



***Programming:
Race***

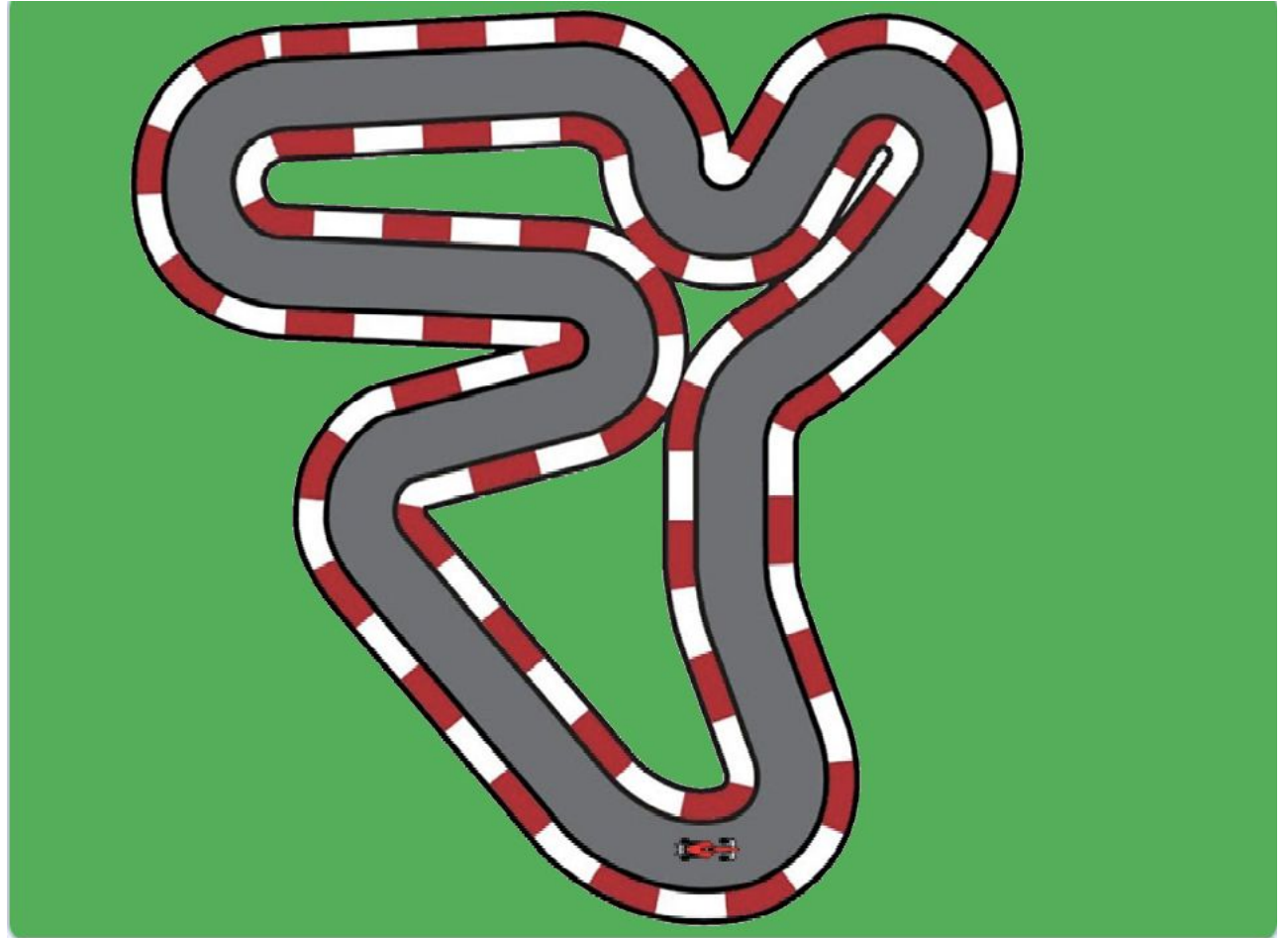
SCRATCH

Today we are going to program a race car so that we can drive it.

The car moves forward automatically and we can steer with the arrows on the keyboard.

The goal is to drive around as long as possible without hitting the grass.

Have fun programming!



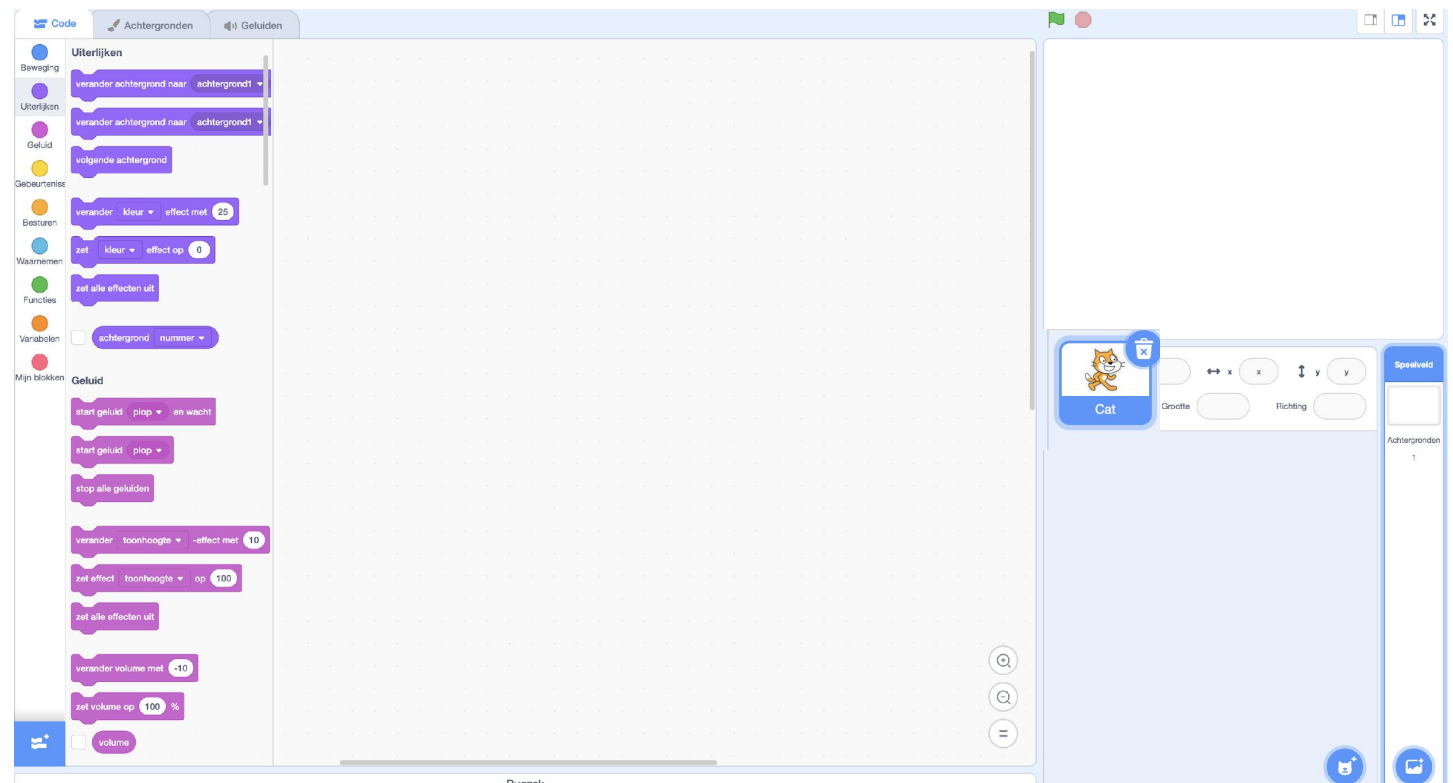
Before we can start, we first need to clear the entire screen.

If there are sprites or blocks on your screen, remove them.

Sprites can be removed by clicking on the trash can in the top right corner.

Blocks can be removed as well by dragging them out of the field.

As soon as your screen is blank you can start.

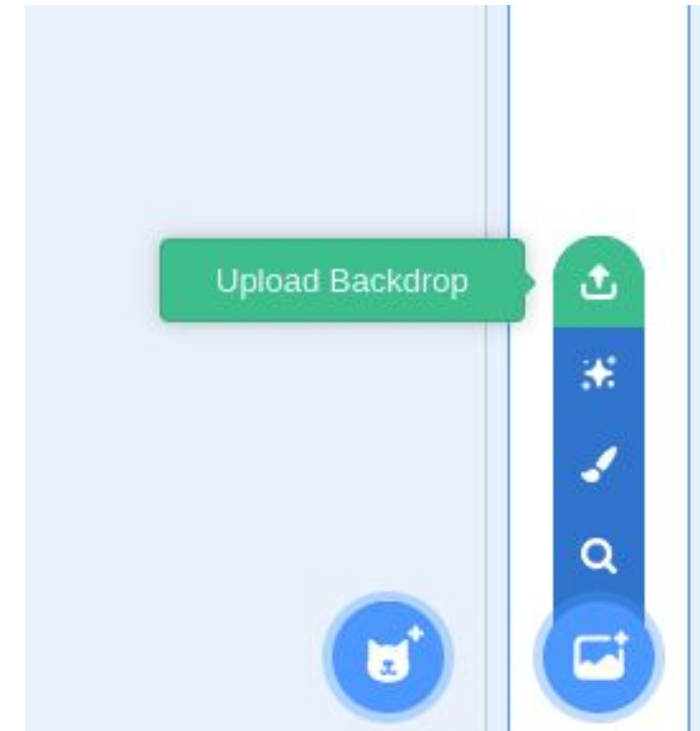




To begin with, we are going to place the race track. We do this as a background.

Click on 'Upload Backdrop' at the bottom right and choose **baan-definitief.jpg**.

This file is on your desktop.





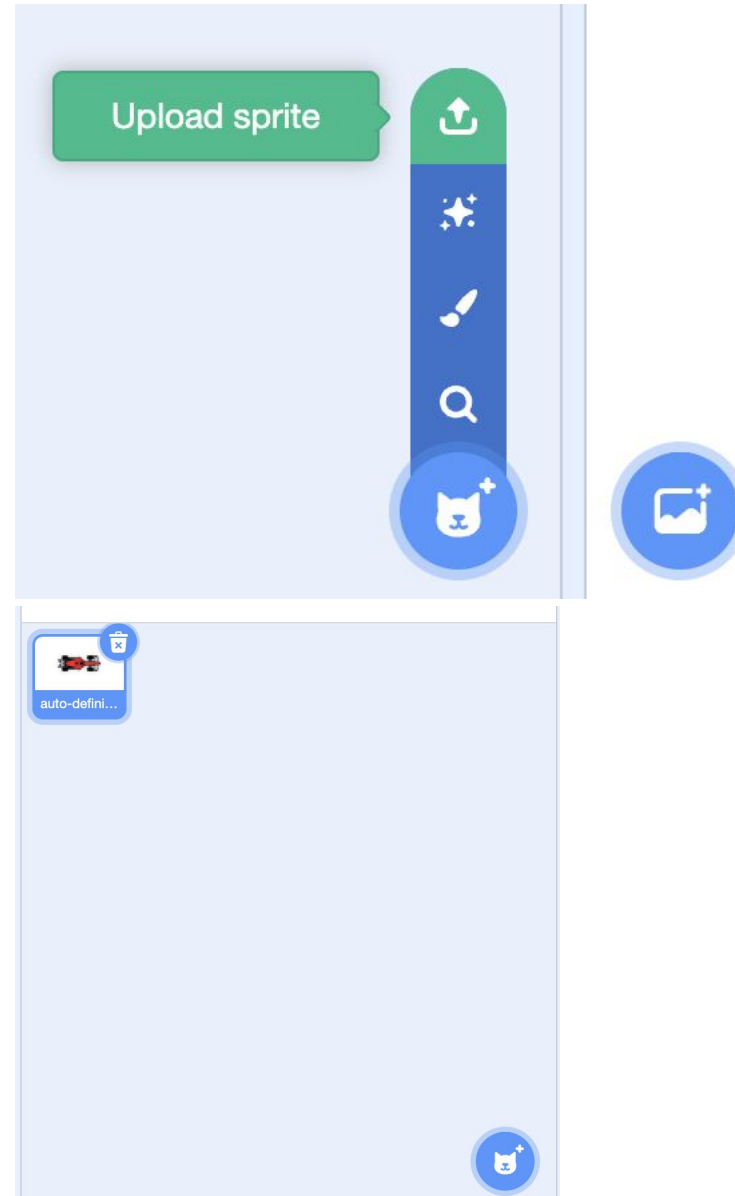
Now we will upload the car.

Click on 'Upload sprite' in the bottom right and choose **auto-definitief.png**.

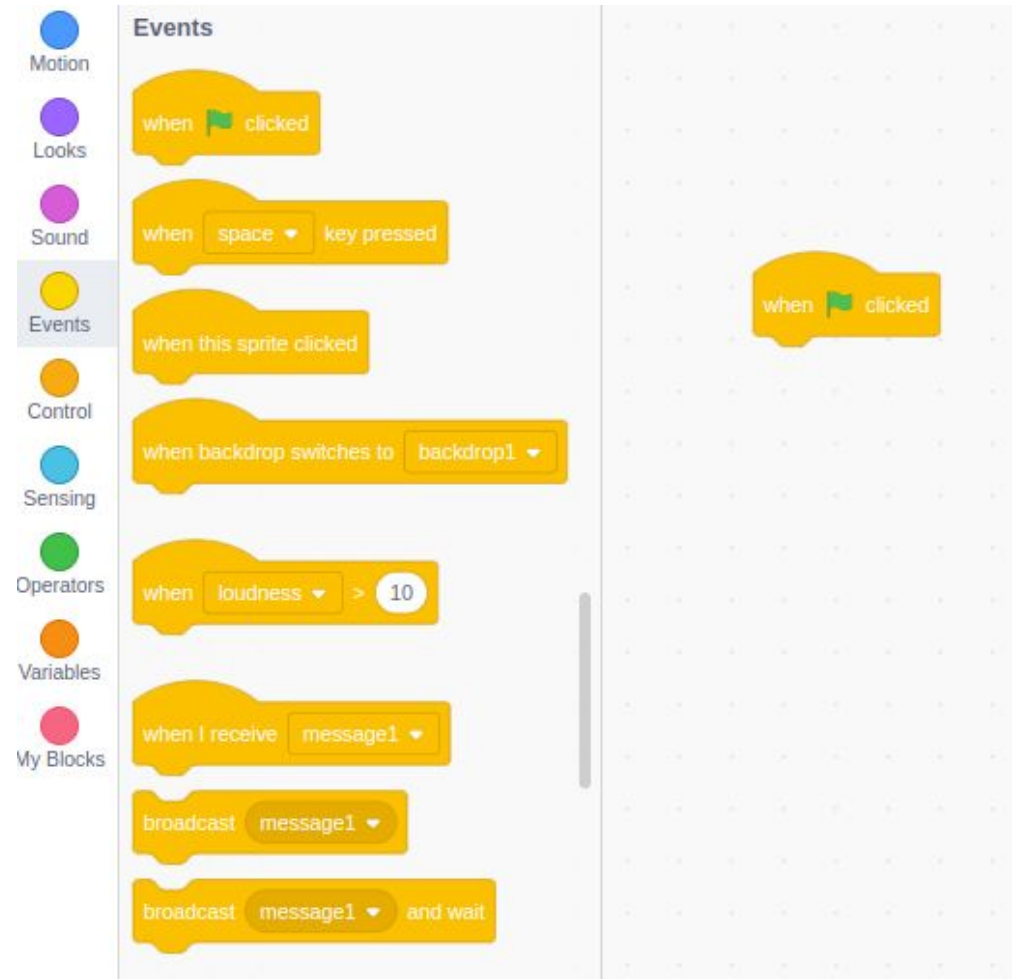
This file is on your desktop.

Click on the car. If there is a blue border around it, it is active.

Now we can start programming.



Click on '**Events**' in the left menu and drag the block '**When the flag clicked**' to the middle.

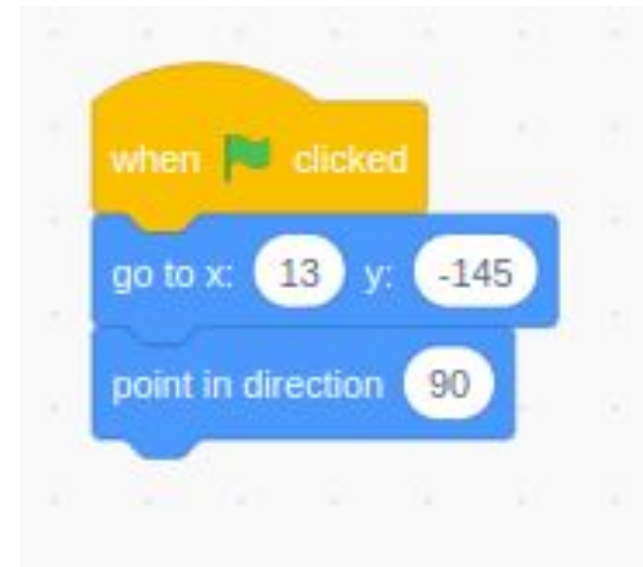


In the '**Motion**' menu there is a block with '**Go to x: (random number) y: (random number)**'. It contains numbers that are different on every computer. Drag this block directly under the previous block.

Change the X to '**13**' and the Y to '**-145**'.

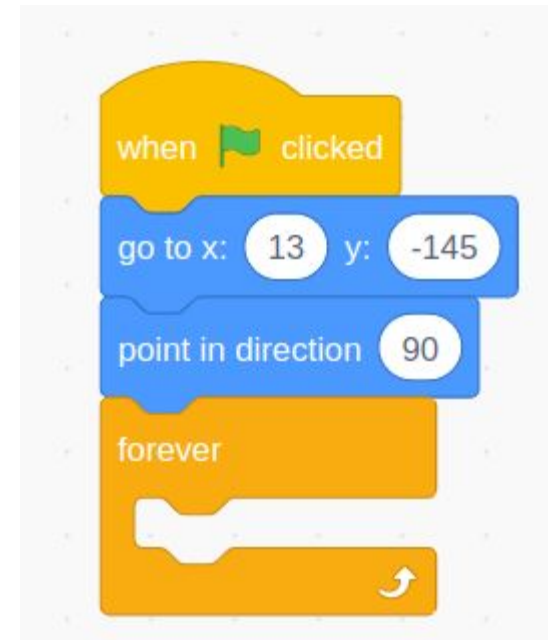
The same menu says '**point in direction 90**'. Place this below the previous instruction.

It puts the car on the starting line at the start of the game.



Click on '**Control**' and choose the block '**forever**'. Place this at the bottom.

This is a repeat block. Everything in this block will be repeated forever, until the game is over.



Click on '**Motion**' on the left and drag the block '**move 10 steps**' into the repeat block. Change 10 to **3**.

The car will drive because of this block while the game is running.

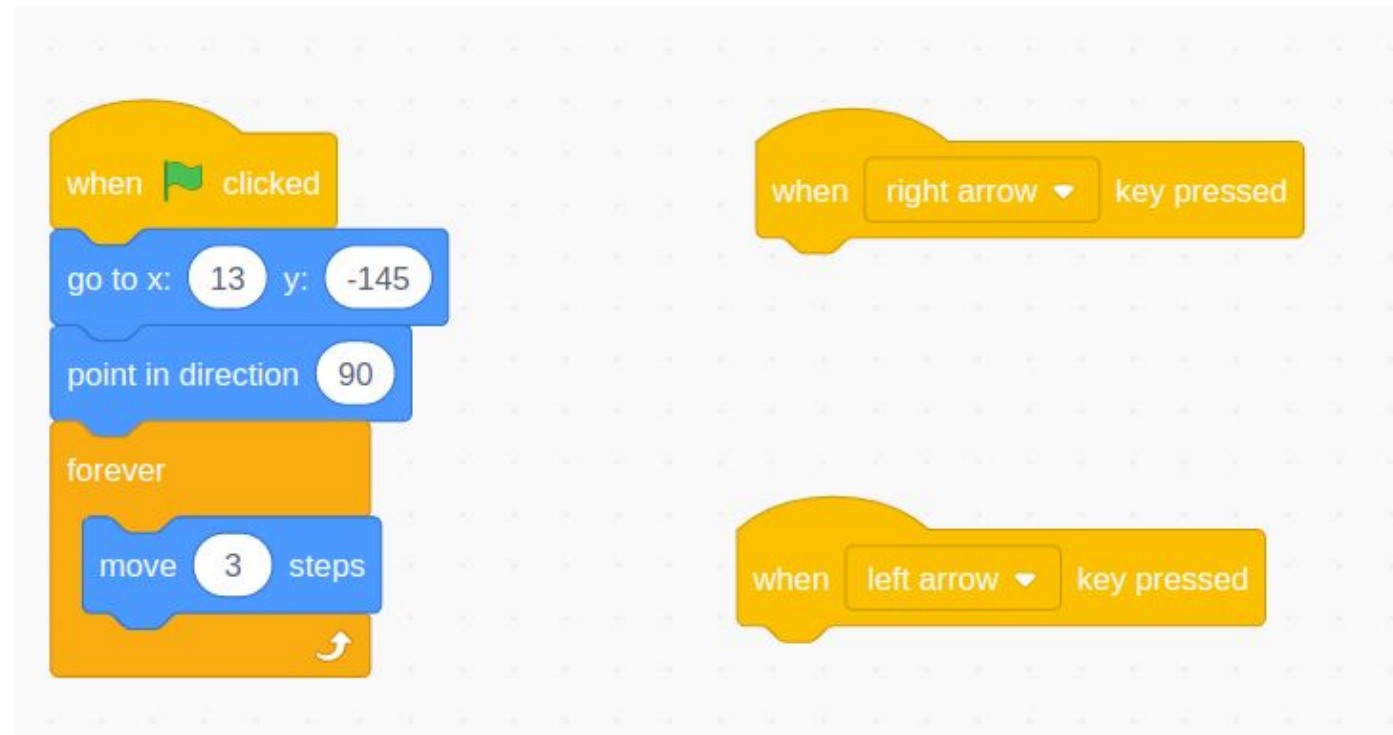


Now we need to make the car drivable.

We do this by making two separate block combinations that are separate from the previous starting block.

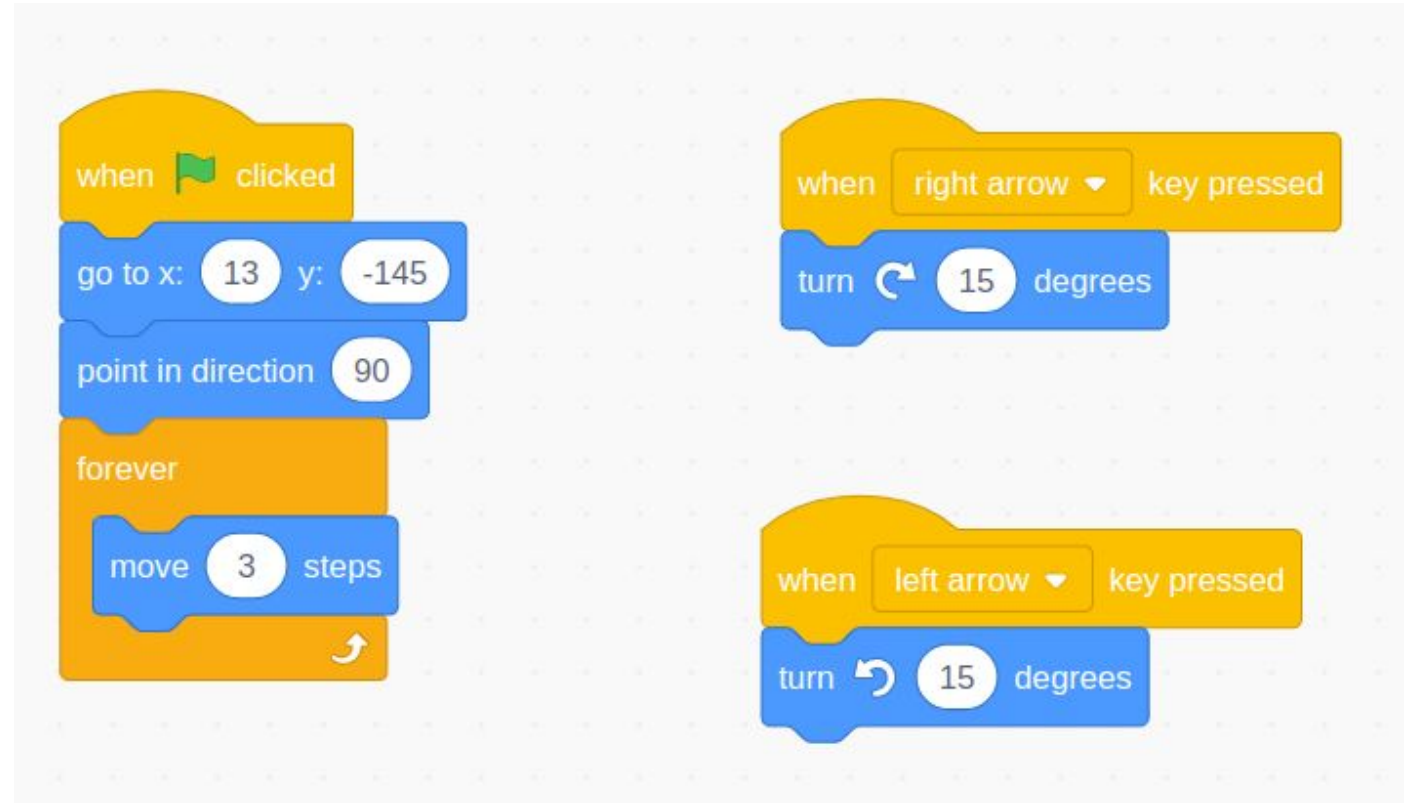
Go to "**Events**" and drag the "**when space key pressed**" block to the center. Do this twice.

Click the arrow next to "**space key**" and choose another key, '**right arrow**' for one block, and '**left arrow**' for the other block.



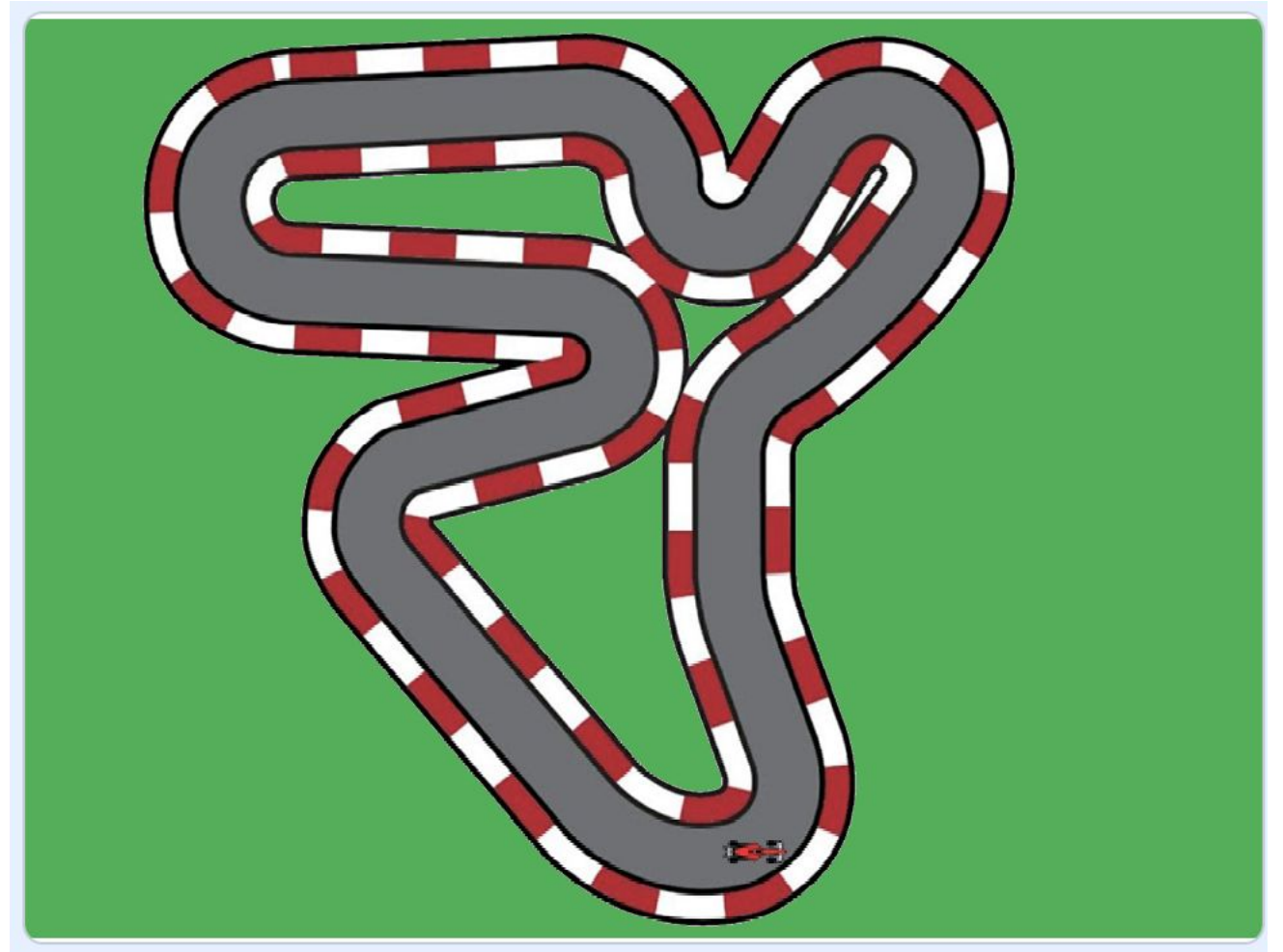
Go to '**Motion**' and drag '**turn -> 15 degrees**' under the block where you just chose 'arrow right'.

We do the same for '**left arrow**', but with '**turn <- 15 degrees**'.



If you press the **green flag** at the top right, the game starts. You will notice that the car goes fast and that it continues to drive indefinitely, even if it has gone off the track.

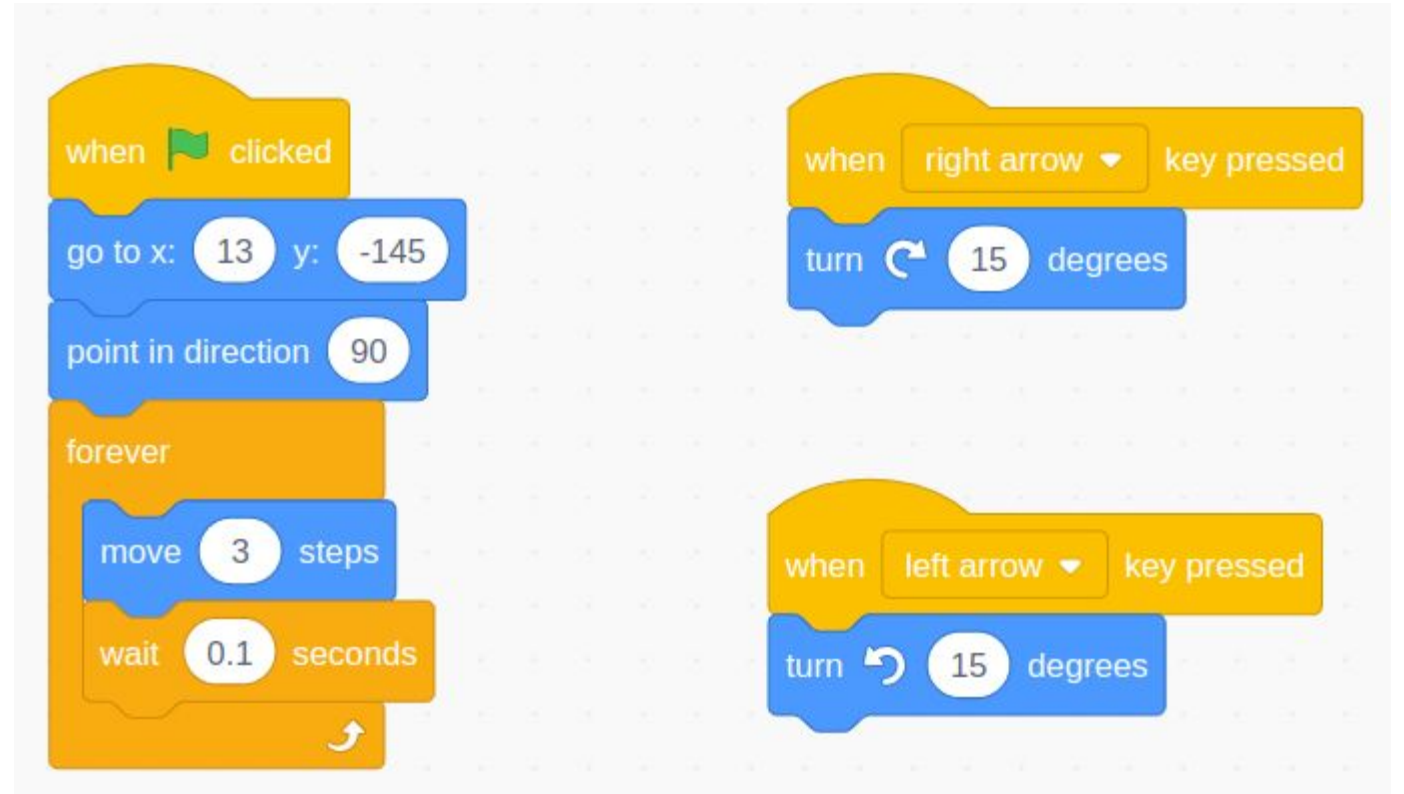
We're going to solve this! Click on the **red stop** sign next to the flag to stop the game and then we can continue.



From now on we will only work in the big block combination under '**when the flag clicked**'.

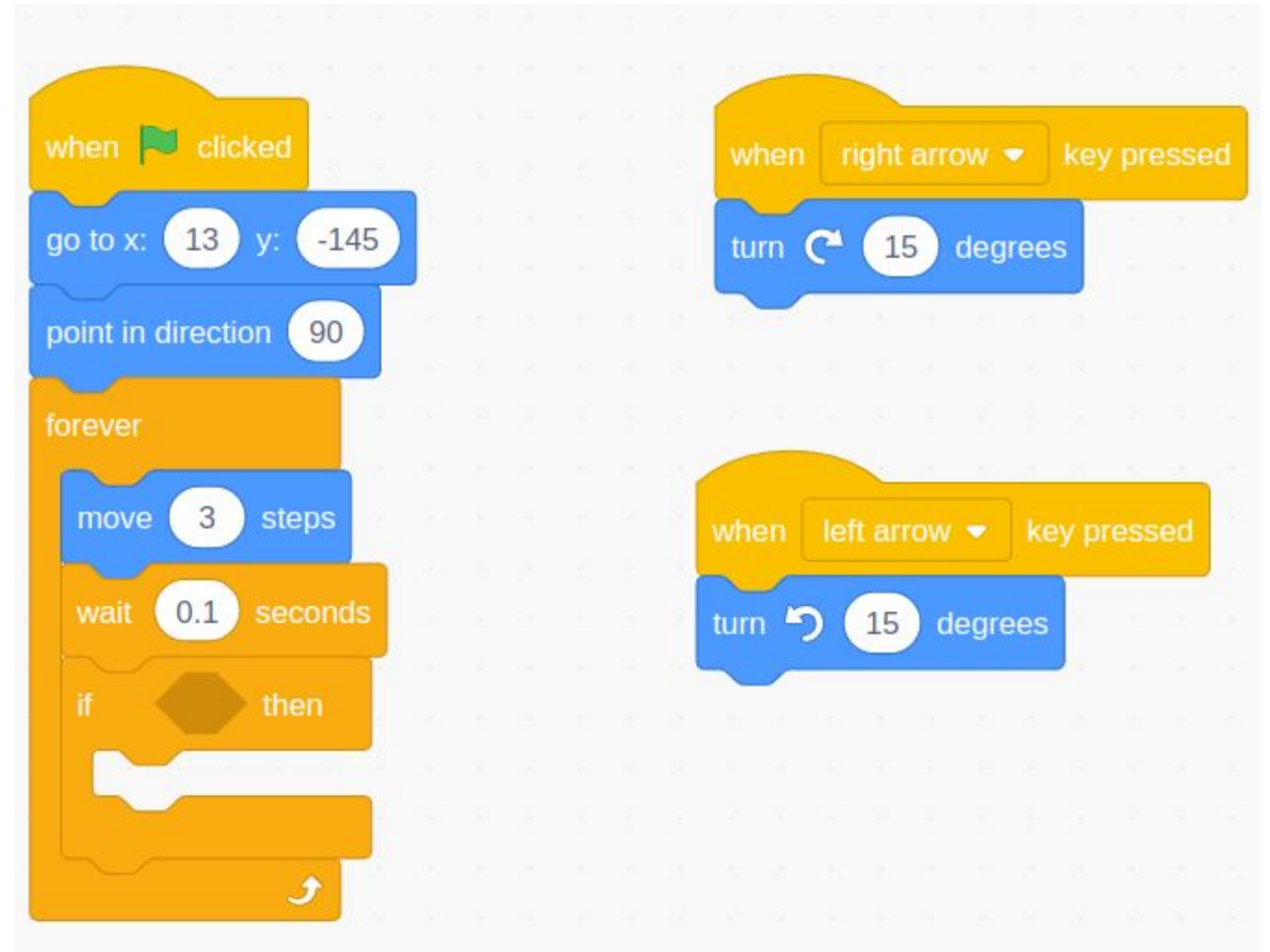
Click on '**Control**' and drag '**wait 1 sec**' into the forever block.

Change the '**1**' to '**0.1**'. This creates a slight delay that causes the car to slow down.



Now we're going to create the mechanism that will stop the game as soon as you hit the grass.

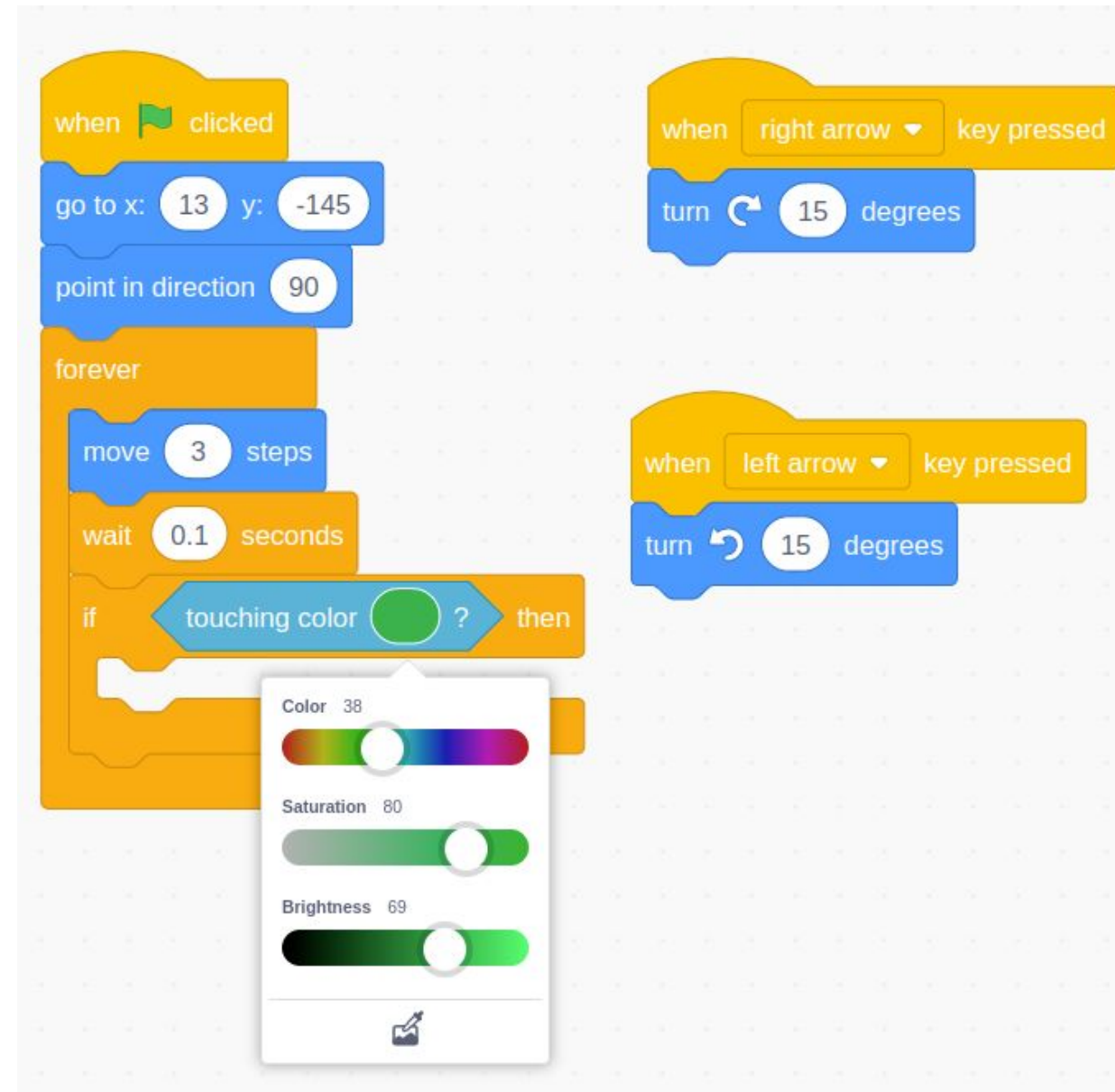
Click on '**Control**' and drag the block '**if <> then**' under the wait block.



Go to '**Sensing**' and drag '**touching color (random color)?**' in the box between '**if**' and '**then**'. The color shown here is random.

You need to choose a color. Click on the ball containing the color and three sliders and a pipette will appear.

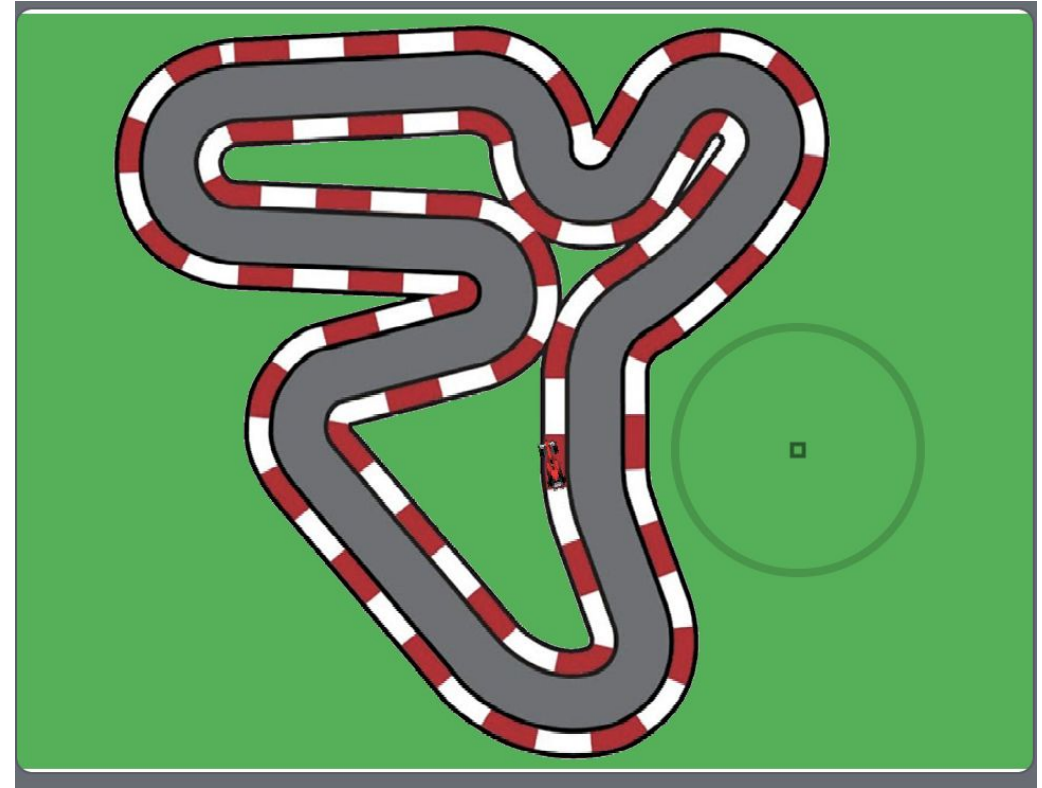
With the eyedropper we can select the color. That way we don't have to fill in the numbers ourselves.



Click on the eyedropper. Now you can select the grass color of the track.

Click once on the green field and you will see that the numbers automatically turn green.

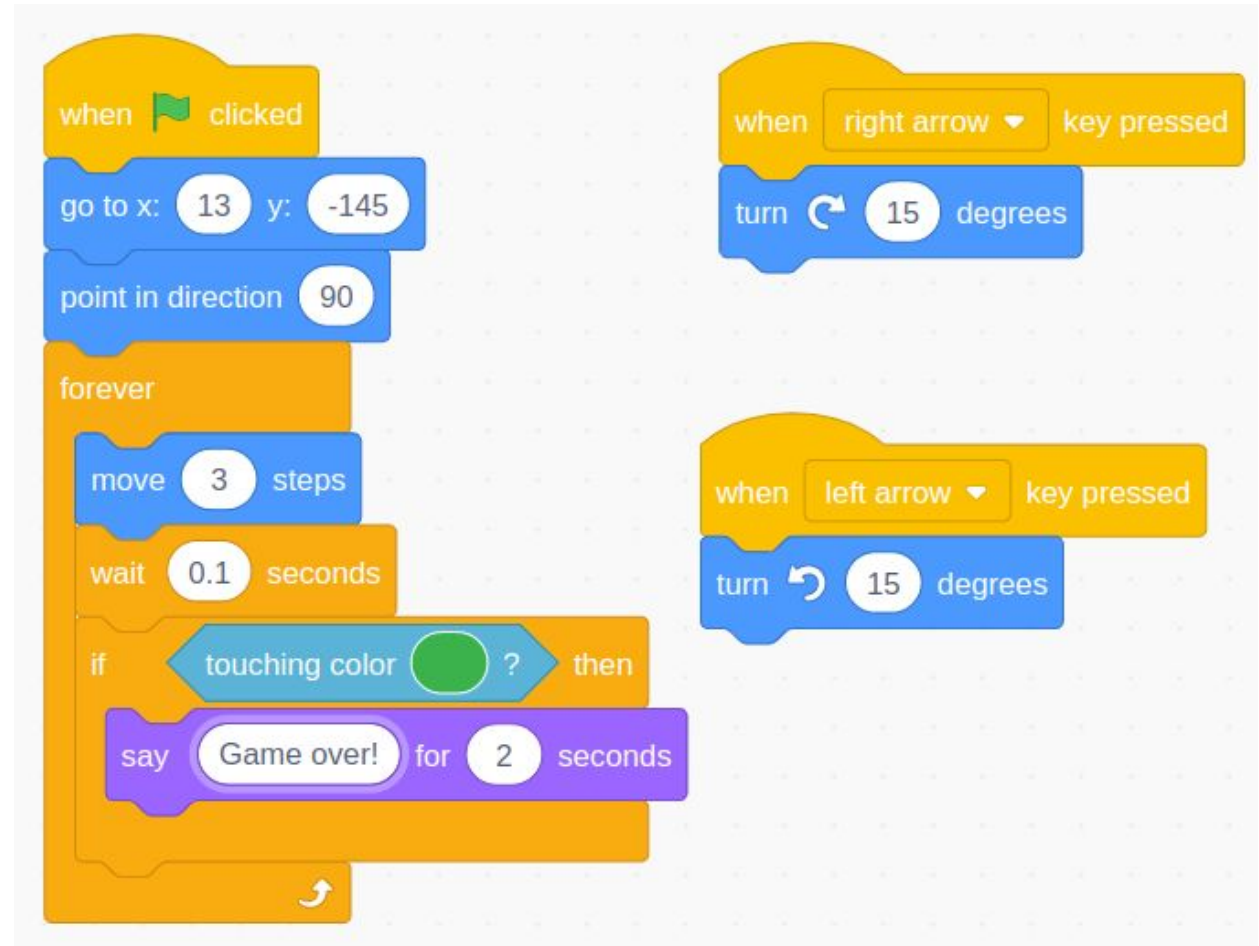
Now we can move on.



In the top left of the menu, click "Looks" and drag "say Hello! for 2 seconds" in the 'if <> then' block.

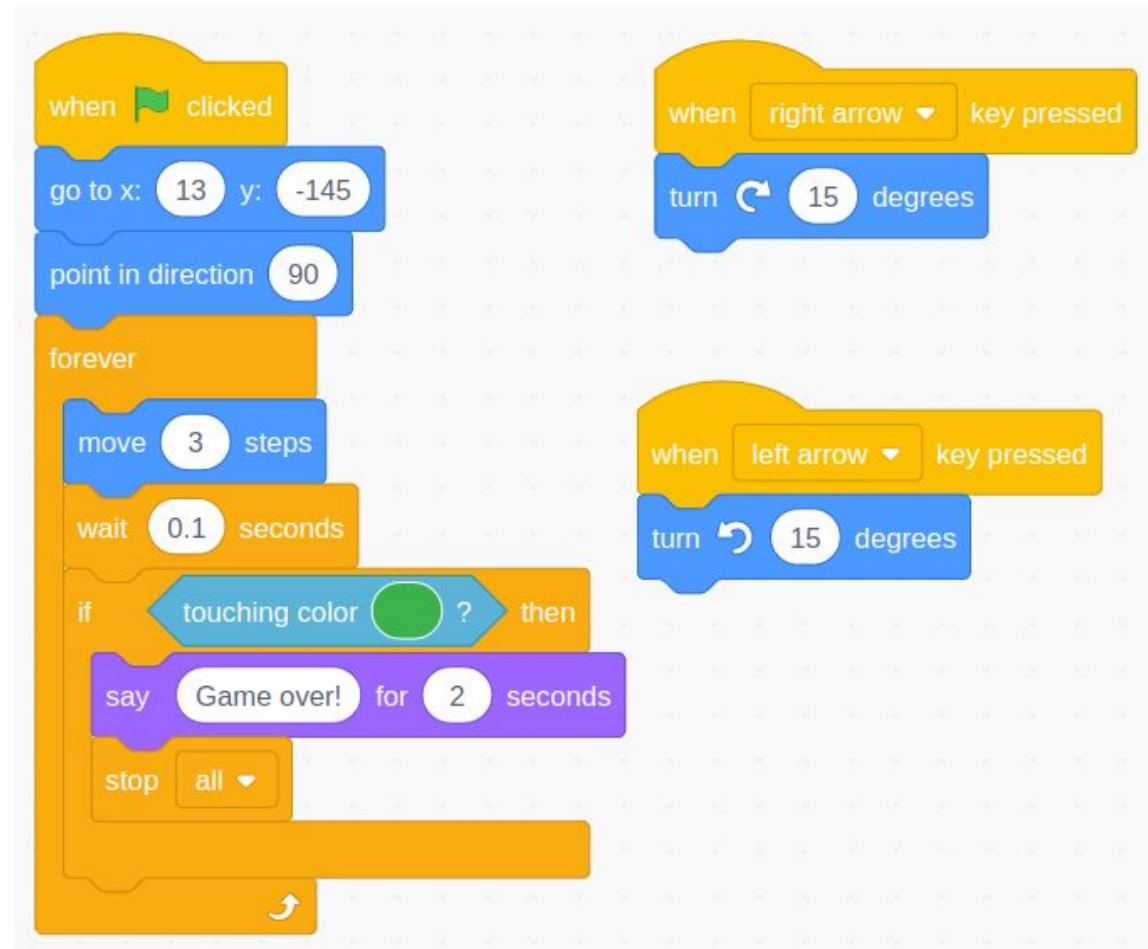
Change the text from 'Hello!' to 'Game over'. Now the car indicates when you have touched the grass.

The car will now say 'Game over', but it will continue to drive. This is because we still have to give an instruction.



Click on '**Control**' in the top left of the menu and drag '**stop all**' under the purple block.

Now the game will stop as soon as the car goes off the track and hits the green.

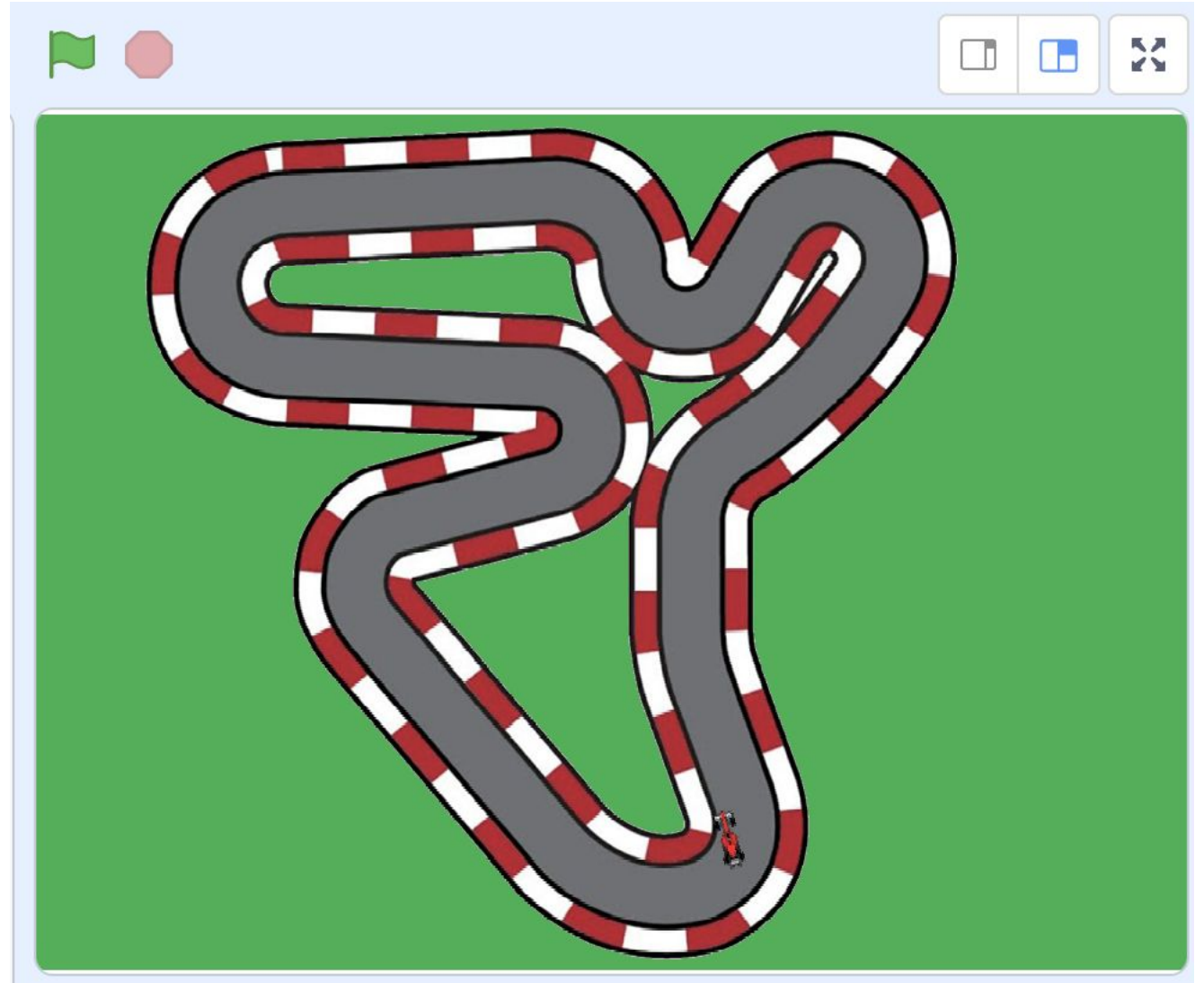


If we now click on the **green flag**, we will see the car driving. We can control it with the left arrow and the right arrow on the keyboard.

How many laps can you drive without hitting the grass?

And what happens when you hit the grass?

This is the end of the assignment. You can make the game even more difficult by adjusting the speed and the waiting time.





This is the end of the assignment.