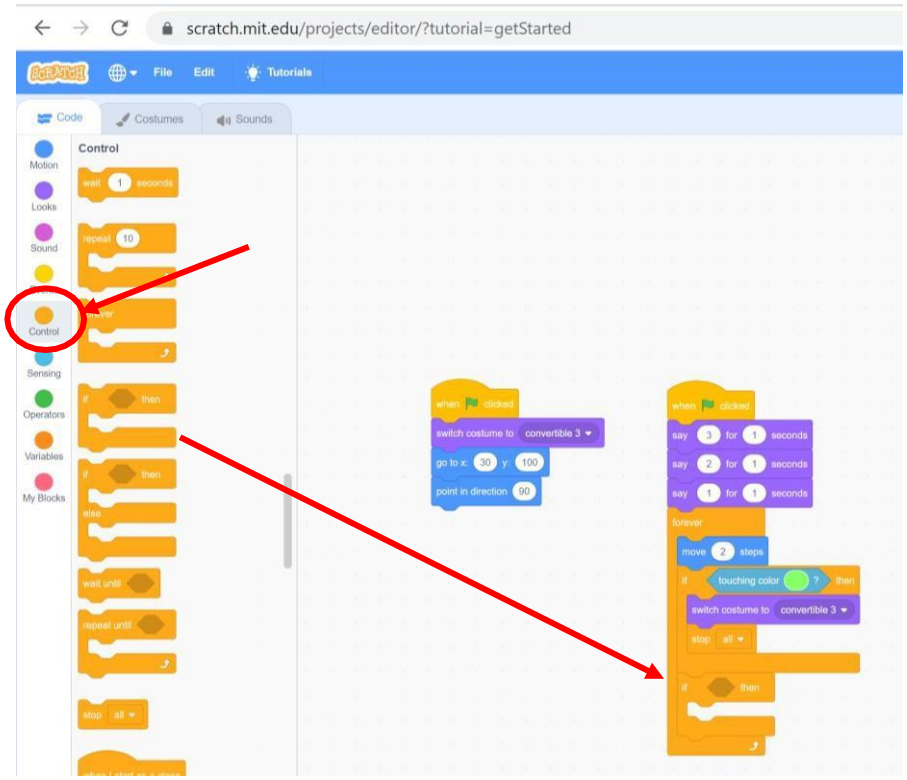
51) Click Control -> Stop all



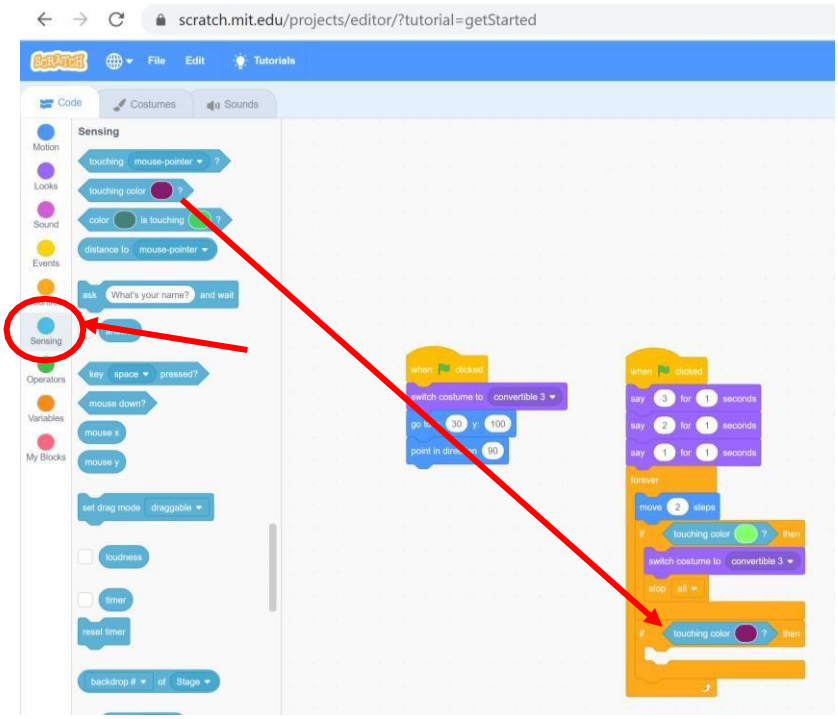
52) Move the if/then to under the move 2 steps block. It will look like the image on the right when you are done.



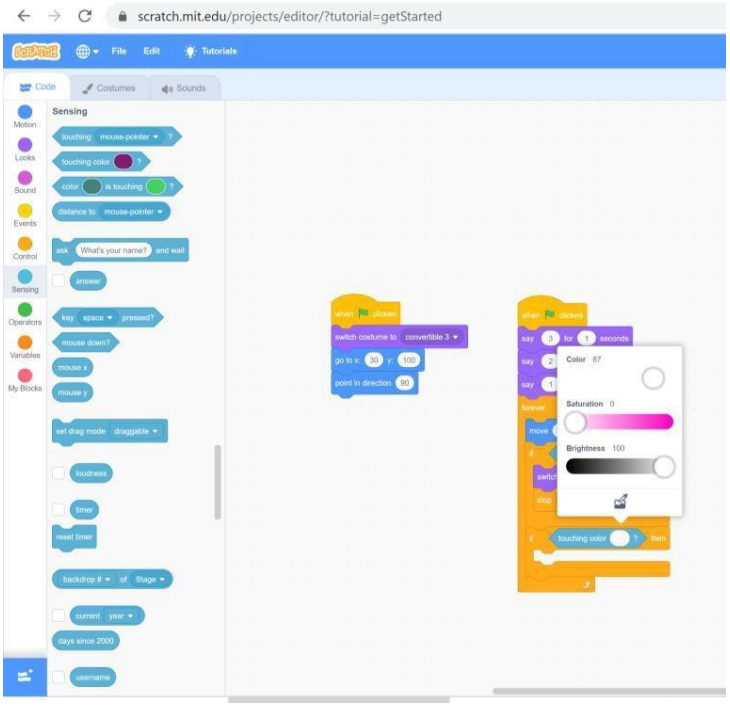
53) Click Control -> if / then



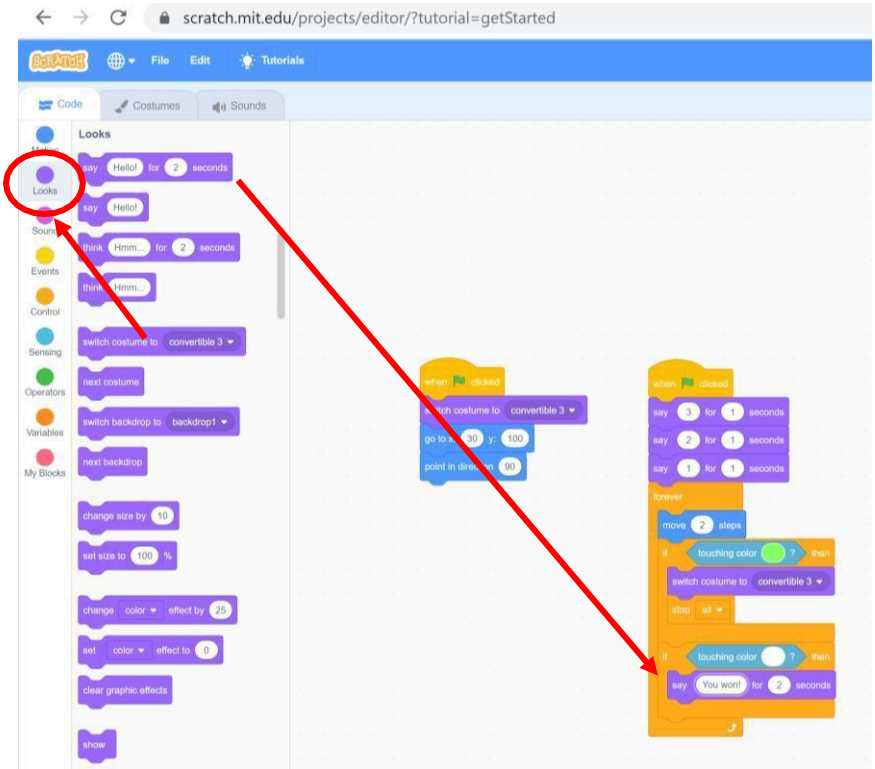
54) Click Sensing -> touching color ()



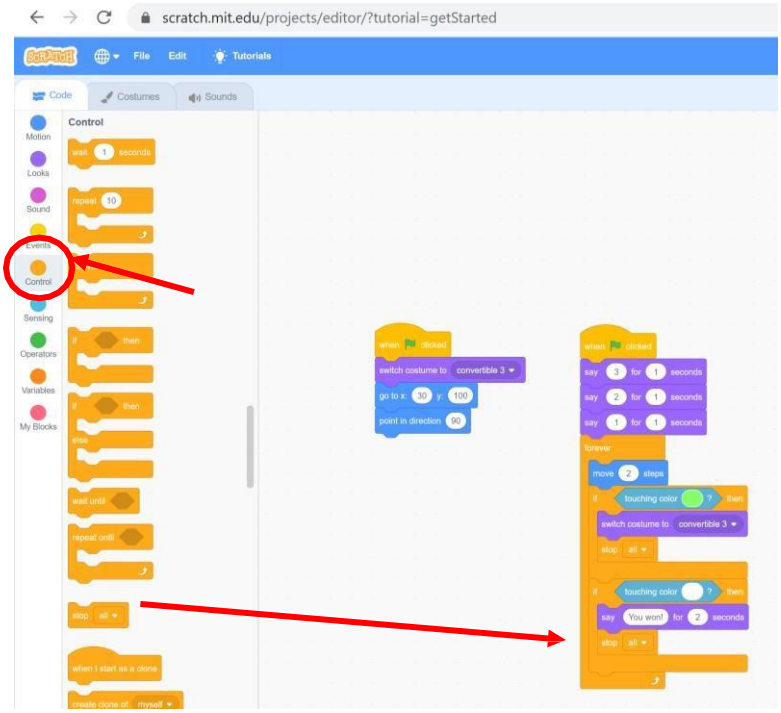
55) Click the color box and move the saturation scroll bar all the way to the left and the brightness scroll bar all the way to the right.



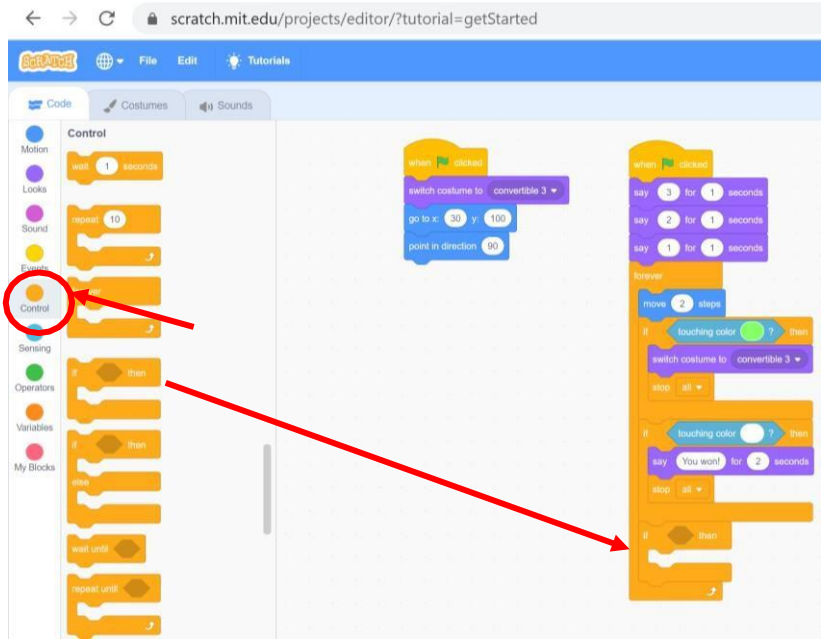
56) Click Looks -> Say Hello! for 2 seconds and drag it over. Replace Hello! with "You won!."



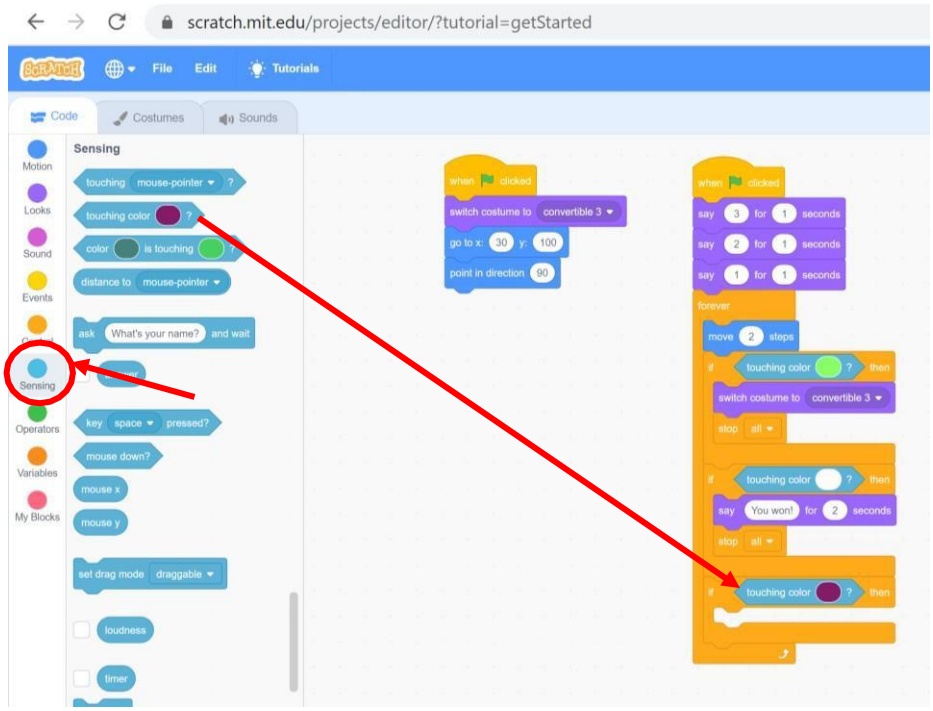
57) Click Control -> Stop all



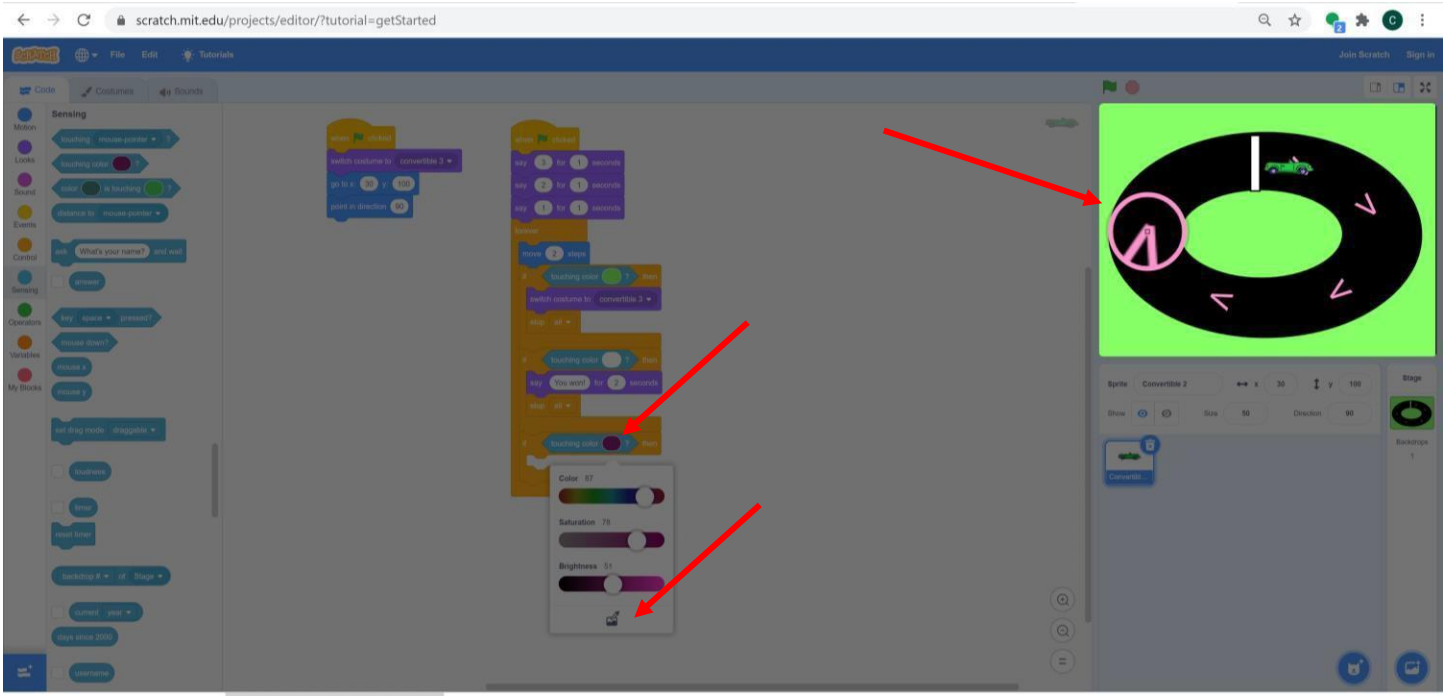
58) Control -> if / then



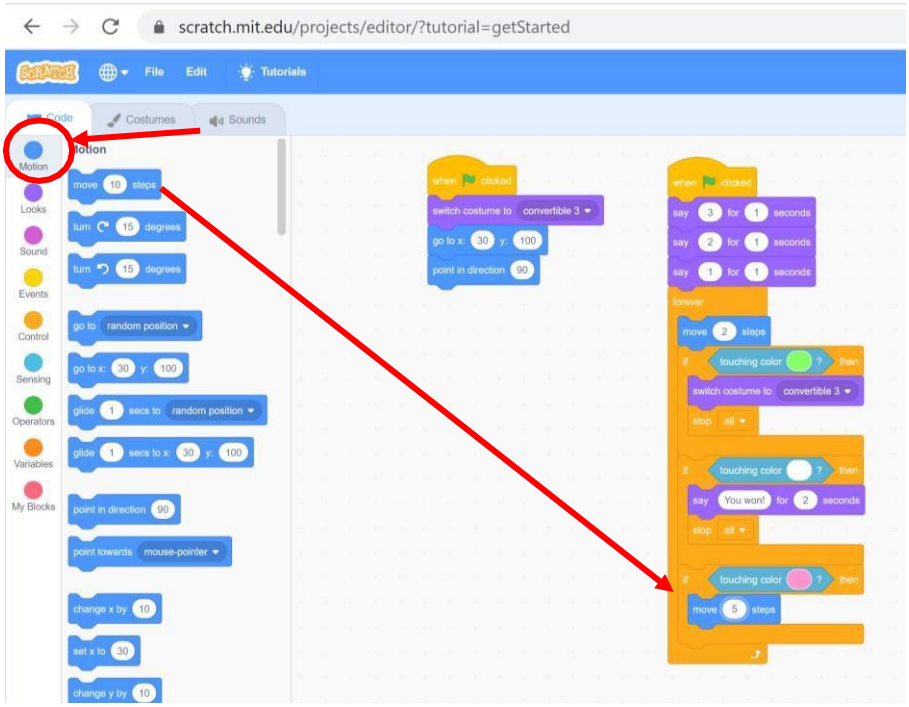
59) Sensing -> Touching color () -> click the "color" box then click the boost "V"



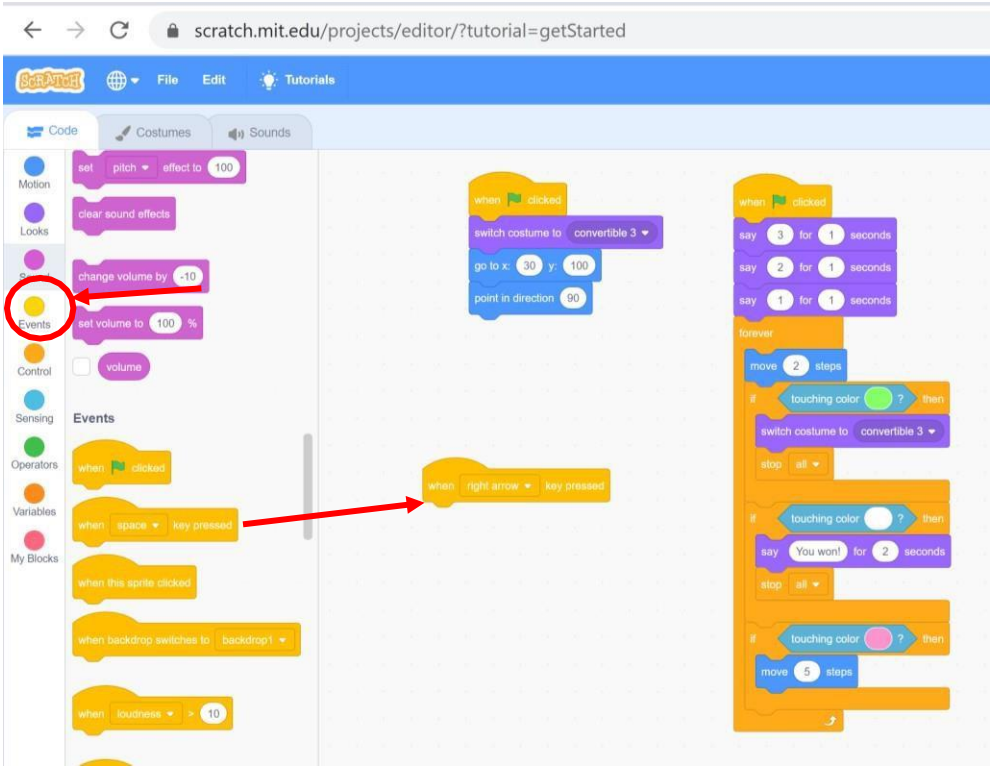
60) Click the color box and change the color to the color of your Vs by using the dropper. Click the dropper, move your mouse over to the Vs and hover over one of the Vs until the large circle turns the color of your Vs and click.



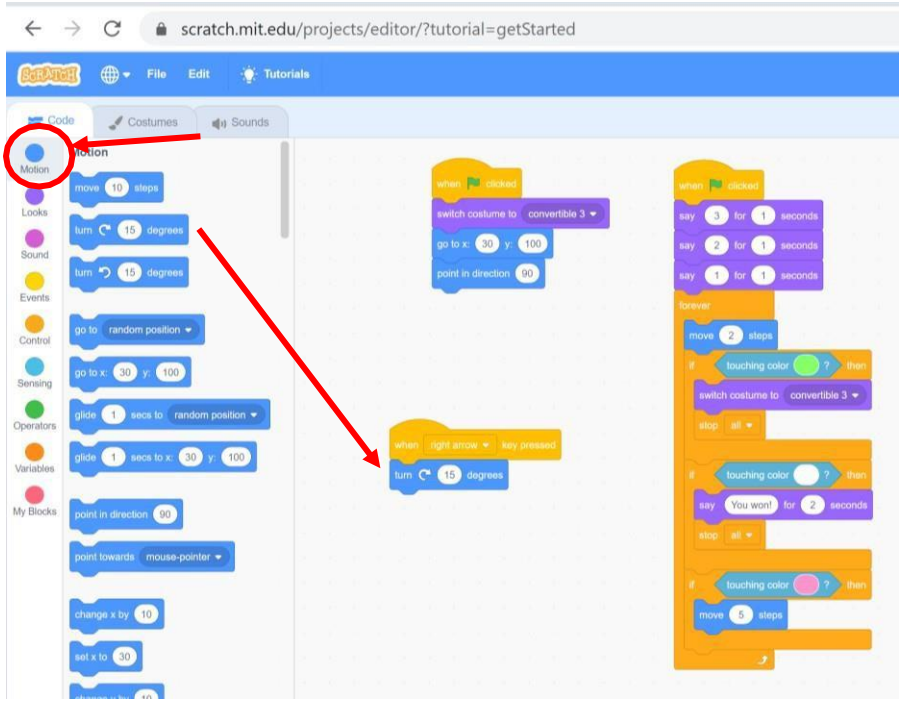
61) Click Motion -> Move 10 steps. Change the number of steps to 5.



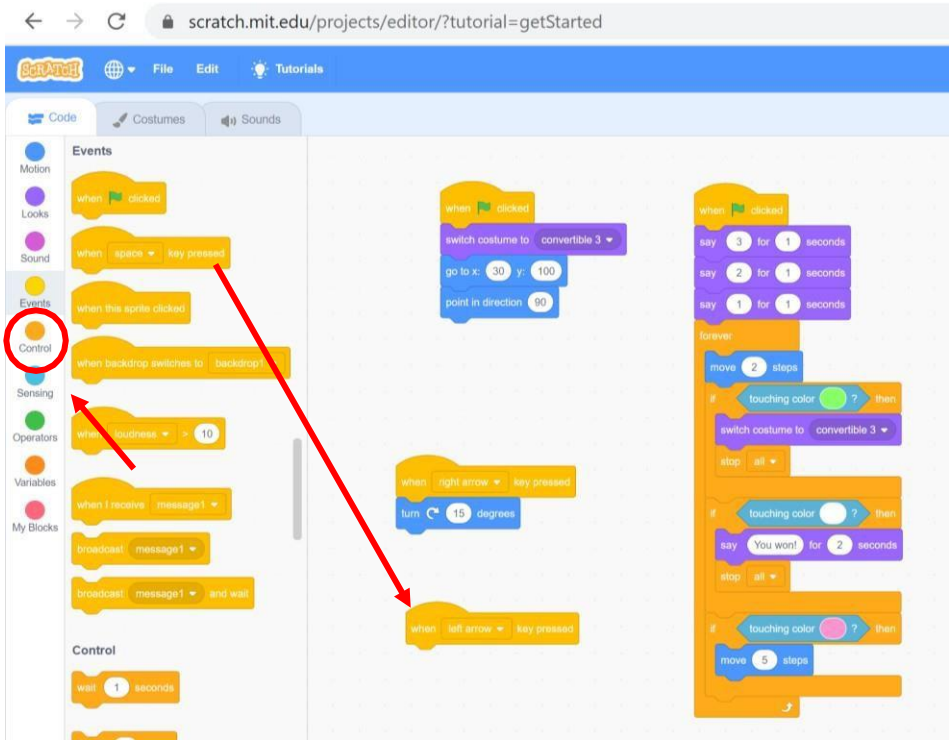
62) Click Events -> When (space) key pressed. Change (space) to (right arrow.)



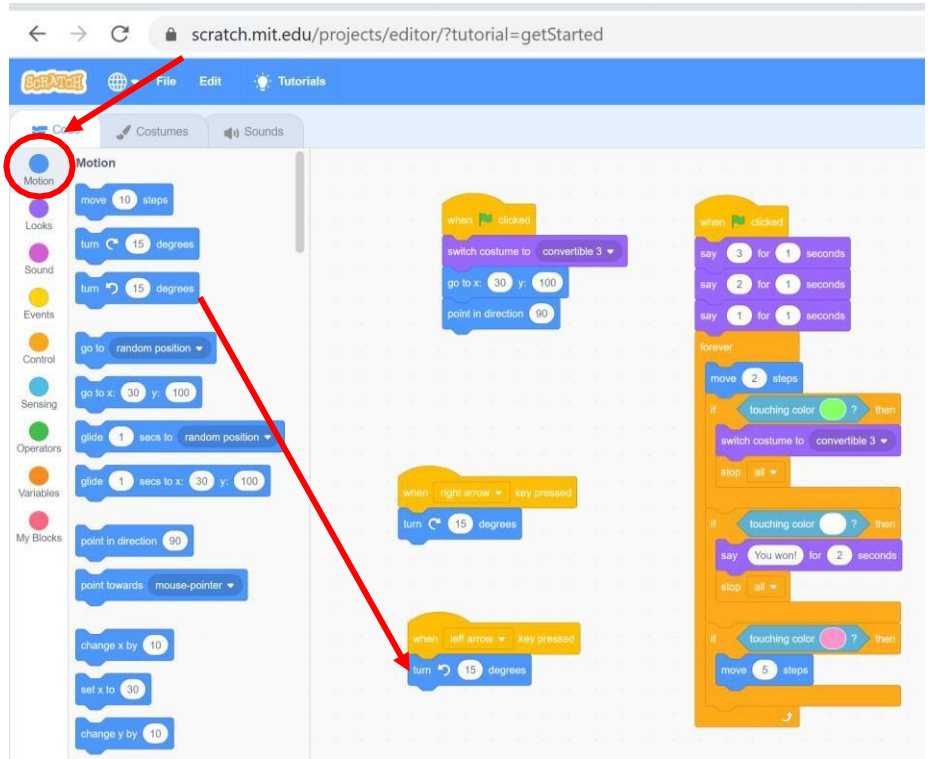
63) Motion -> Turn (right 15 degrees)



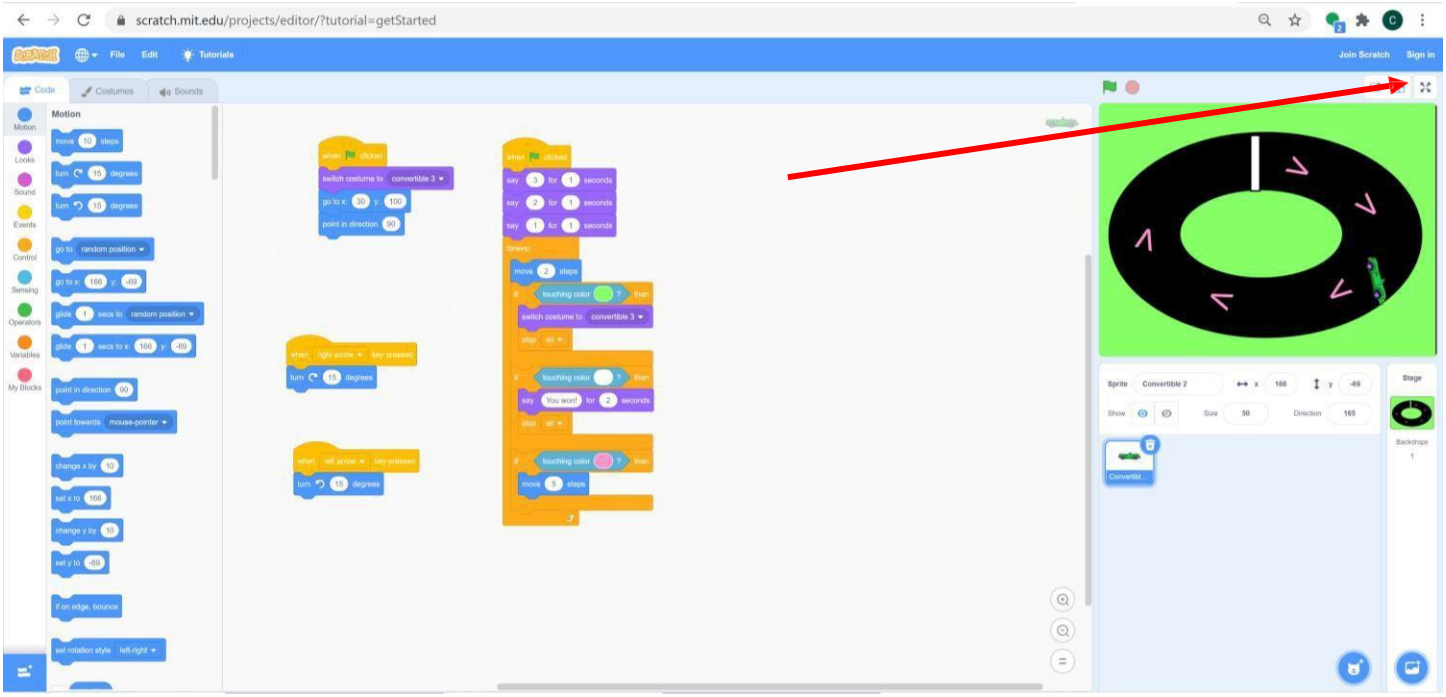
64) Click Events -> When (space) key pressed. Change (space) to (left arrow.)



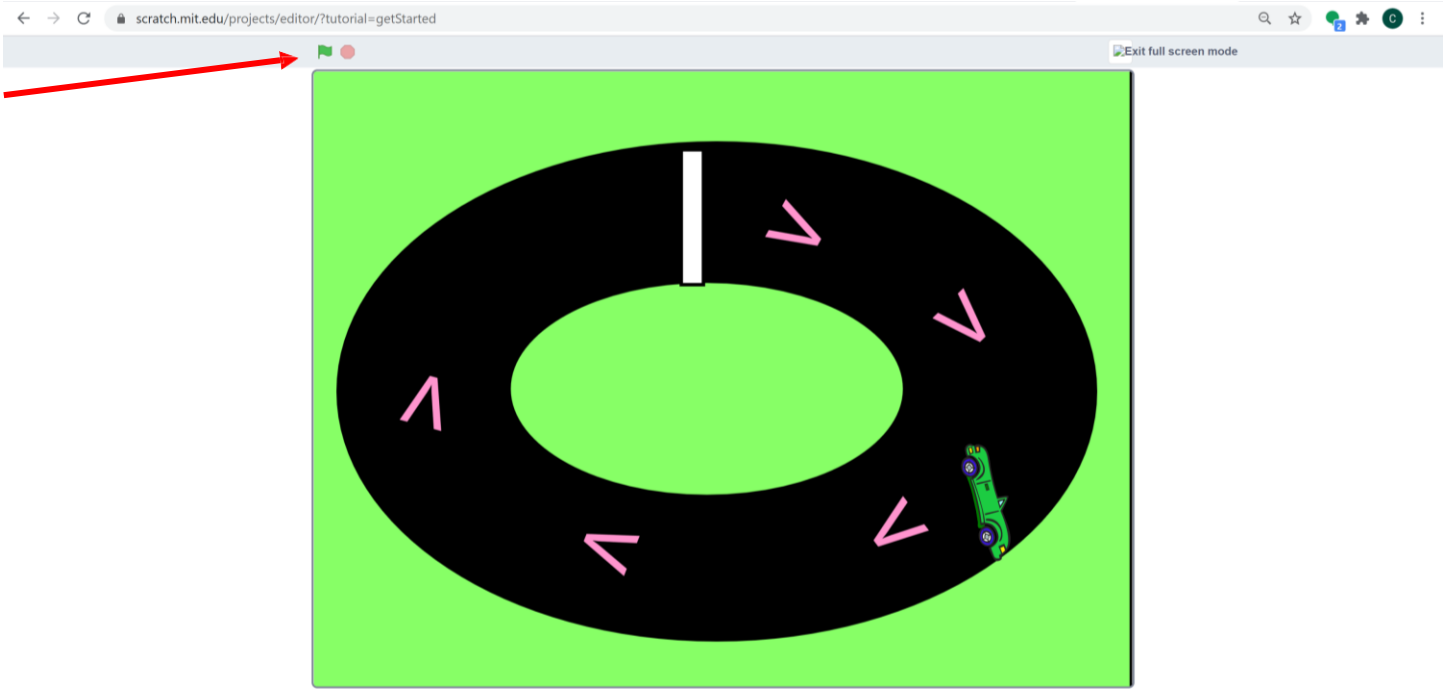
65) Motion -> Turn (left 15 degrees)



66) To play the game, click the full screen control button.



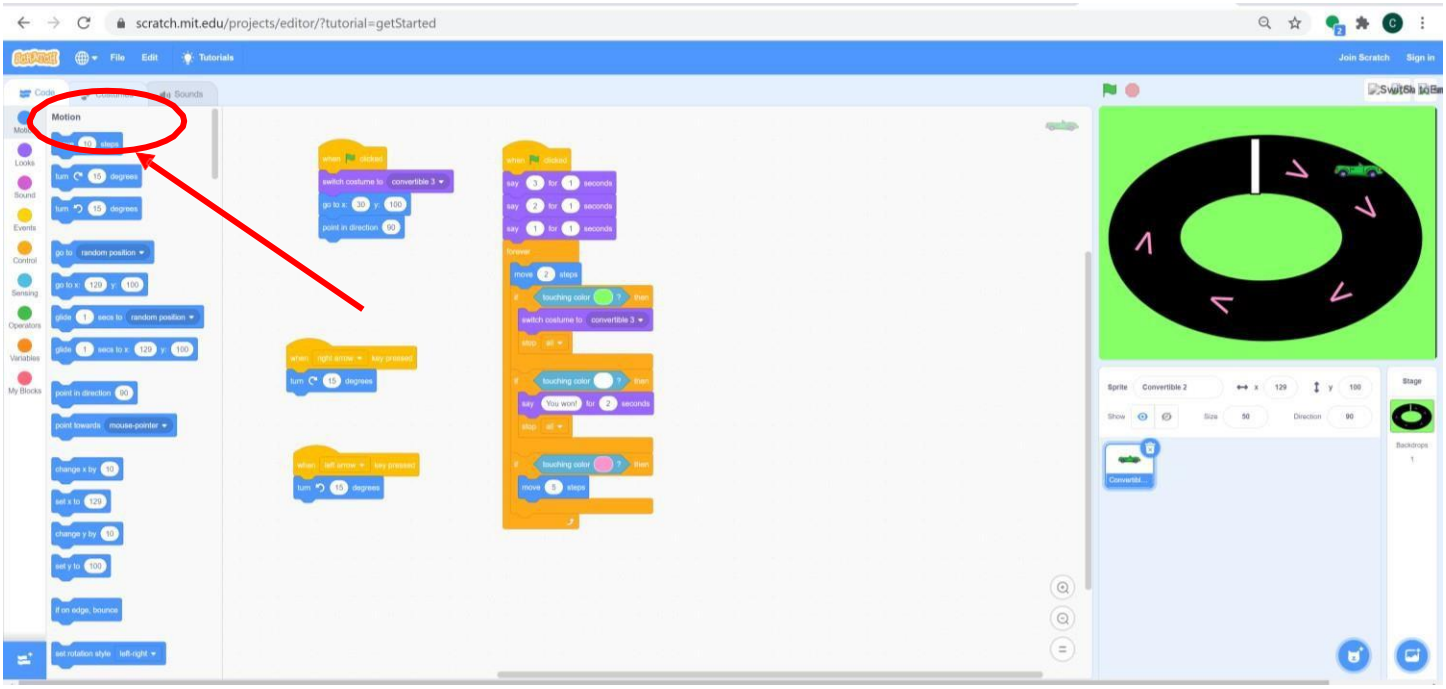
67) Click the green flag to begin. Click the red stop sign to stop the game.



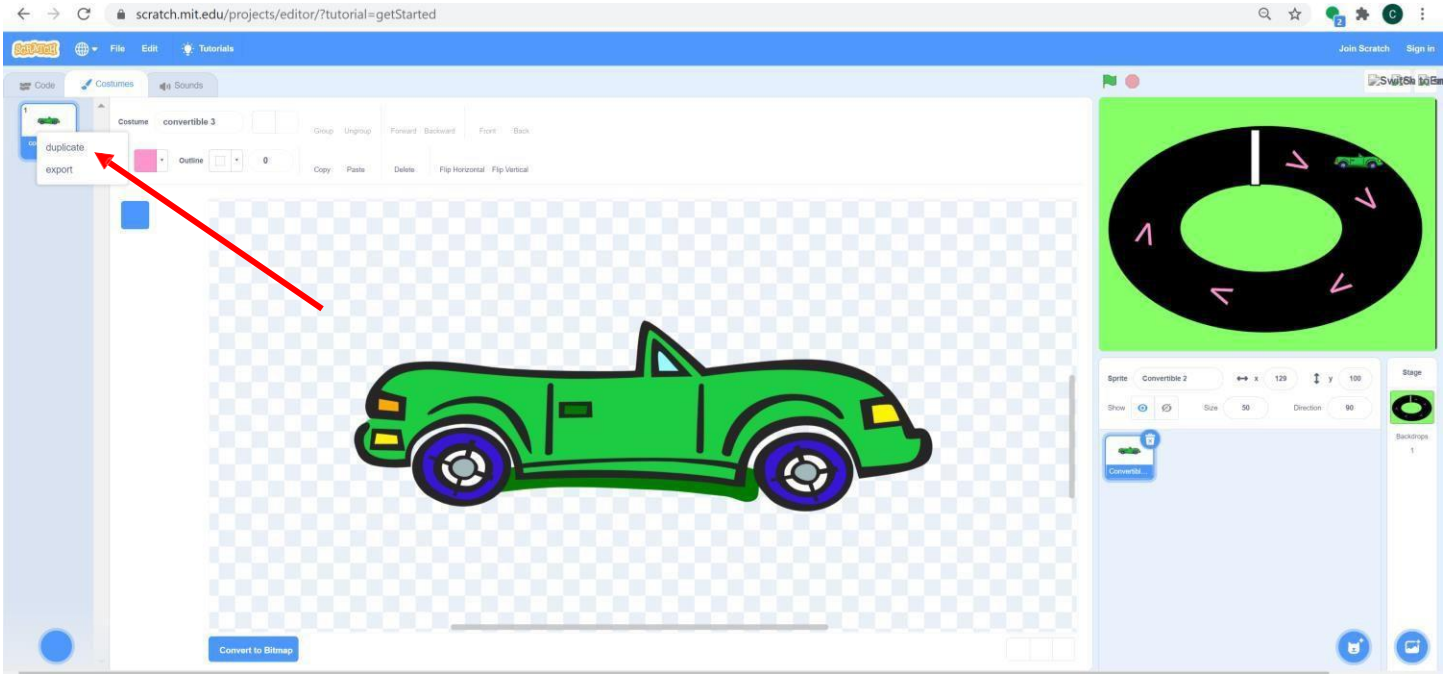
Bonus Round

We can create a "crashed" car when the car touches the green grass.

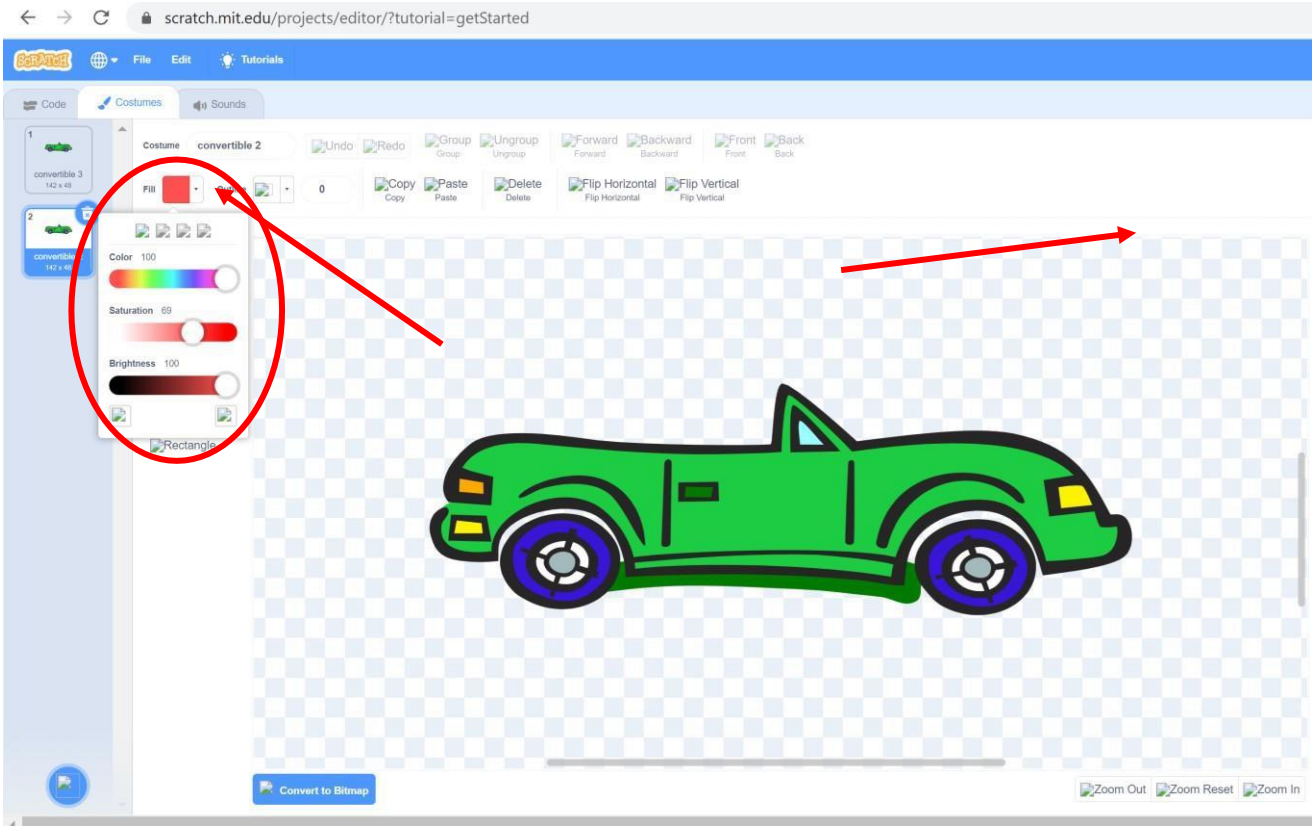
1) **Click on costumes.**



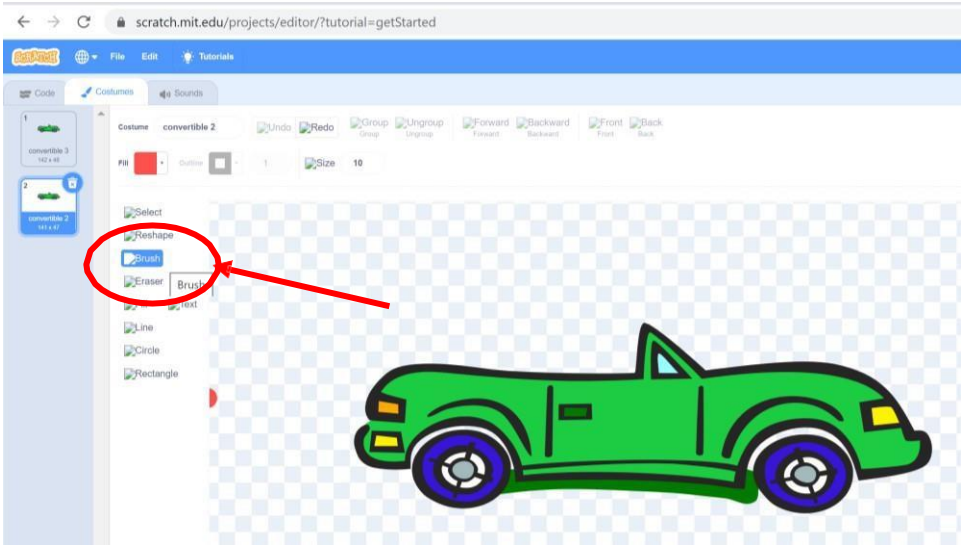
2) **Right click on the convertible and select duplicate.**



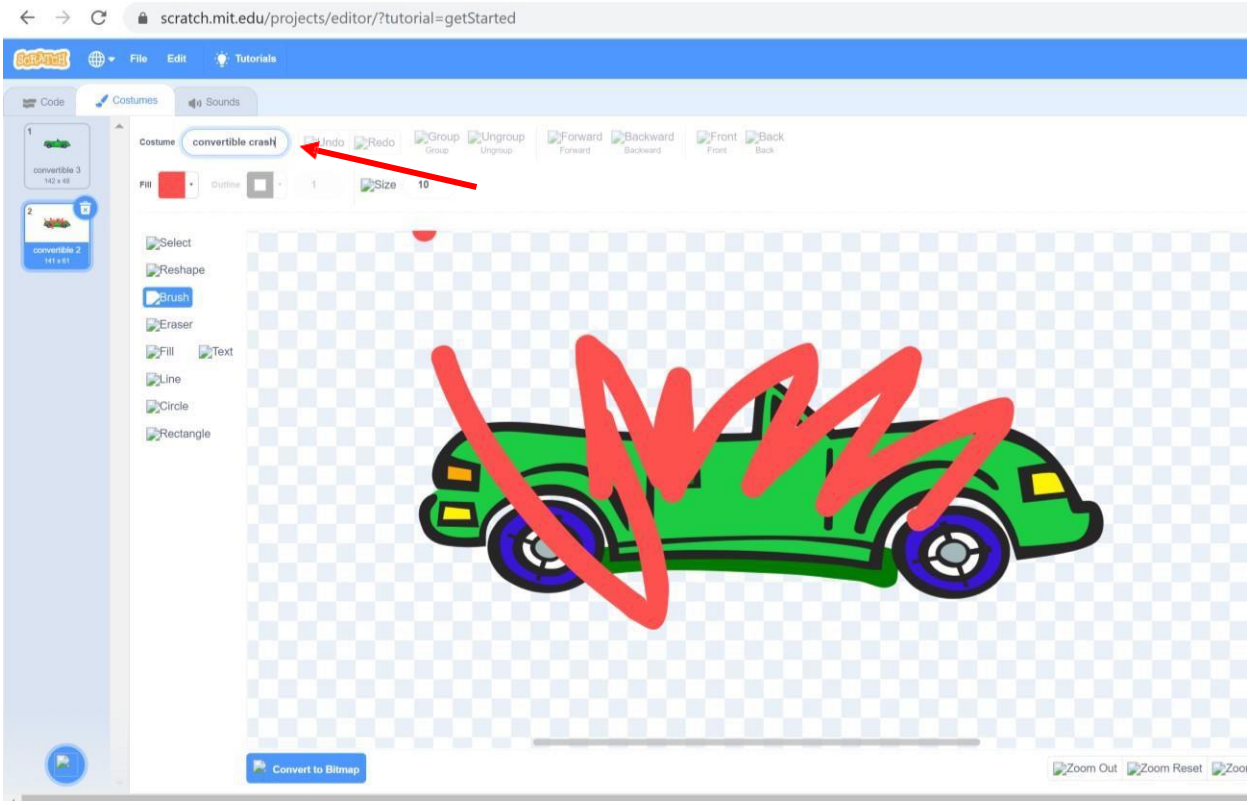
3) Change the fill color to red.



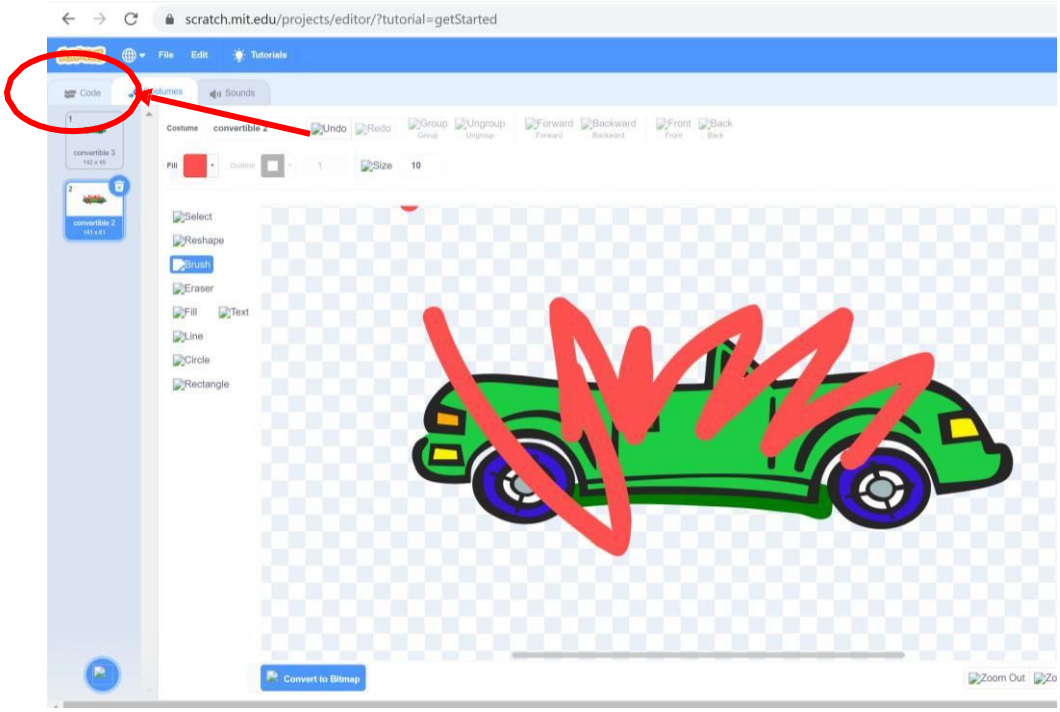
4) Select the Brush tool.



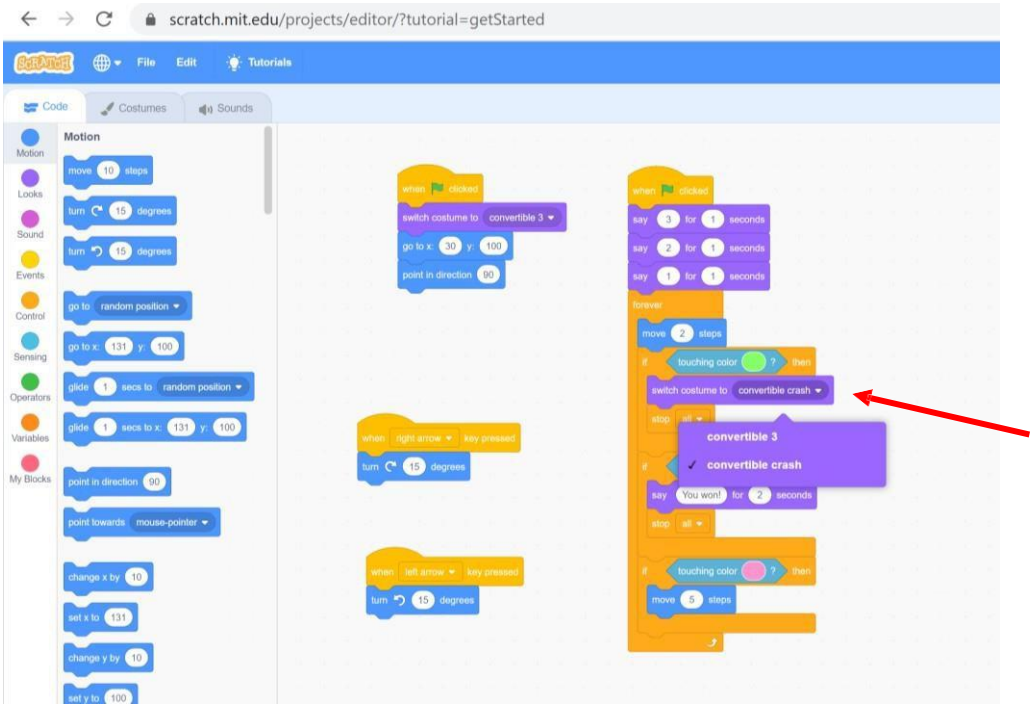
5) Draw "fire" all over your convertible and change the costume name to "convertible crash."



6) Select "Code."



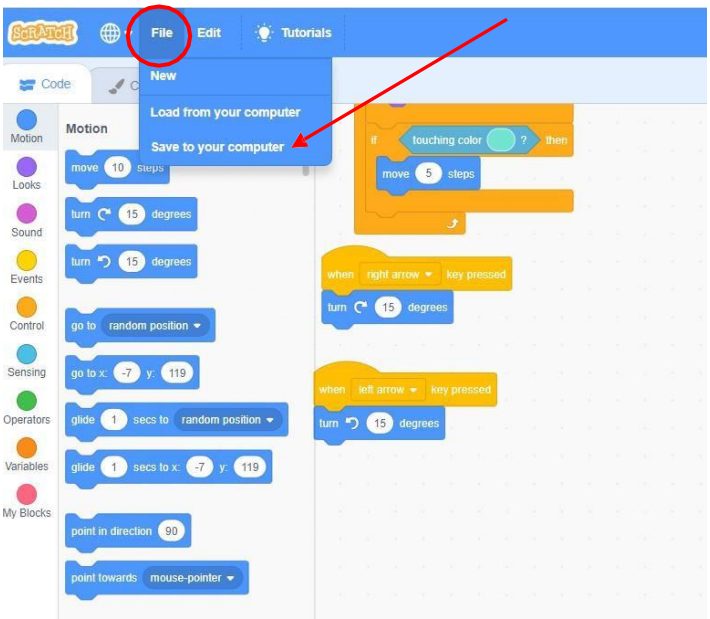
7) **In the if statement used to sense if your car touches the grass and crashes, in "switch costume to" select "convertible crash."**



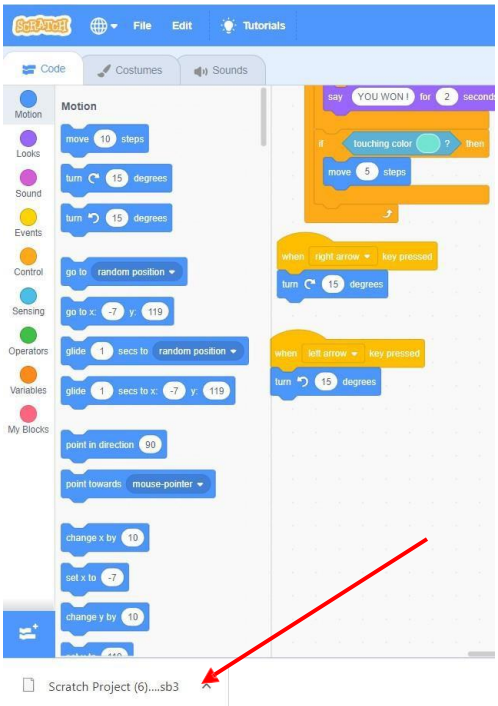
8) **Play your game again and watch what happens if you car touches the grass**

How to Save Your File

1) **Click "File" in the top left corner of the Scratch window. And then select "Save to your computer."**



2) **You will see a file (called Scratch Project.sb3) download on to your computer. (It may have a slightly different name than the one shown in the image below.)**



Summary Steps

9-11: What happens when you start the game?
Set the car's X / Y start coordinates, the direction that car is facing, and the non-crashed car

Steps 14-15: What about moving forward?
The "forever" block will continue moving the car forward indefinitely

Steps 16-19: What about crashing? How do they know they've crashed?
The "if" statement will stop the car from moving and change it to a crashed car when it touches the "green" color

Steps 20-23: What about winning? What signals that you've won the game?
If the car touches the white line, you've won. Display a winning message and stop the game.

Steps 24-26: What about "boost"? How do we make the car go faster?
If the car touches the pink "V" we want it to go faster. Instead of moving just 2 steps, we want to move 5 steps.

Steps 27-30: How do we steer the car?
The "listeners" watch for the left / right keyboard arrows and then turn the car 15 degrees. You can change the "15 degrees" value to make the car turn more / less. Try it!