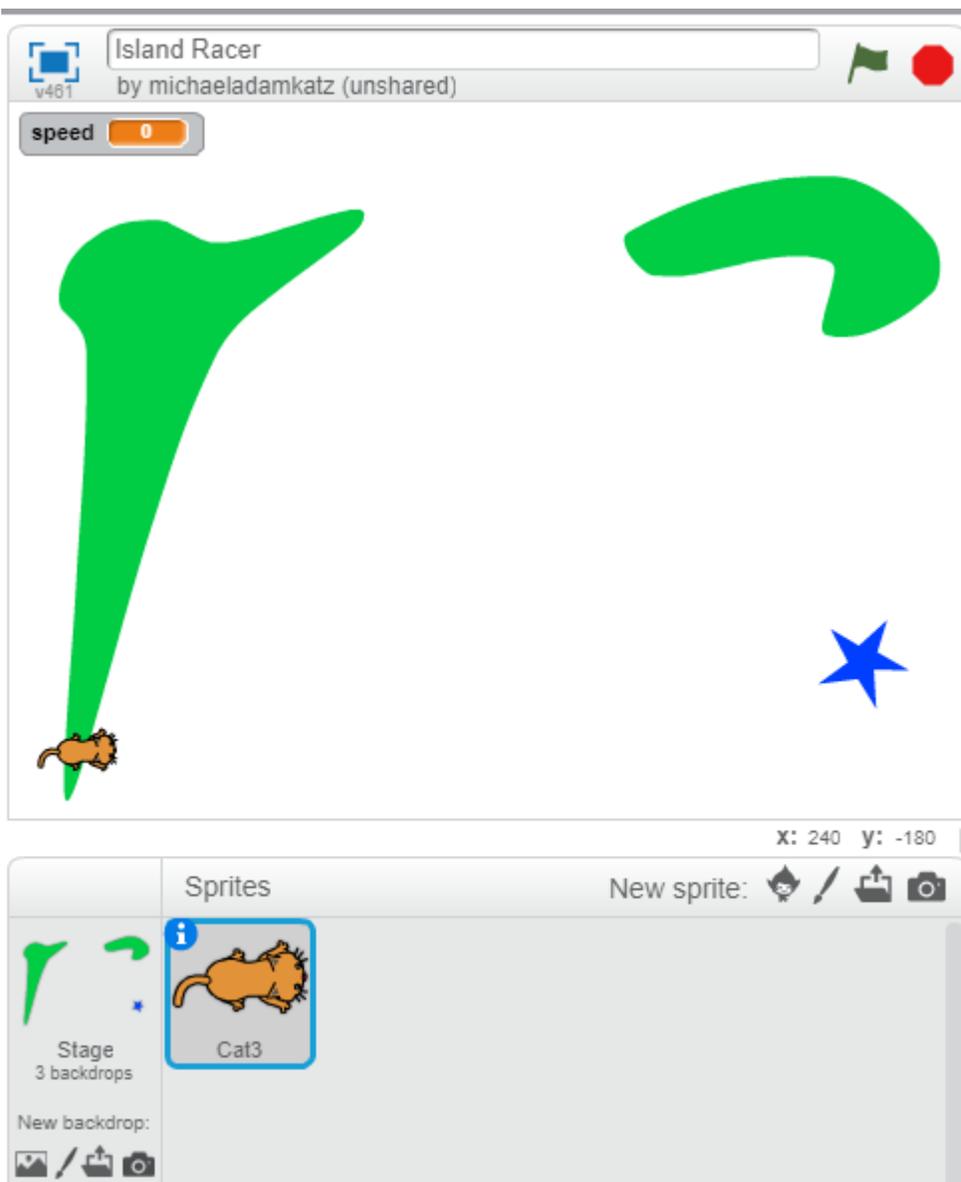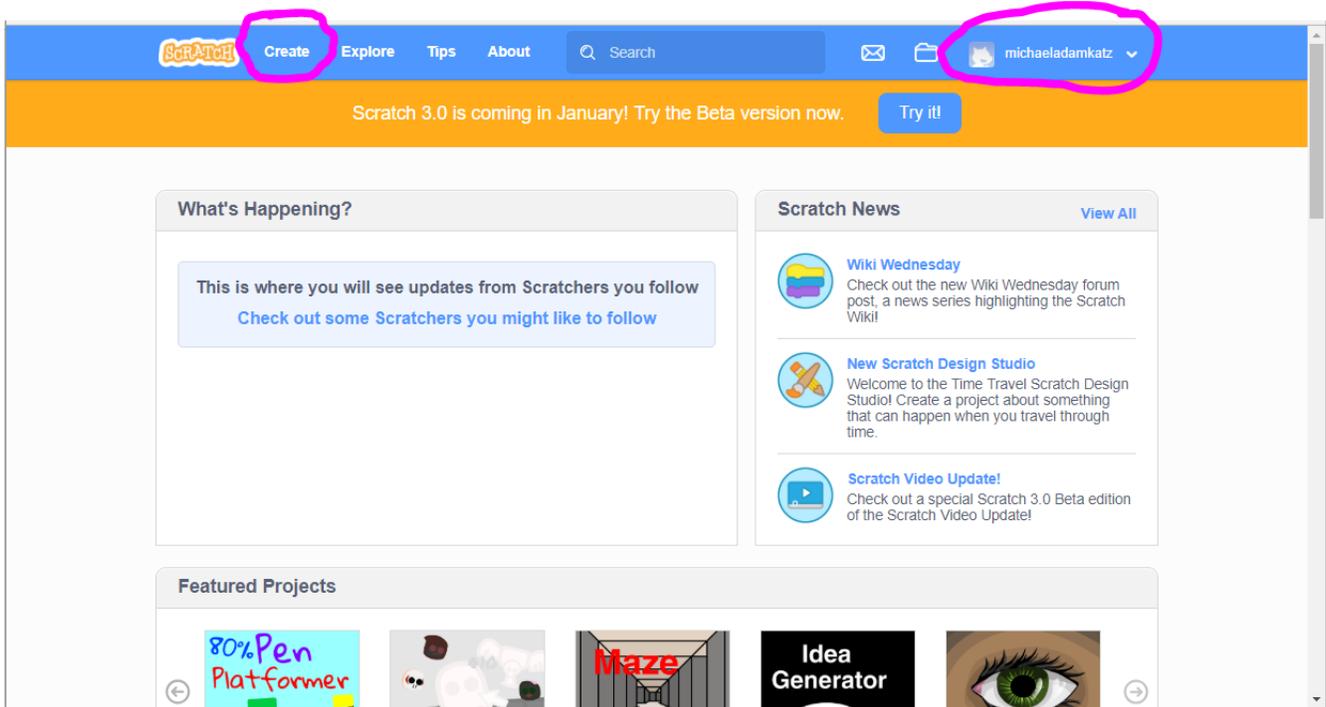Like the Basic Racer, this project uses one sprite and a small amount of code.



Making this game involves drawing an island course backdrop for each level, and making the code for the cat/car sprite.

When you start Scratch at **https://scratch.mit.edu/** you will be at the home screen shown below:

First, if you don't already have a Scratch account, you should make one. Use the upper-right corner of the screen to create an account, to log in, or to see if you are already logged in. In the picture above, you can see that I'm logged in with my Scratch account name, "michaeladamkatz".

Once you are logged in to your Scratch account, click Create as shown on the top of the screen above. This starts you with a new project as shown below.
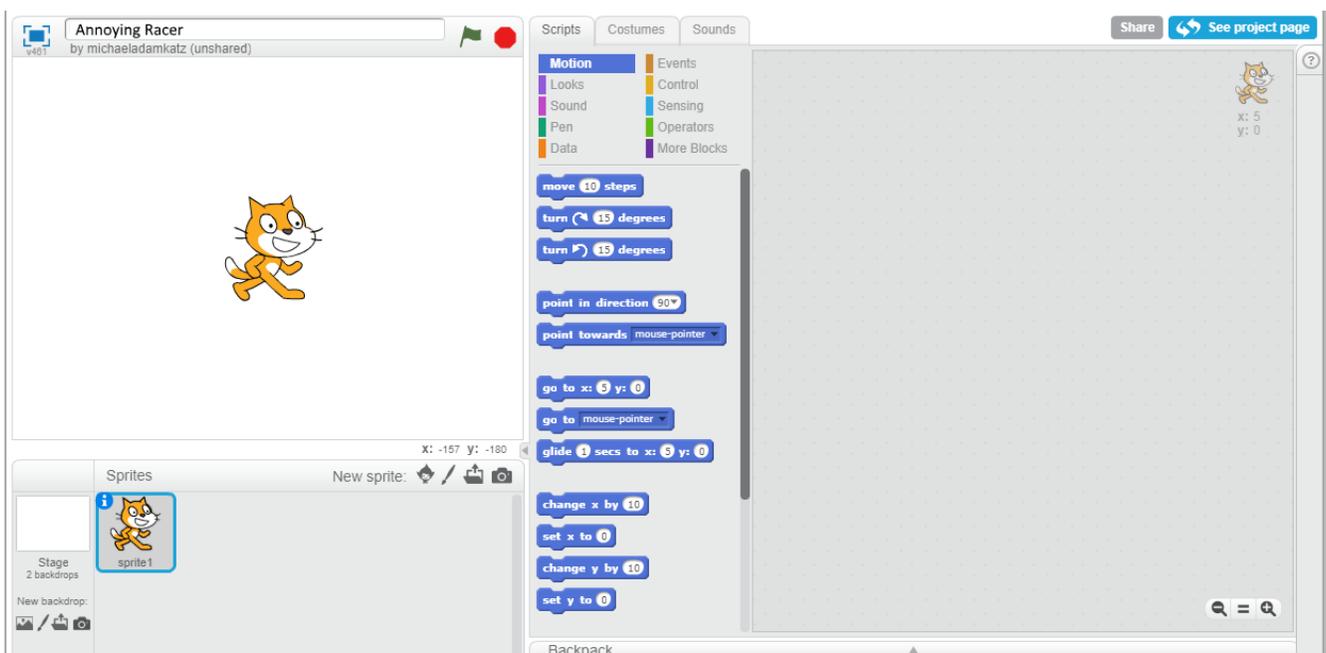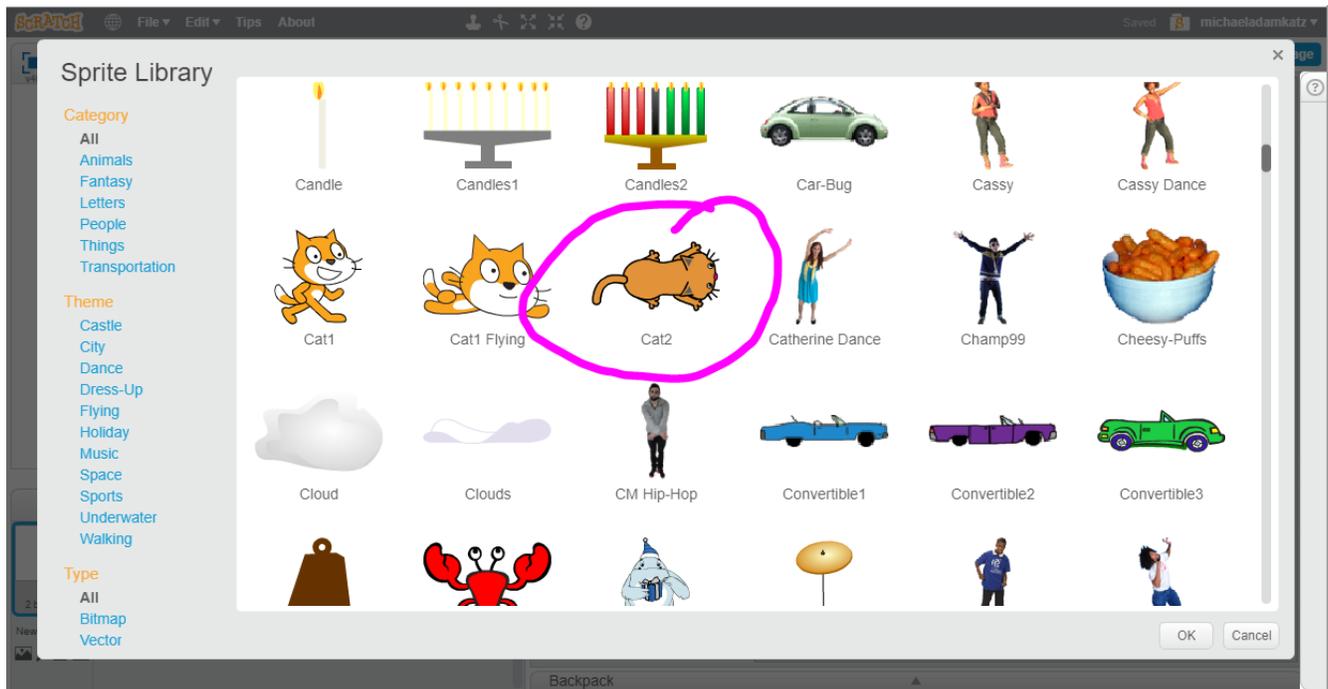
We don't want to use the cat sprite for this project, so right-click (or hold down the shift key and left-click) on the cat sprite icon, and choose "delete" from the popup menu:
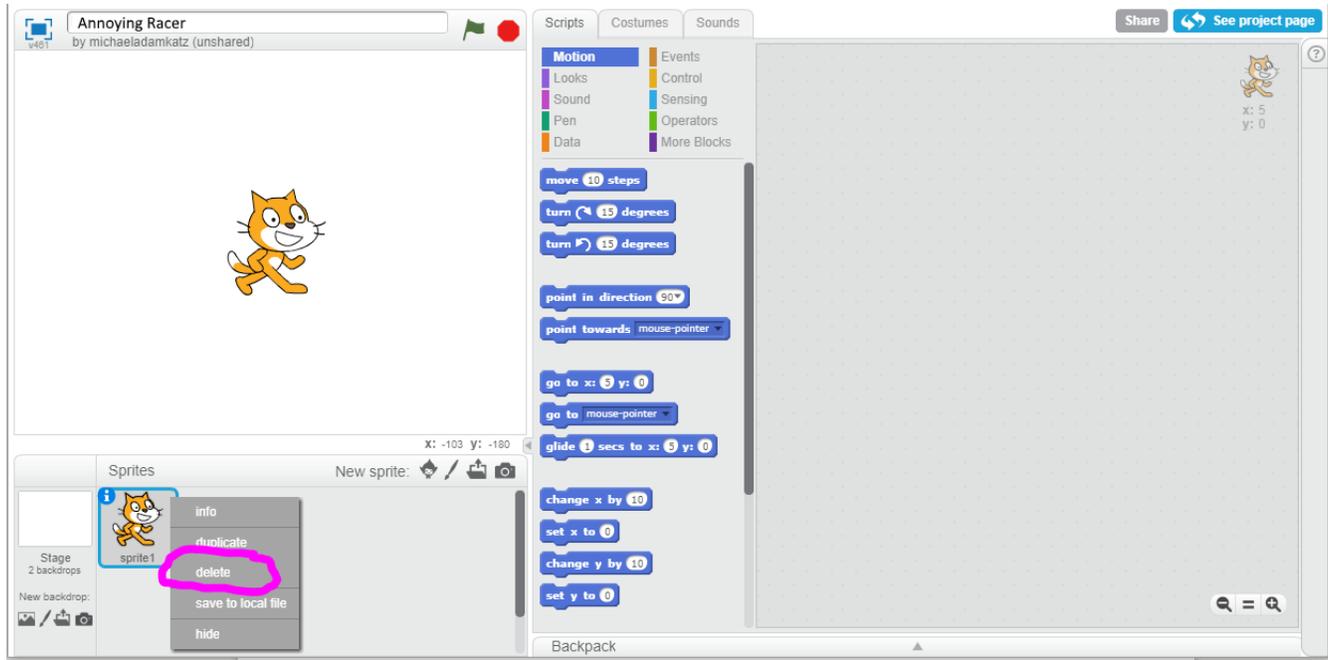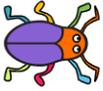


Then click the icon shown below to add a new sprite from Scratch's sprite library:
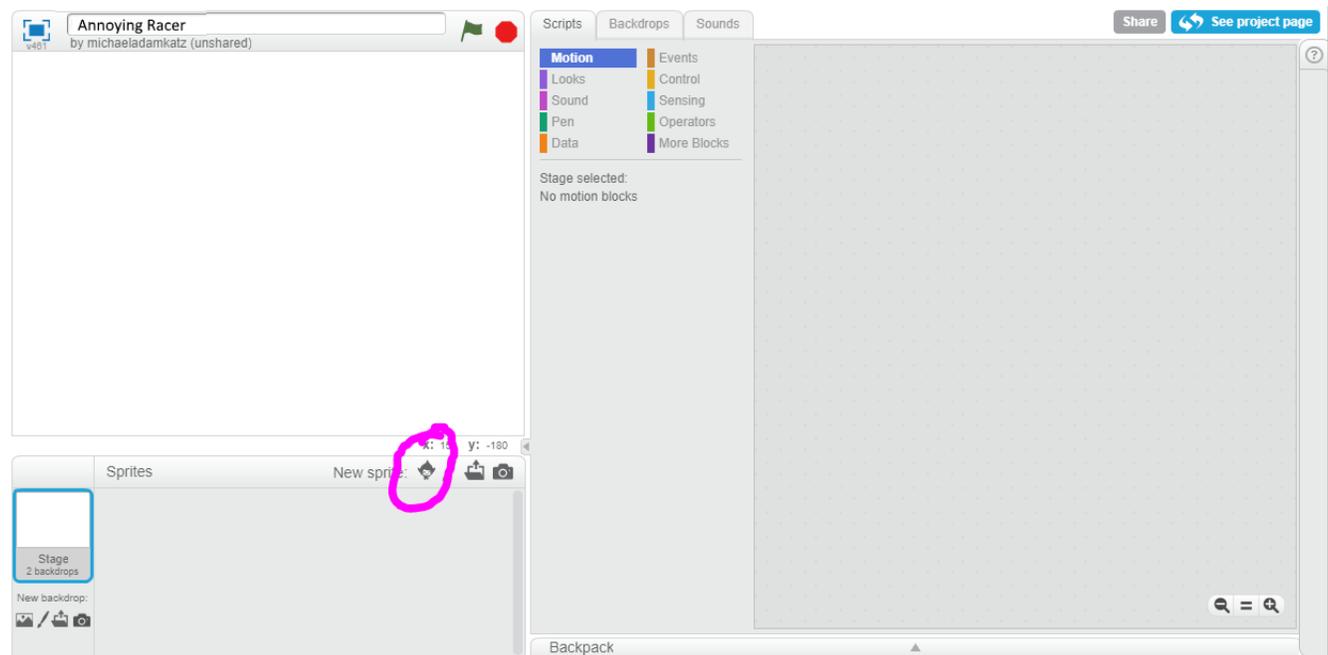
Scroll down the list and choose the top-down cat:



You can also choose a different "top-down" sprite, like the beetle  or
the mouse  . Or you can draw your own top-down sprite. Can you
draw a top-down car? (You can actually choose any of the sprite library
sprites for this game, but you'll see that the ones that are drawn from a top-down viewpoint work best.)

We will add code for the sprite a bit later. for now, make the cat small by
clicking on the purple "Looks" category. Find the block that says "set size to
100%" and change the number to 30. Then click on the block to make the cat
change to 30% of its normal size:
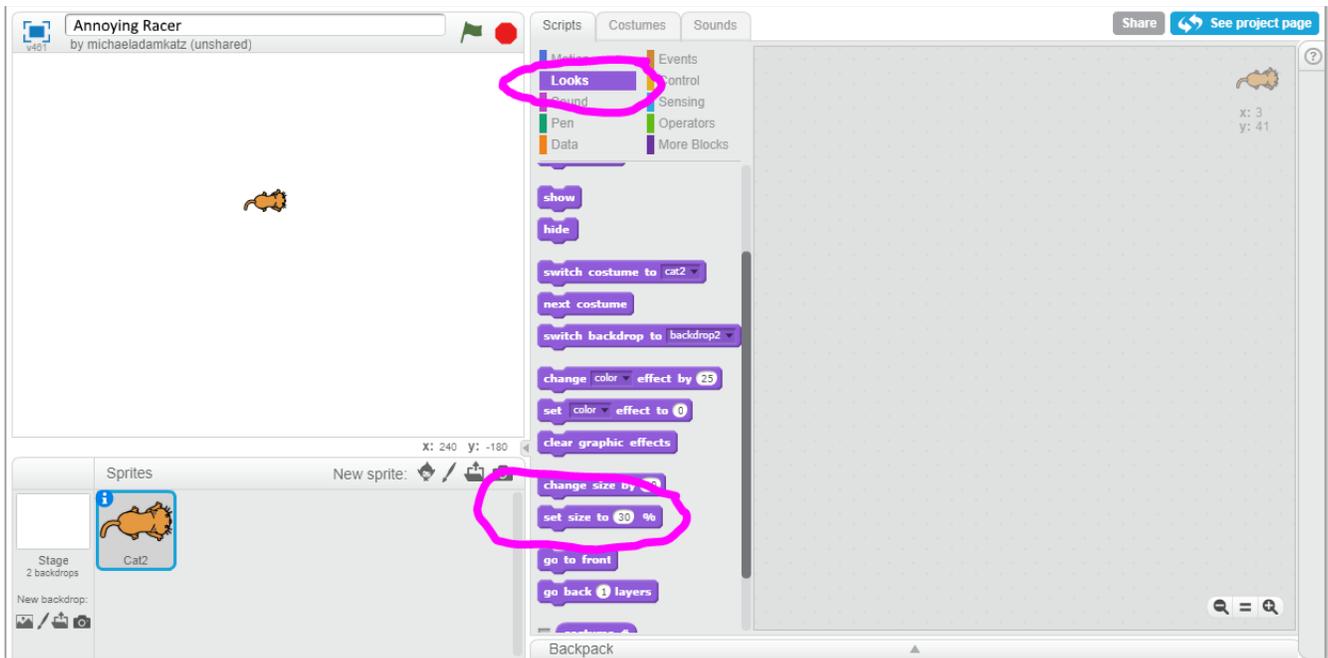
You can also drag the cat on the screen to move it out of the way a bit.

To make the obstacle backdrop, click on the "Stage" in the lower-left of the screen:
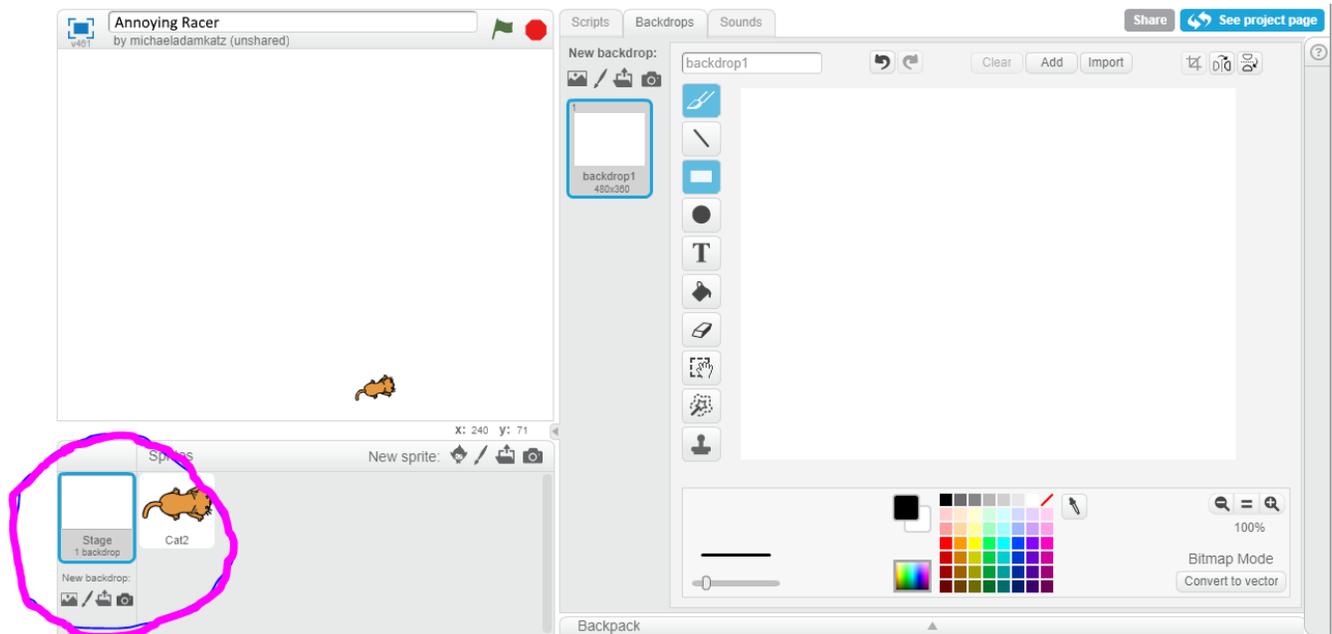


We want to draw in vector mode, so click the "Convert to vector" button in the lower-right of the screen:
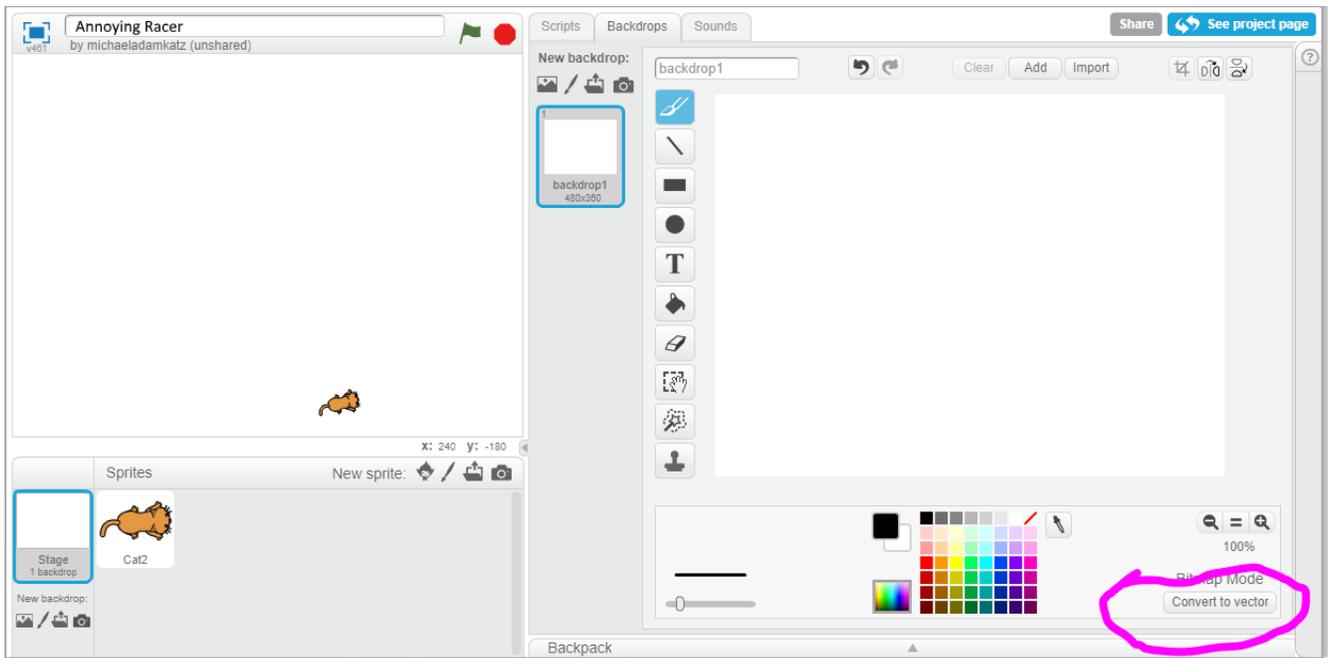
Now a tricky part is we need to delete the white "background rectangle" to keep it from getting in our way, so click the arrow tool, then click on the white backdrop, then press the "Backspace" key on your keyboard to delete it.
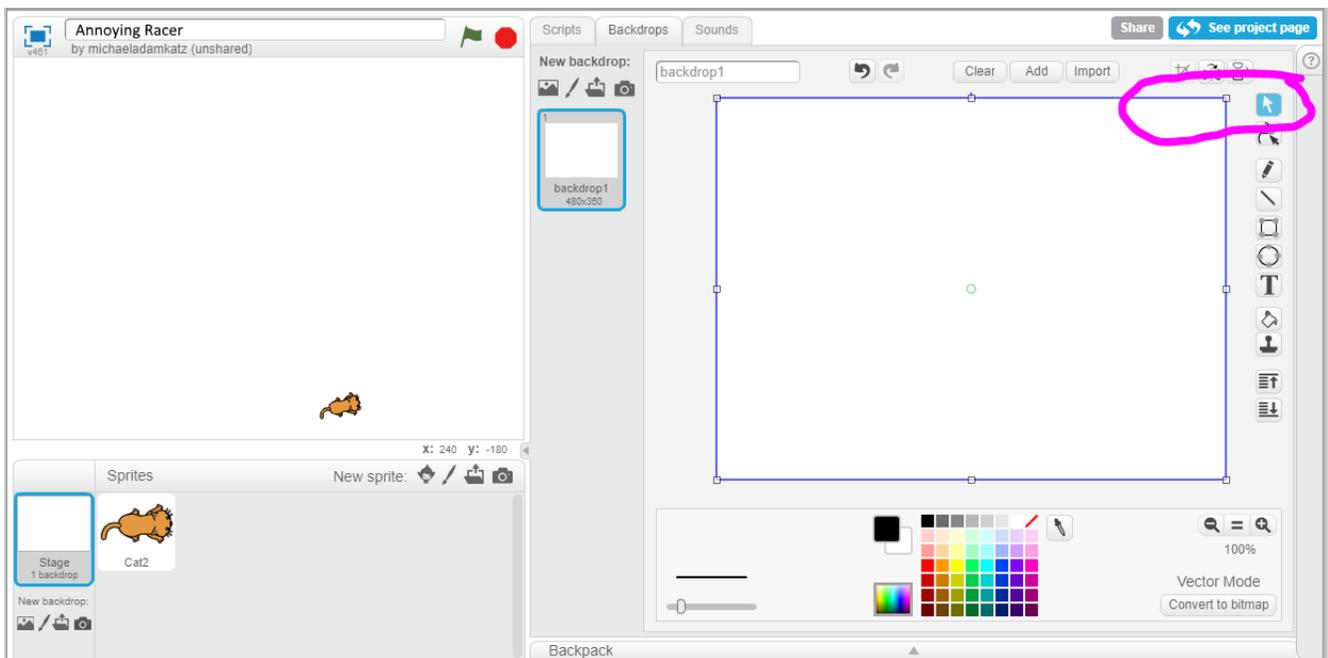


Once it's deleted, the background with change to a light gray checkerboard pattern.

Because we already learned how to use the Reshape tool in the Basic Racer project, we won't go into too much detail here. The picture below shows the kind of island course we want to draw. Here are the steps to follow:

- Use the rectangle and circle tool to make the various islands. When using each tool, use the area below the picture to select the red color and to select the solid filled pattern.
- Use the Reshape tool to stretch the circles and rectangles to make the obstacles. Click on the edge of the shape to add a new point. Click on a point to remove it.
- Remember that when you start with a circle/oval shape, the Reshape tool makes smooth curvy lines. When you start with a square/rectangle shape, the Reshape tool makes anglular lines.
- Start with a rectangle shape and the blue color to make a star shape for the goal.
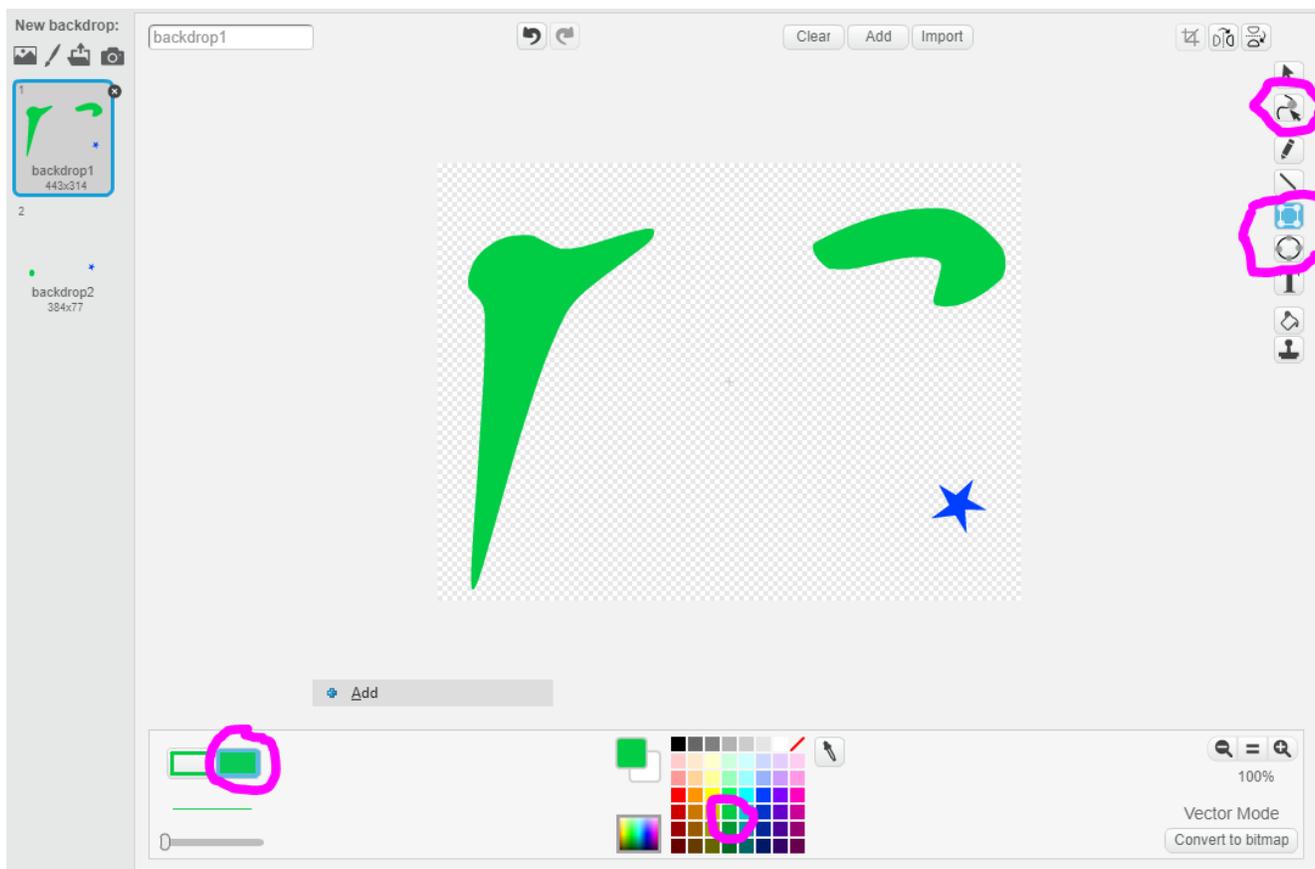


You will want to play the game for a while to understand what islands make a good level. Try starting with a level with islands like those shown above.

After you get a feel for it, try to think of your own challenging island levels. The great thing about Vector Mode is that you can always fix your shapes as you go.

Finally, we are ready to create the script to control the cat/car sprite. Click back on the cat's sprite icon. This script uses one variable, named "speed". To make this variable, go to the Data section and click "Make a Variable". Then enter the name "speed" and click OK.
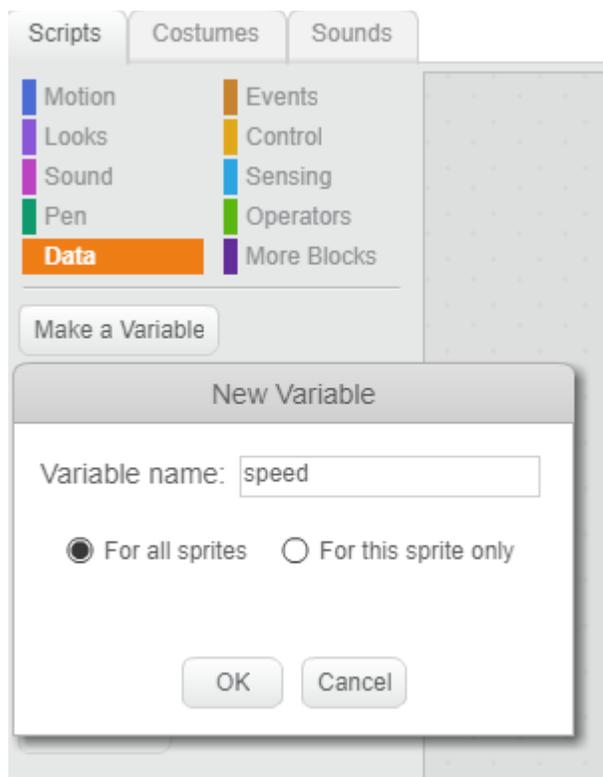


Then make the cat's script look like what is shown in the picture below:

Here are some tips about this script and how to make the script:

- Use the colors to know which block catory to look in for each block.
- Drag each block out of the block menu area into the scripting area.
- If you don't want a block in the scripting area any more, drag it back into the block menu area to delete it.

```
when [flag] clicked
set size to (30) %
switch backdrop to [backdrop1 ▾]
Go Home
forever
    if < key [left arrow ▾] pressed? > then
        turn ↺ (10) degrees

    if < key [right arrow ▾] pressed? > then
        turn ↻ (10) degrees

    if < key [up arrow ▾] pressed? and < touching color [ ] ? > > then
        change [speed ▾] by (0.24)

    if < touching color [ ] ? > then
        switch backdrop to [next backdrop ▾]
        Go Home

    change [speed ▾] by (-0.15)
    if < (speed) < [0] > then
        set [speed ▾] to [0]

    move (speed) steps
```

```
define Go Home
set [speed ▾] to [0]
go to x: (-200) y: (-146)
point in direction (90 ▾)
```

- The "go to x y" block is for positioning the cat at the start of the game. An easy way to get the right numbers for this block is simply to drag the cat to the place you want it to start, and the numbers in the "go to x y" block in the block menu area automatically update to that position. So just drag the "go to x y" block with those numbers from the block menu area to the scripting area.

- For the "touching color" blocks, the way to set the color is to click right on the little color square in the "touching color" block, and then click on one of your green islands.
- Feel free to play around with the "change speed" numbers. But you will find that if these numbers change to much the game stops being fun.

This project uses the dark purple More Blocks category to make a function called "Go Home" (*function* is the programming word for More Blocks). Click the "Make a Block" button, then enter the name "Go Home", then click "OK". The reason we use this block is so that we can do the same thing in three places in the script without having to repeat the code three times.
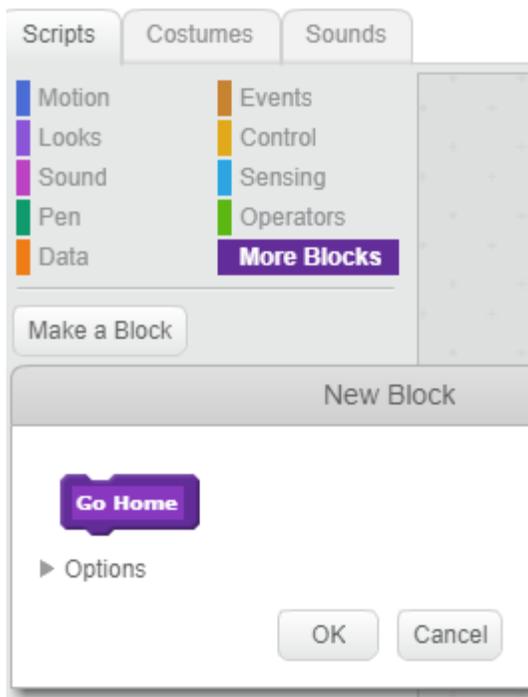


Ask a mentor if you need help with the script.

If it's all working, you should be able to click the green flag at the top of the screen, and then "drive" your cat around the track using the left and right arrow keys. Try to get to the blue star.

Finally, let's add more levels. Notice that the script says when touching color blue it does "switch backdrop to next backdrop". This changes to the backdrop so the player can play the next level. This is an easy way to add

multiple levels to a game: Make each level a different backdrop on the stage.

To add a new backdrop, click the Stage icon in the lower-left part of the screen. Then click the Backdrops tab. Then click the pen icon to draw a new backdrop:
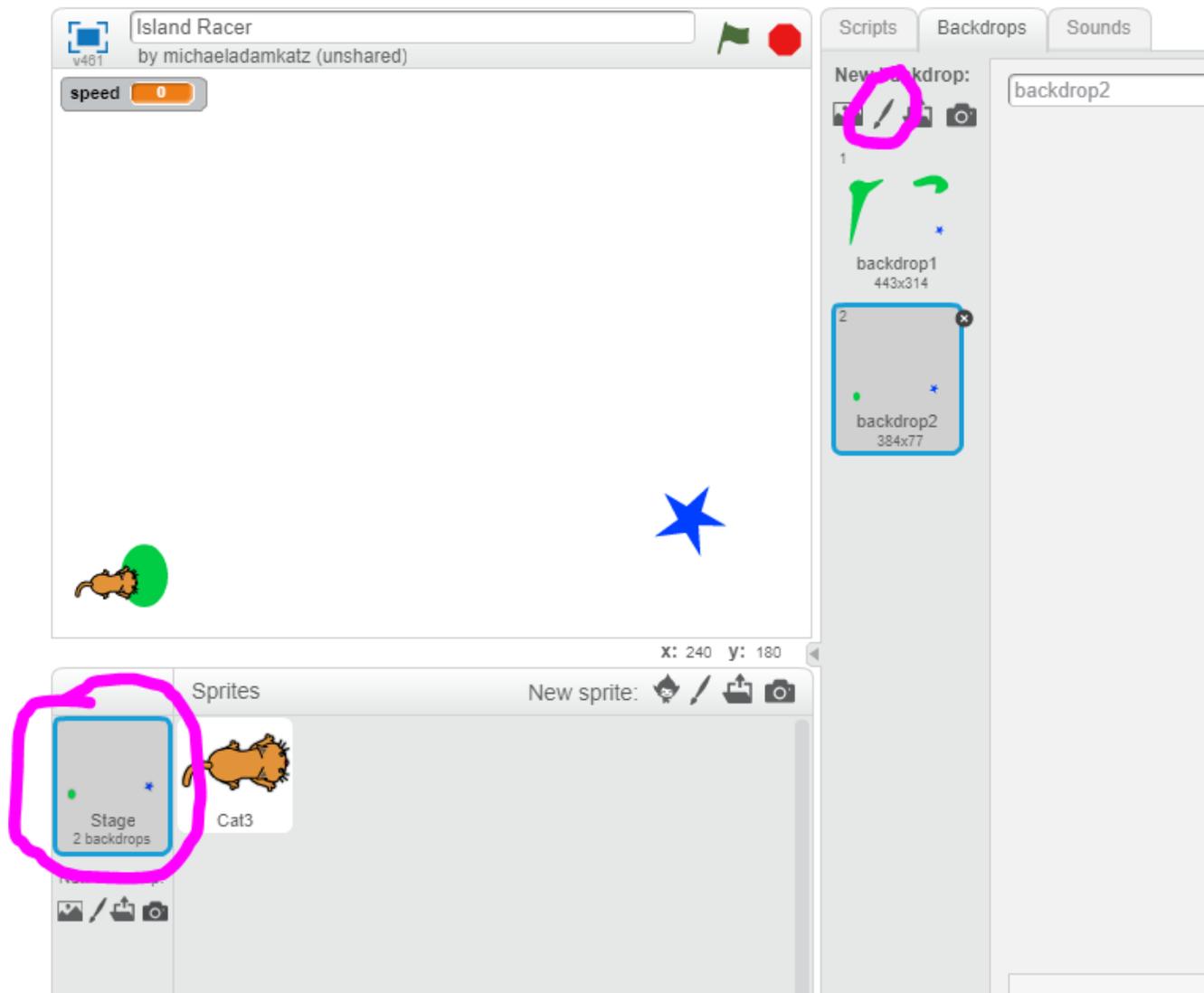


Then draw the islands on your new backdrop similar to how you made them on the first backdrop. Try to make it so each level is a bit harder than the previous one.