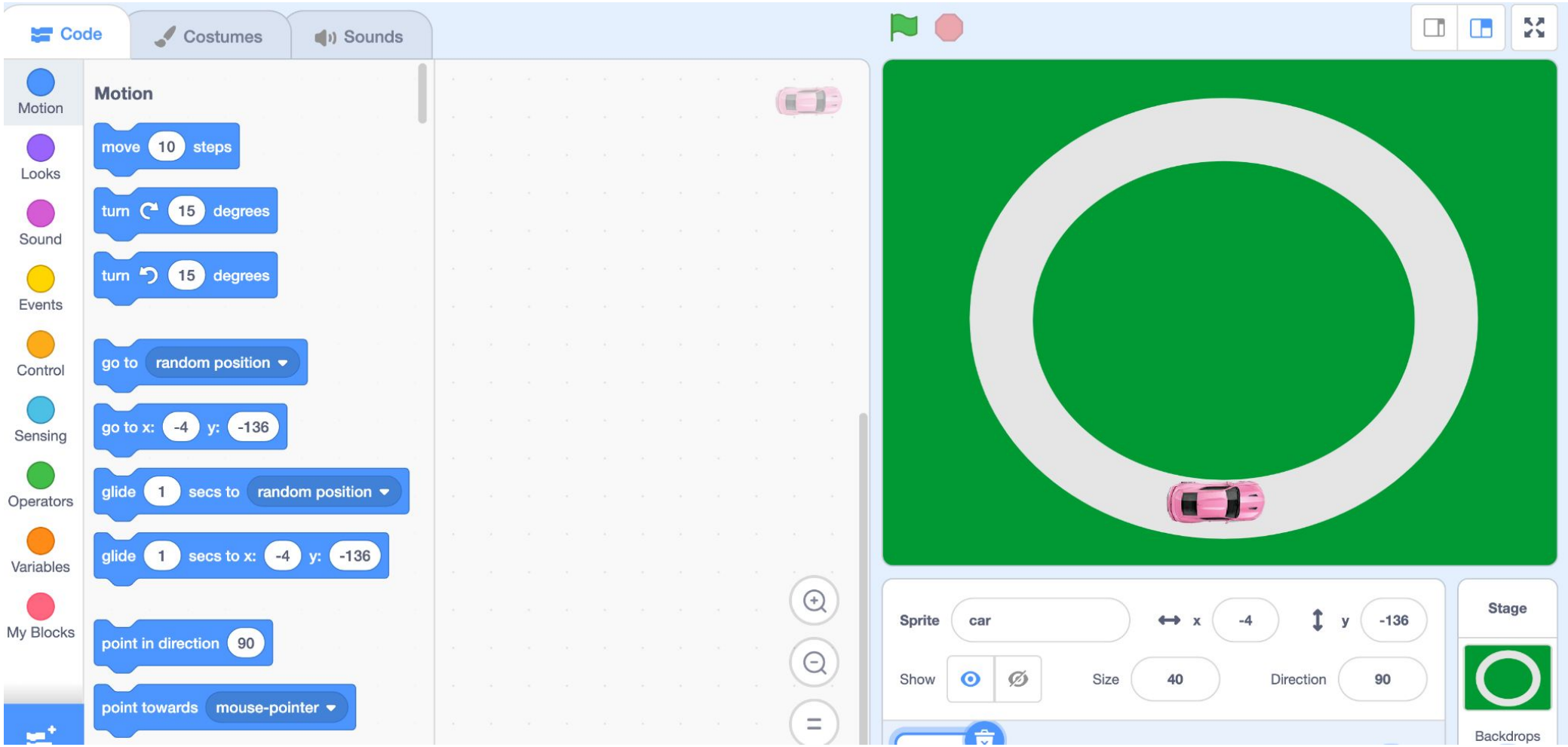
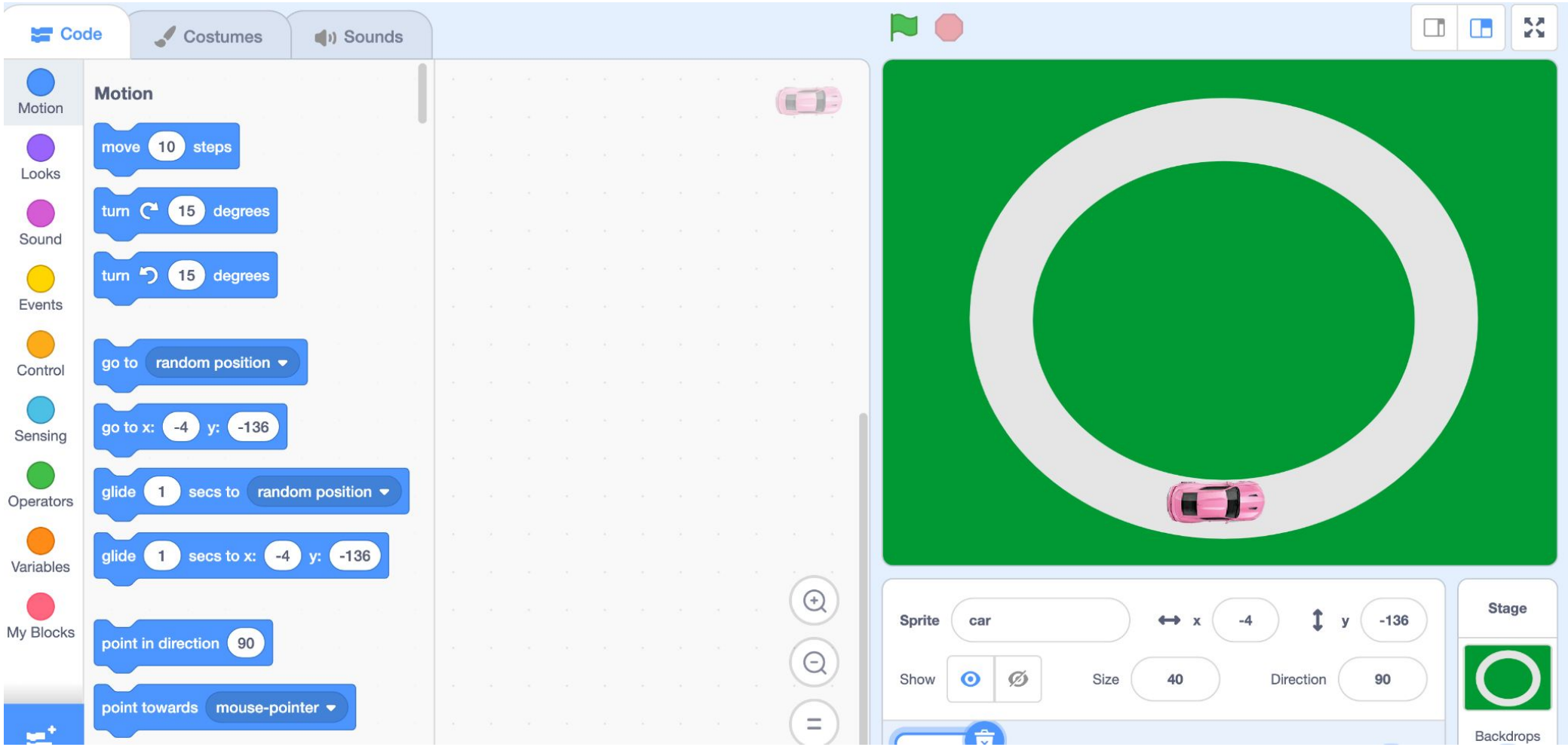

Are you up for a challenge?
90
MLB 040

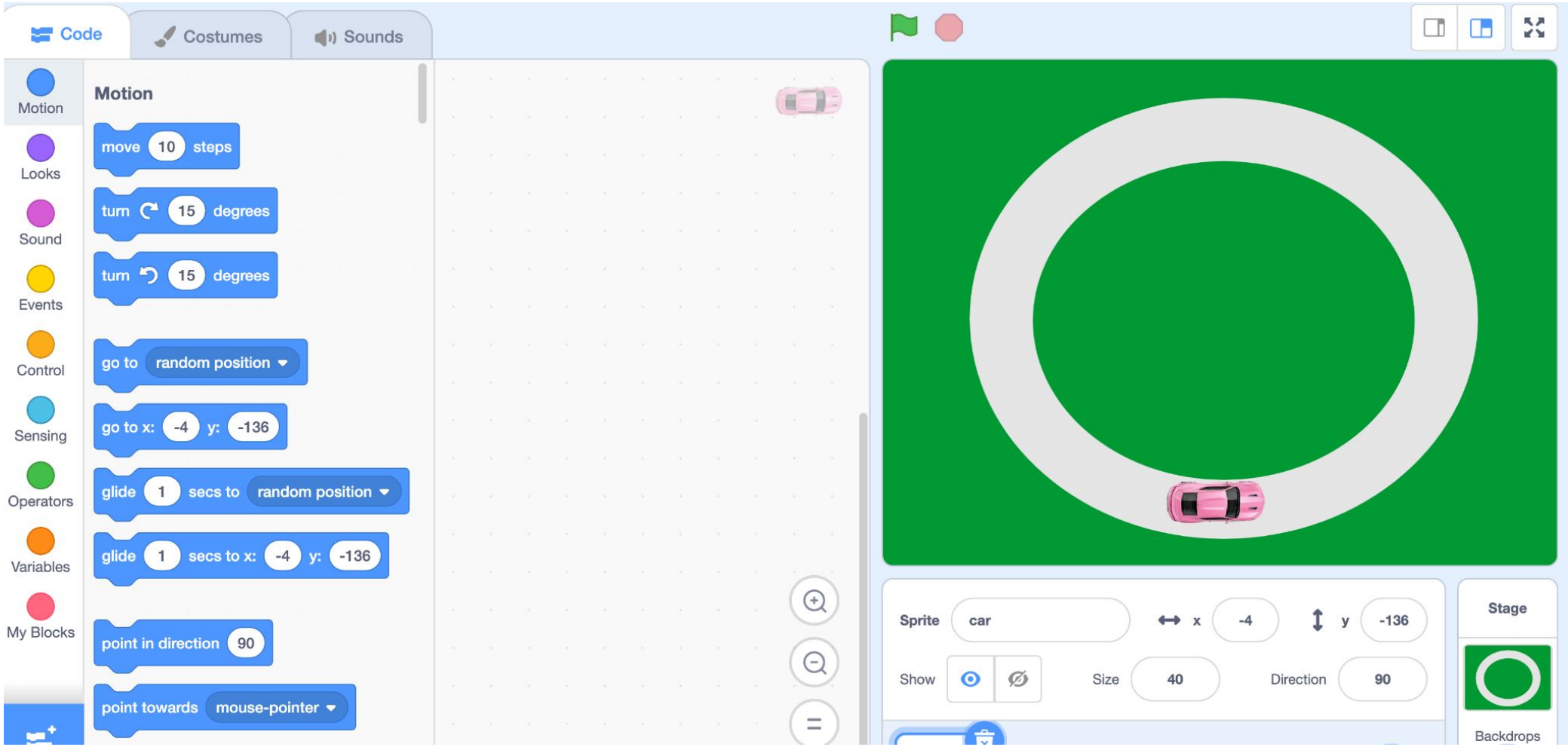
→ Go to Scratch: Click here



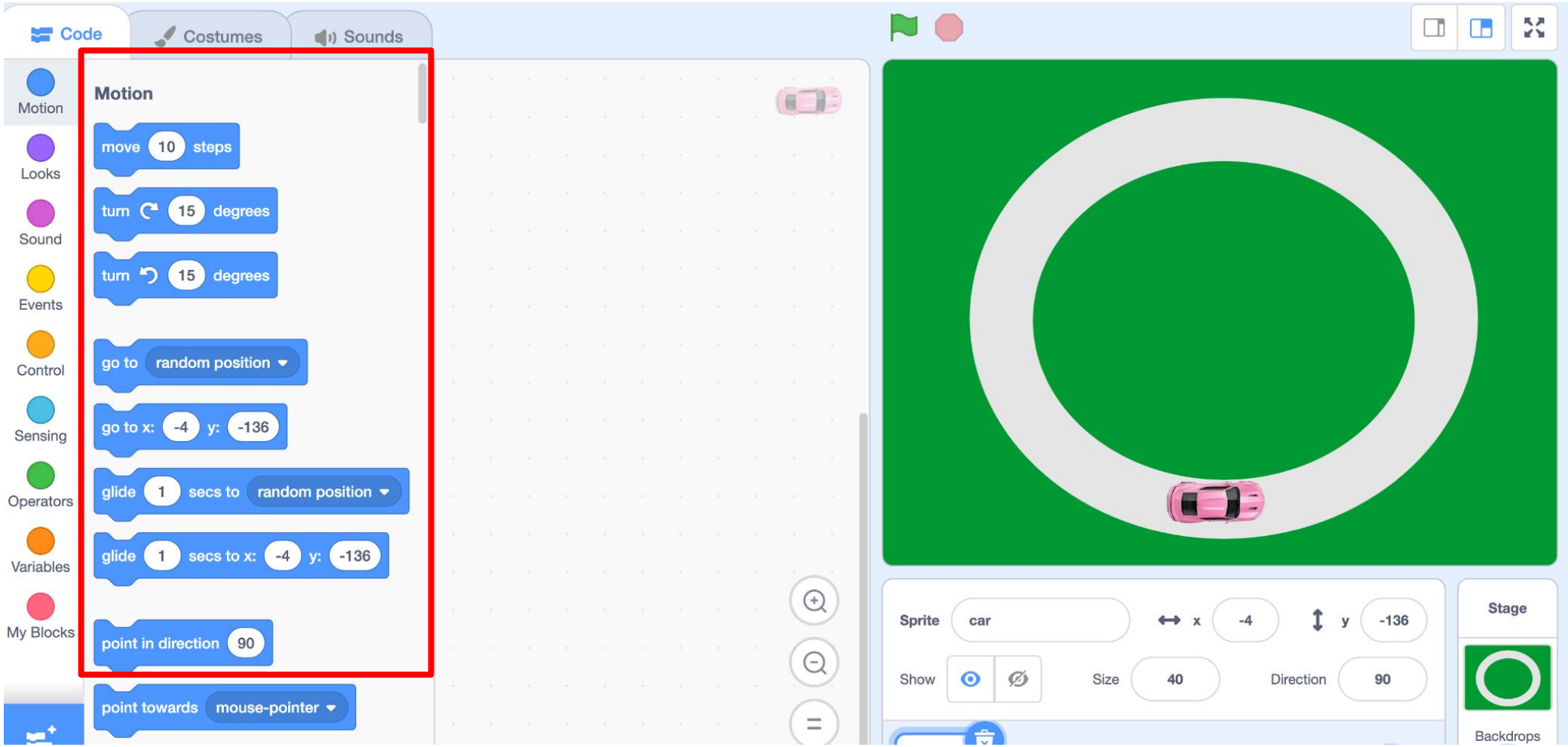
This is Scratch. Scratch is a website which you can use to program things!



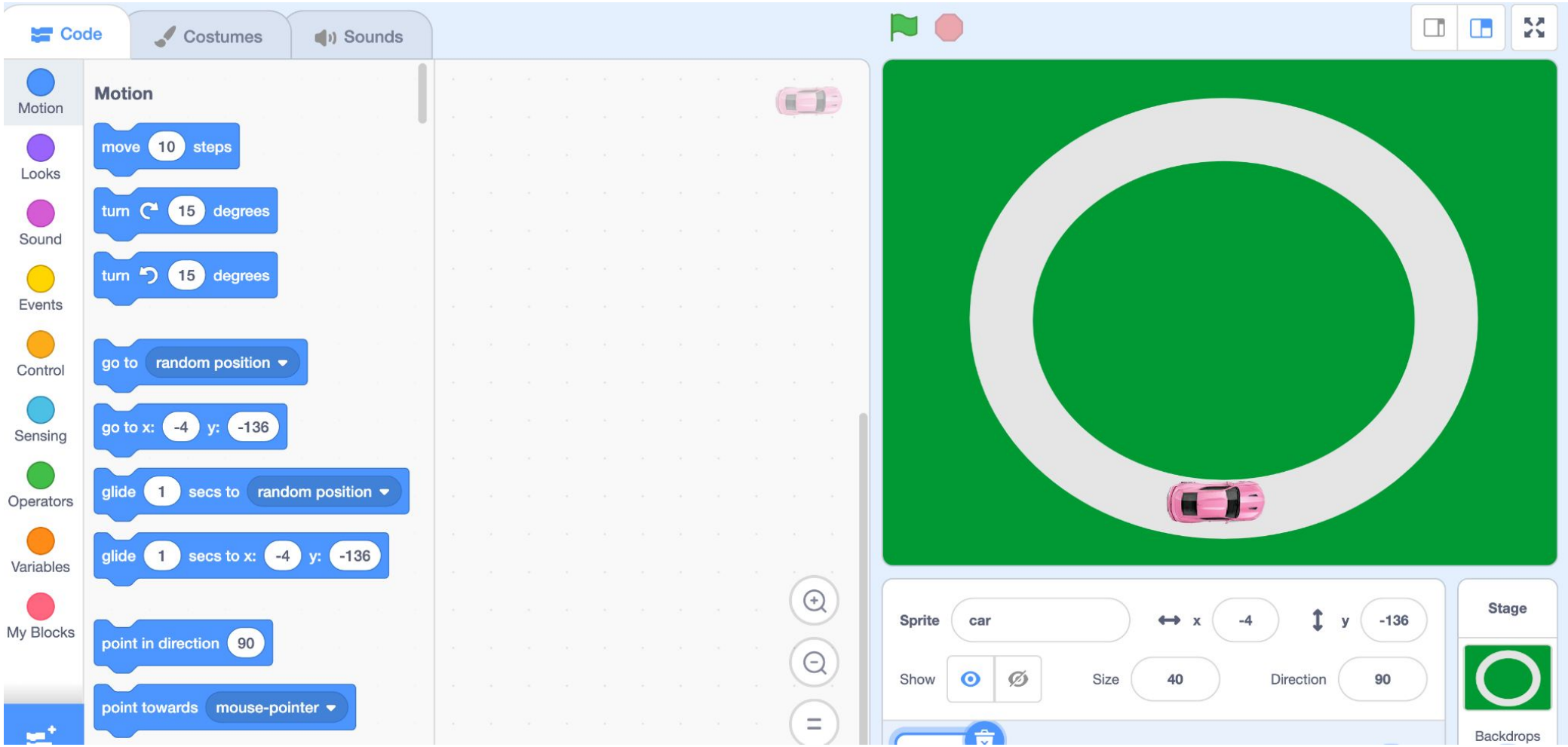
Programming is a little like building a recipe for a computer. You program ‘code’. And the computer will folow that code step by step.



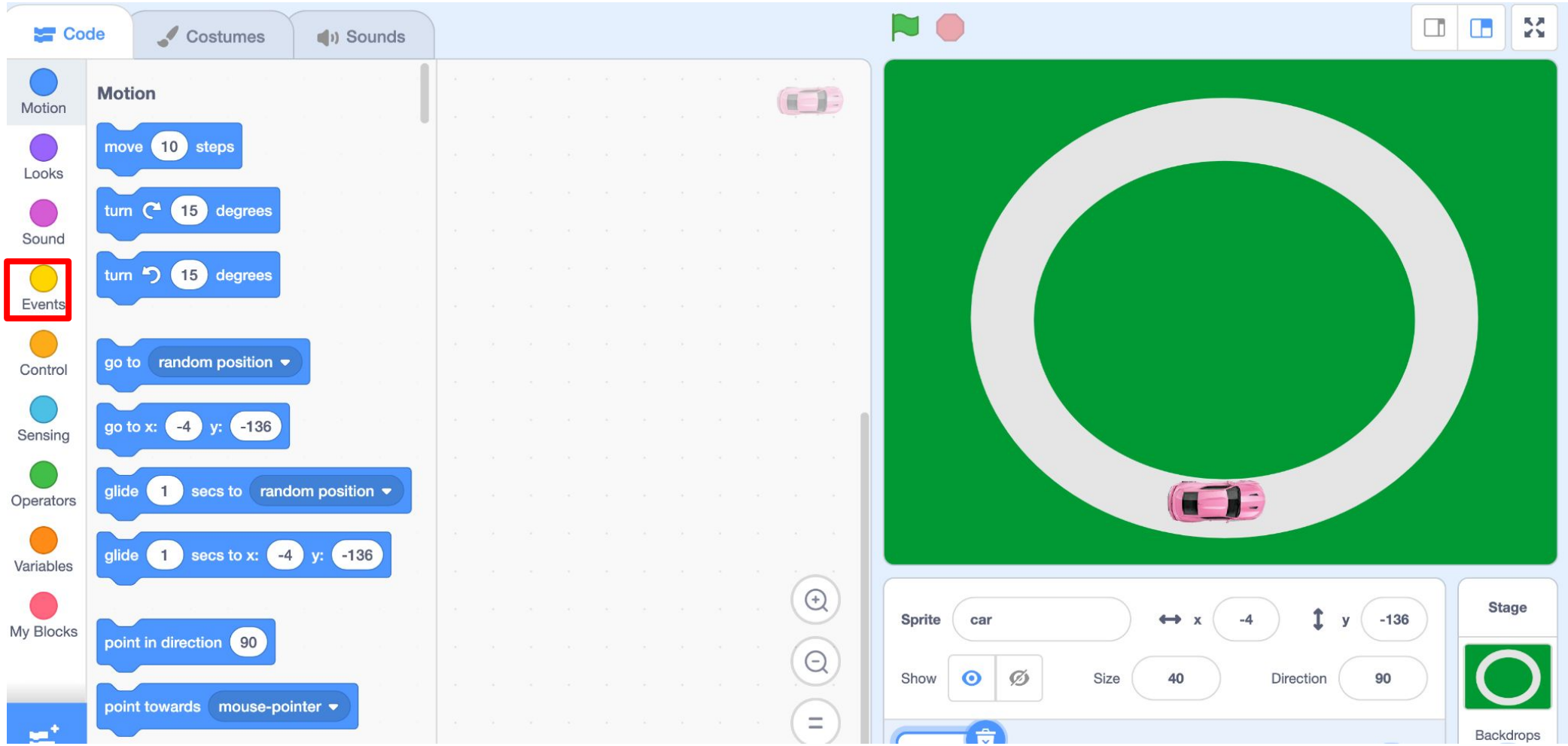
These are examples of ‘steps’ or ‘commands’ you can give to the computer. For example: Move 10 steps.



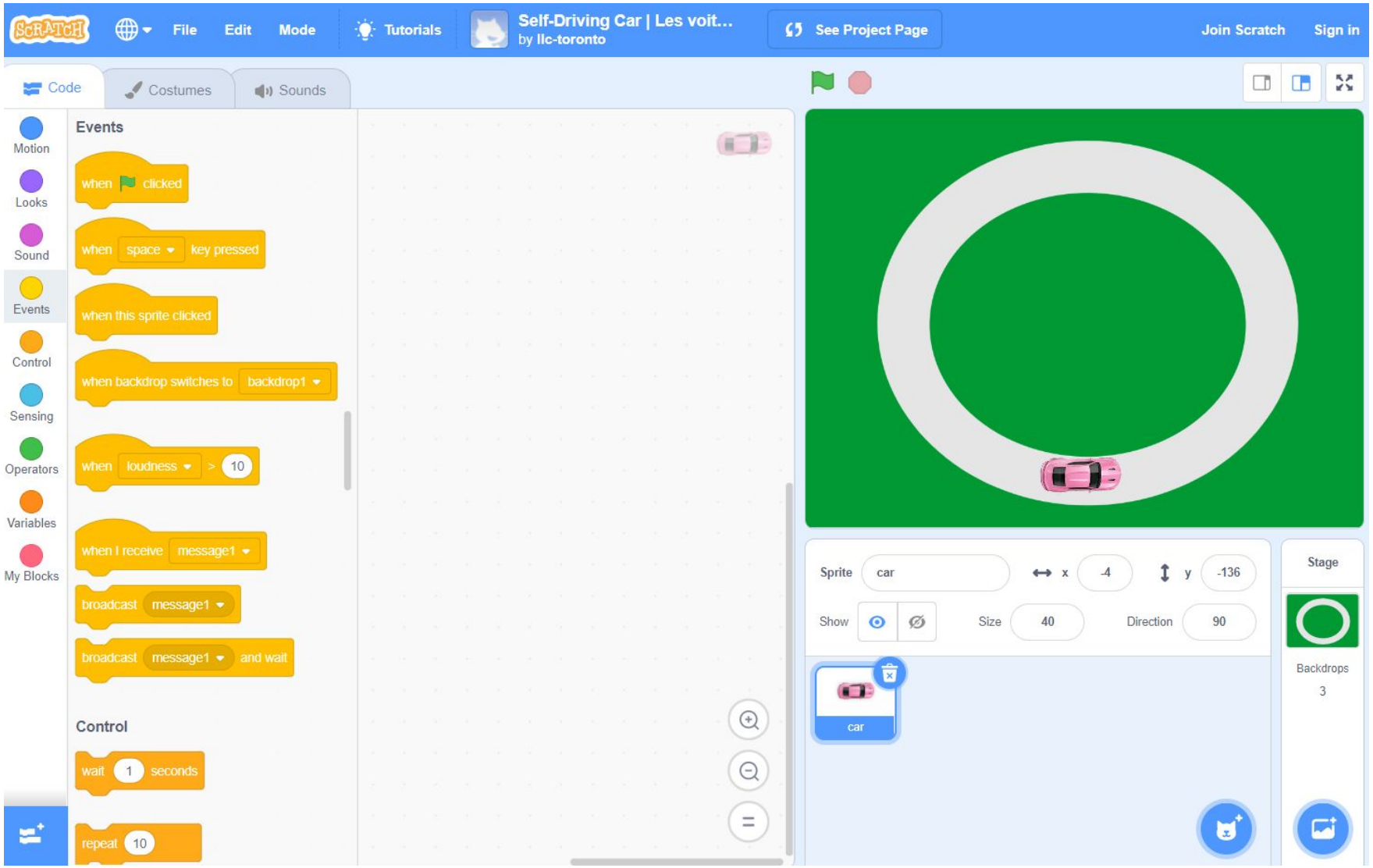
Let’s try moving the car!



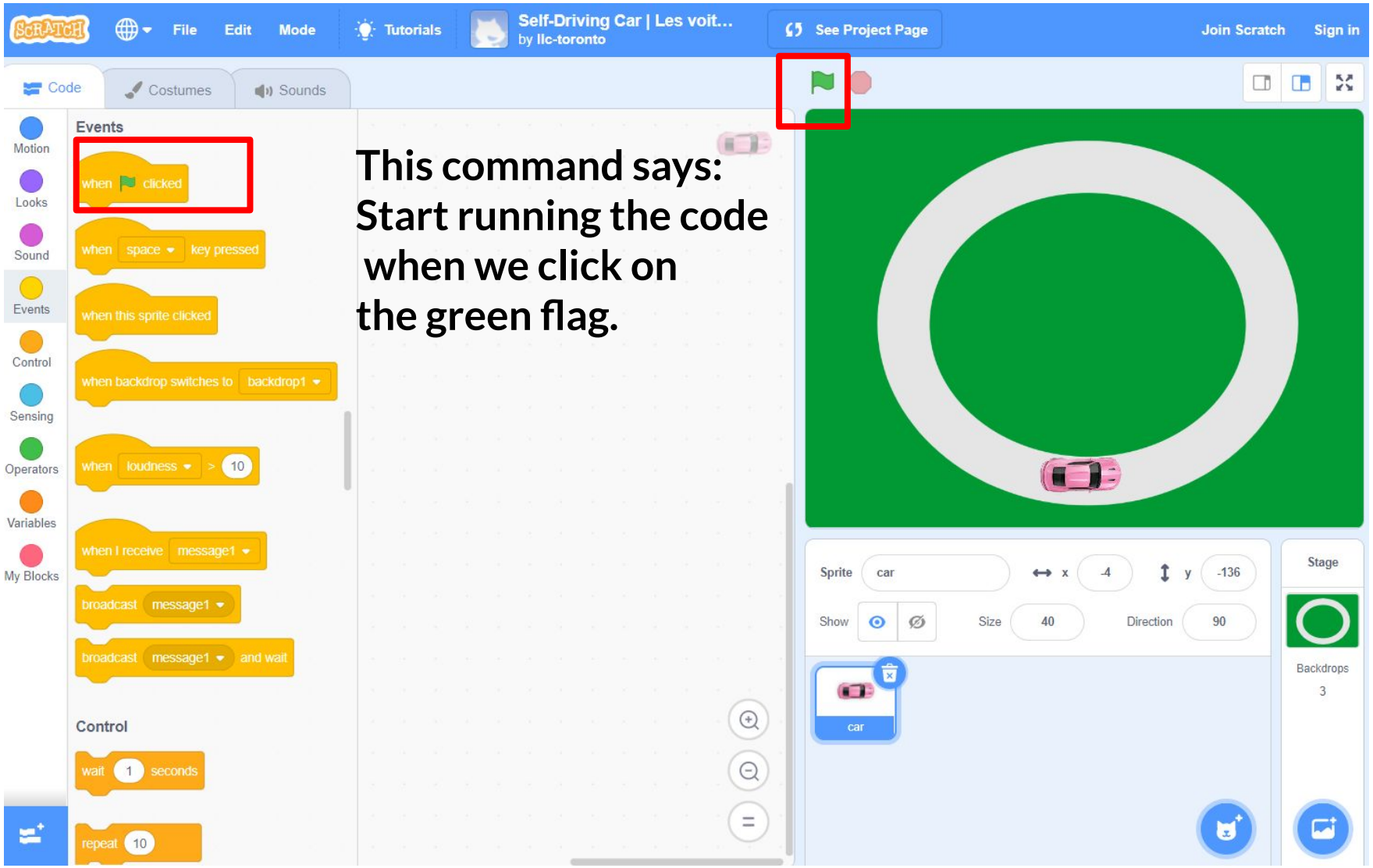
Click on Events



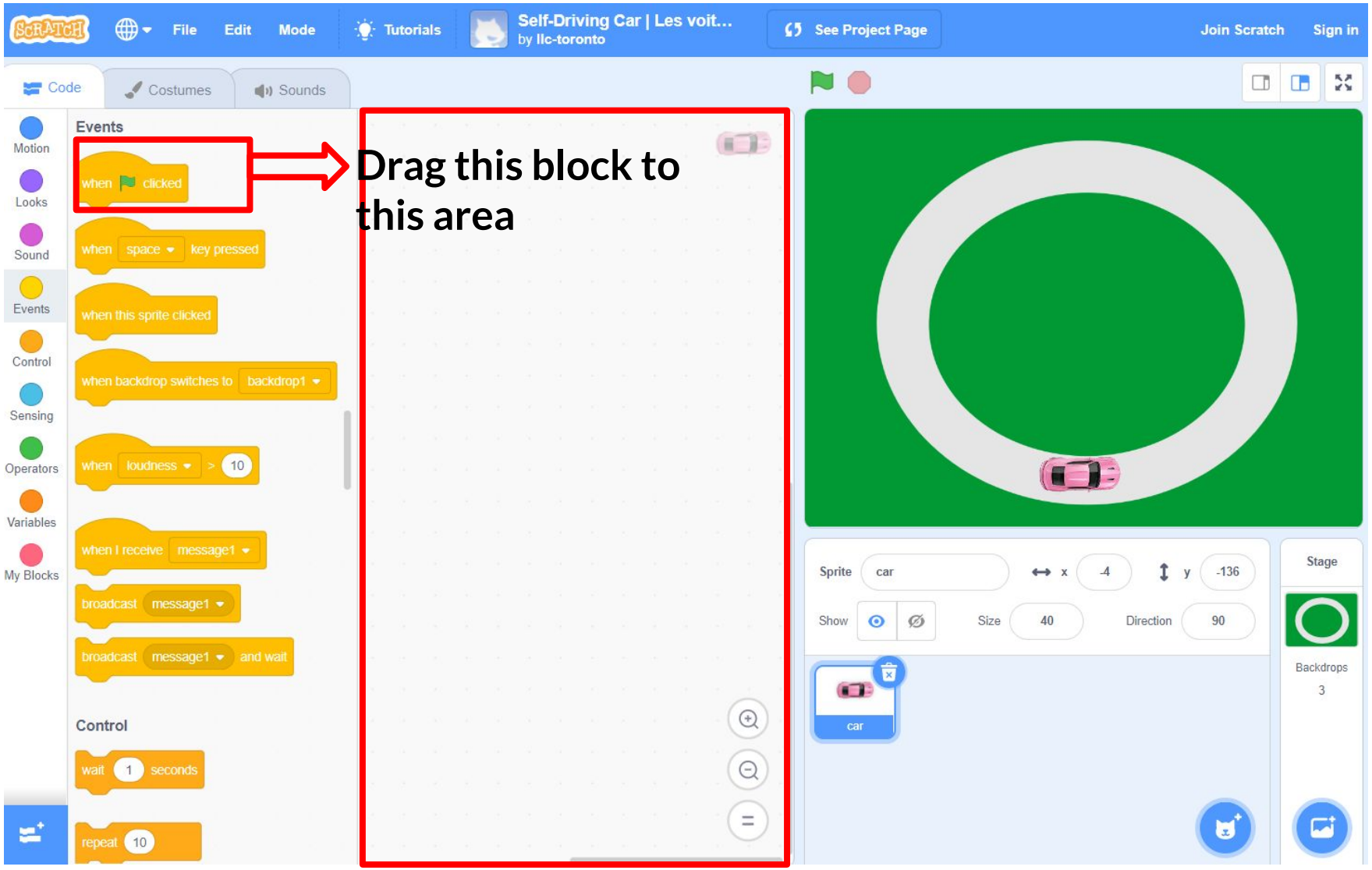
Now you see this:



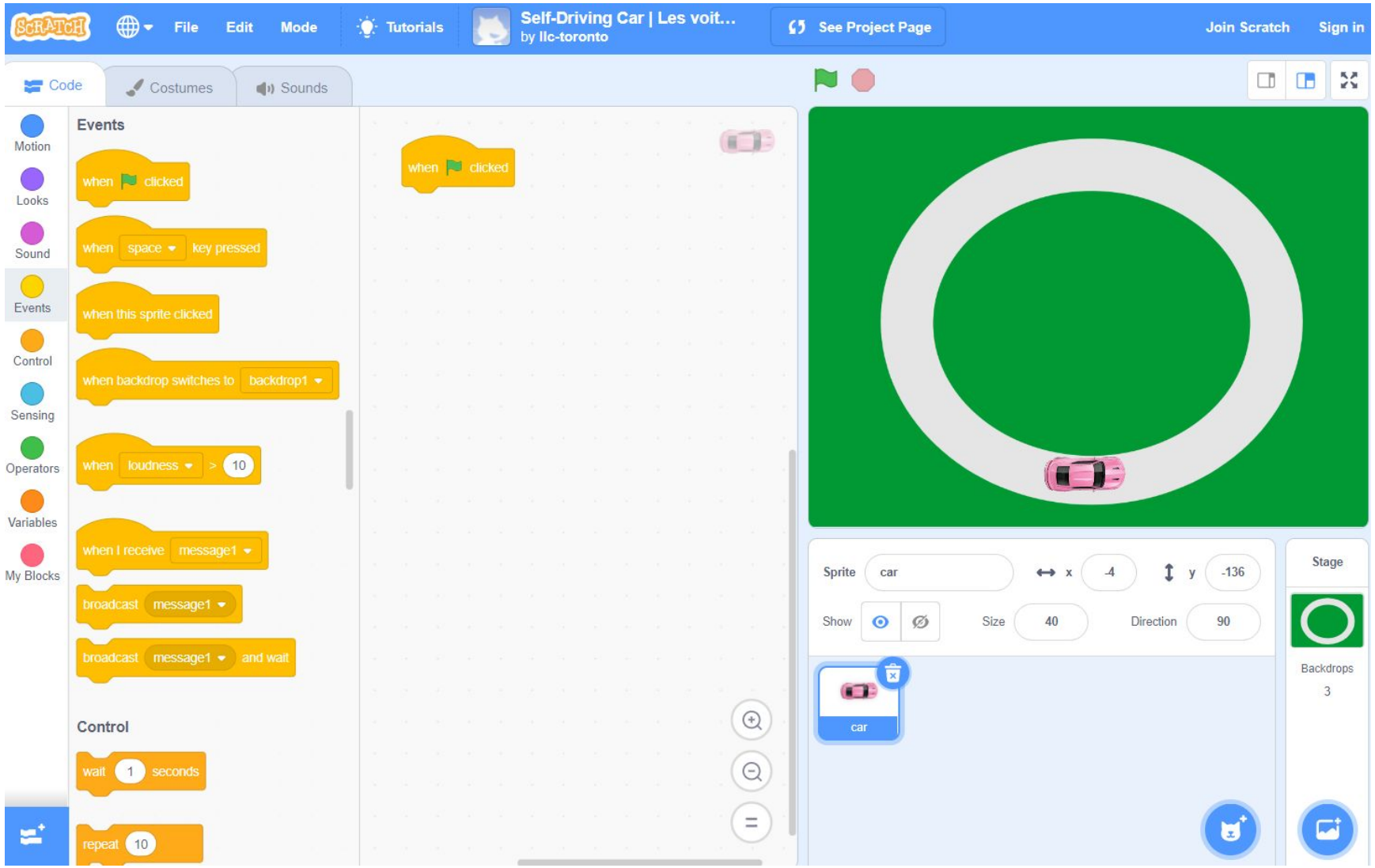
Now you see this:



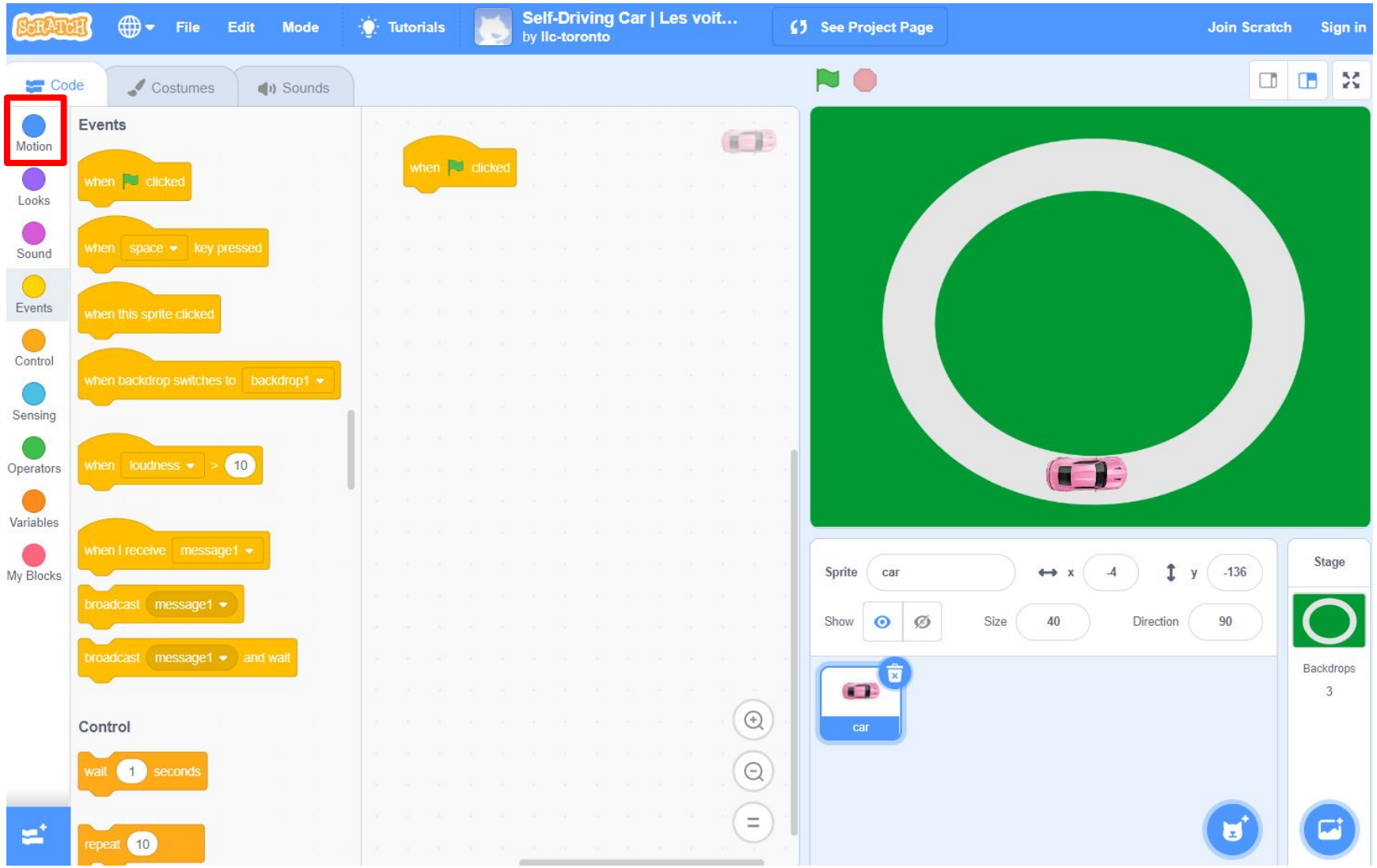
Now you see this:



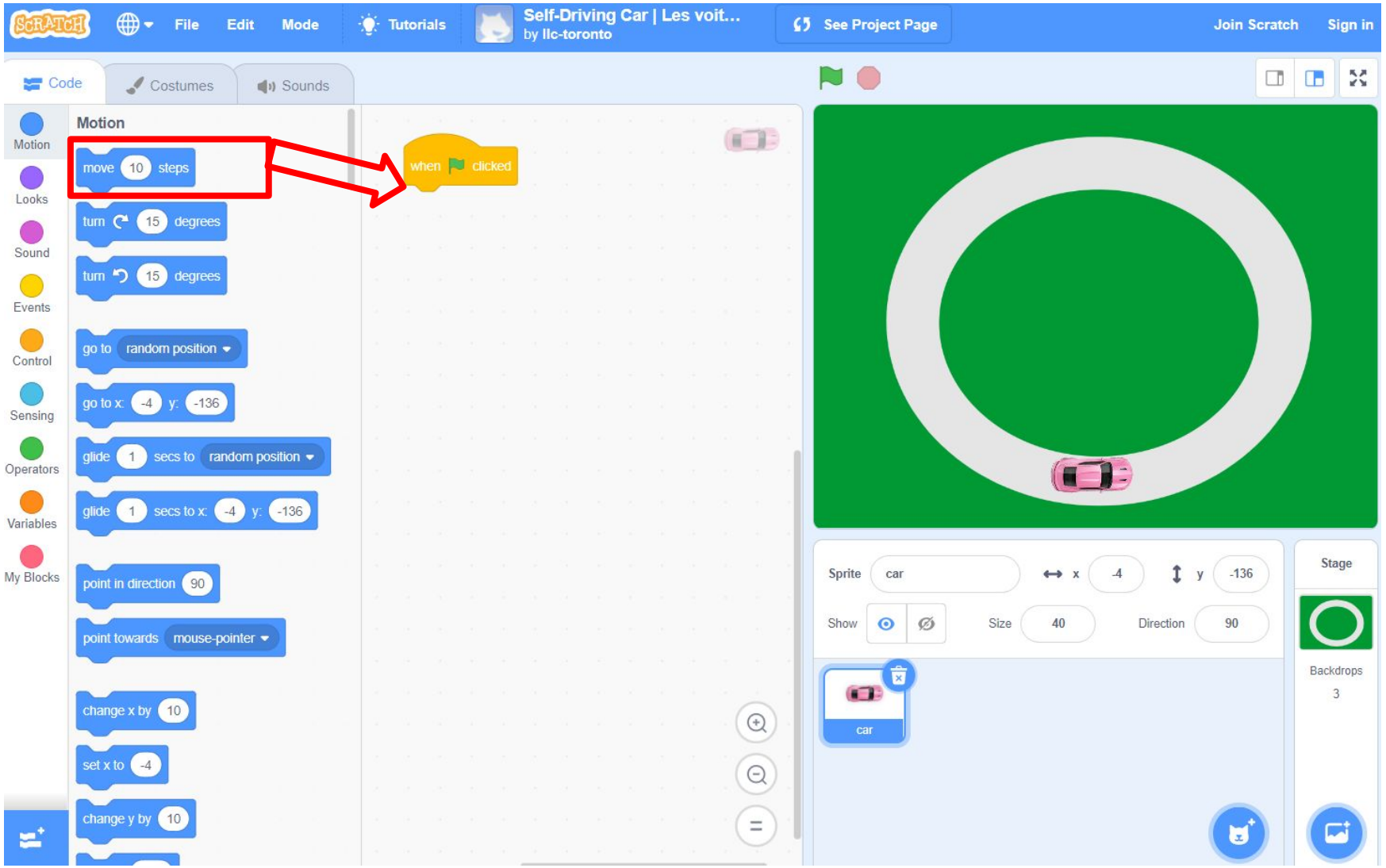
Now you see this:



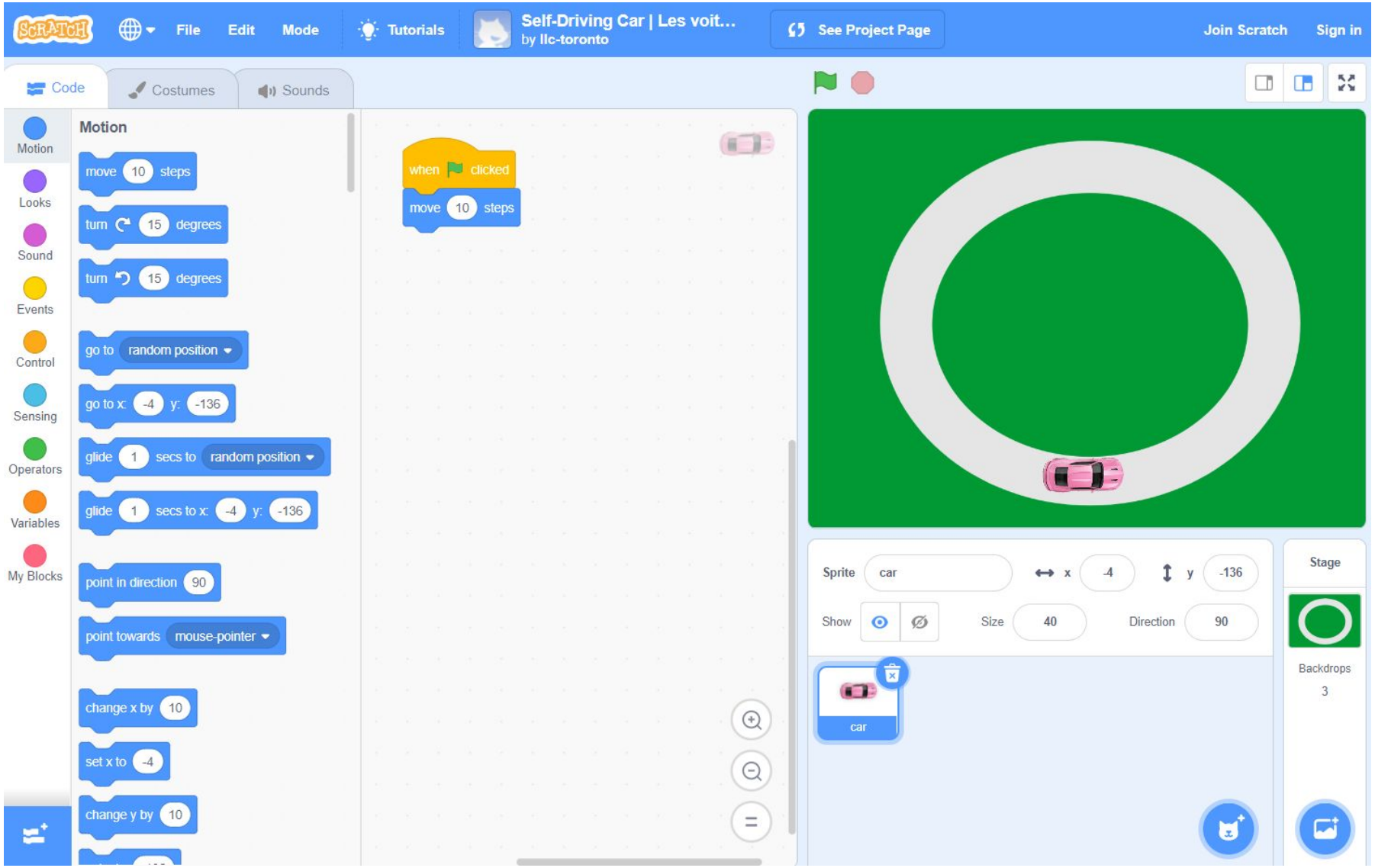
Click on Motions



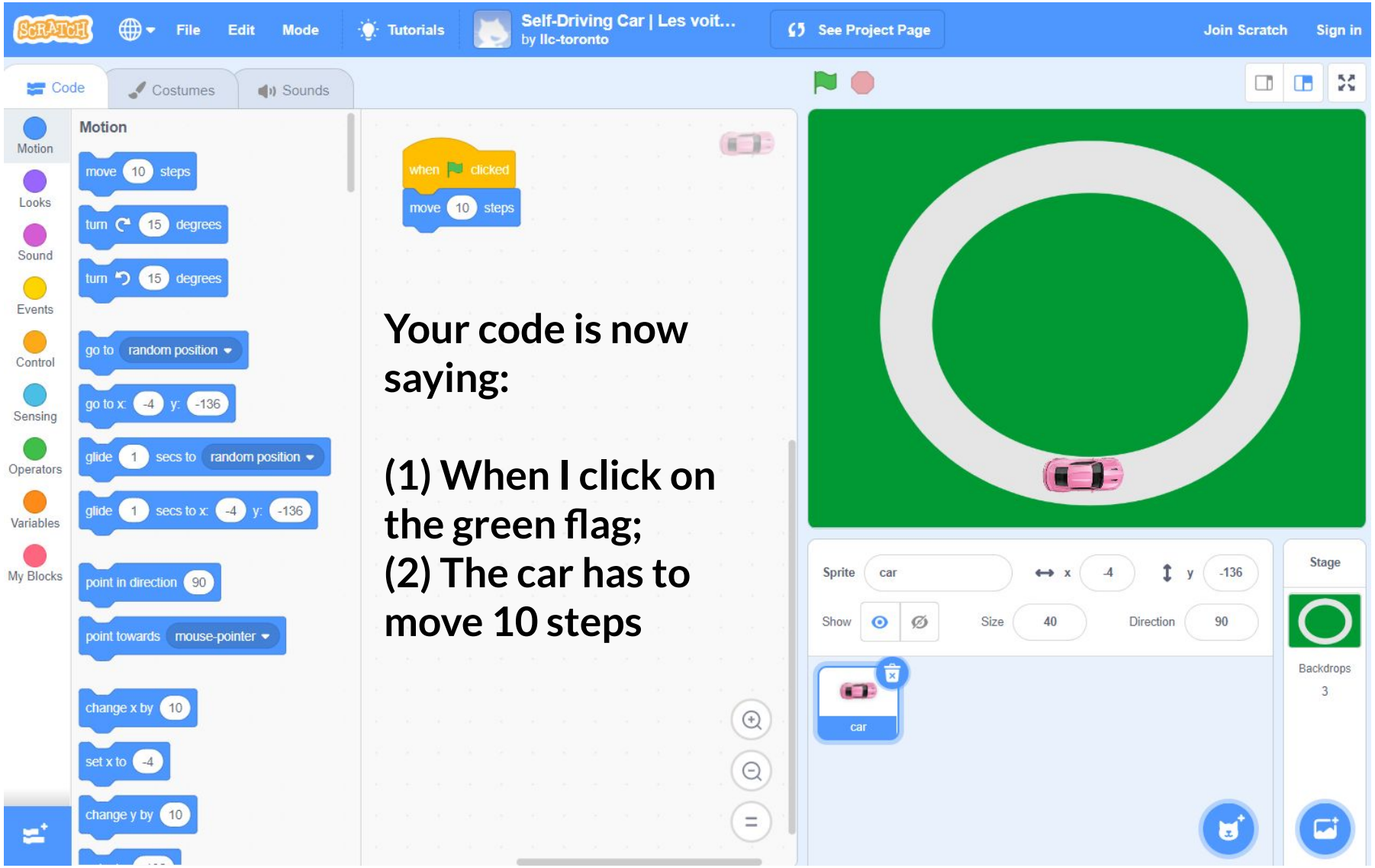
Drag this command under your other command



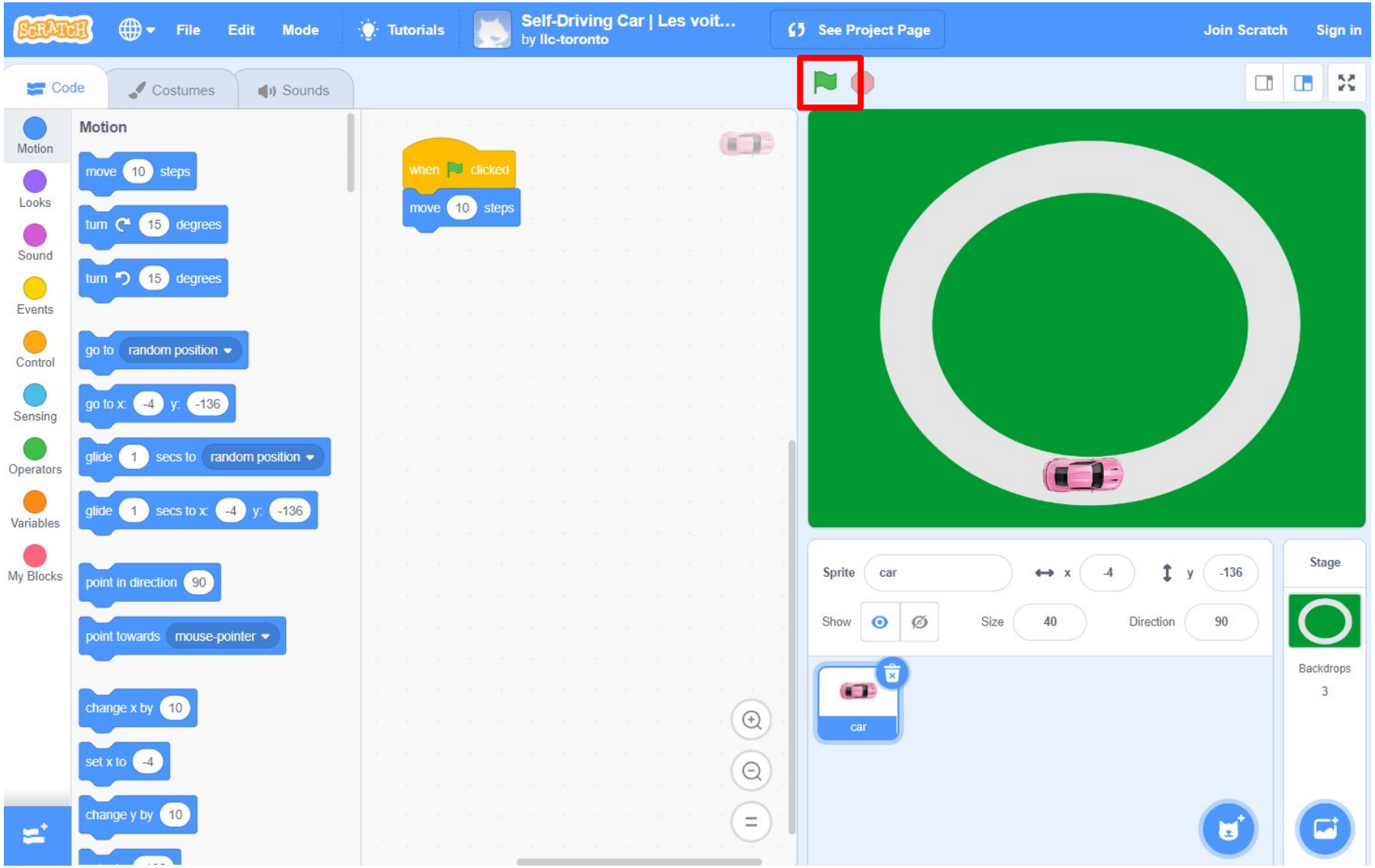
Drag this command under your other command



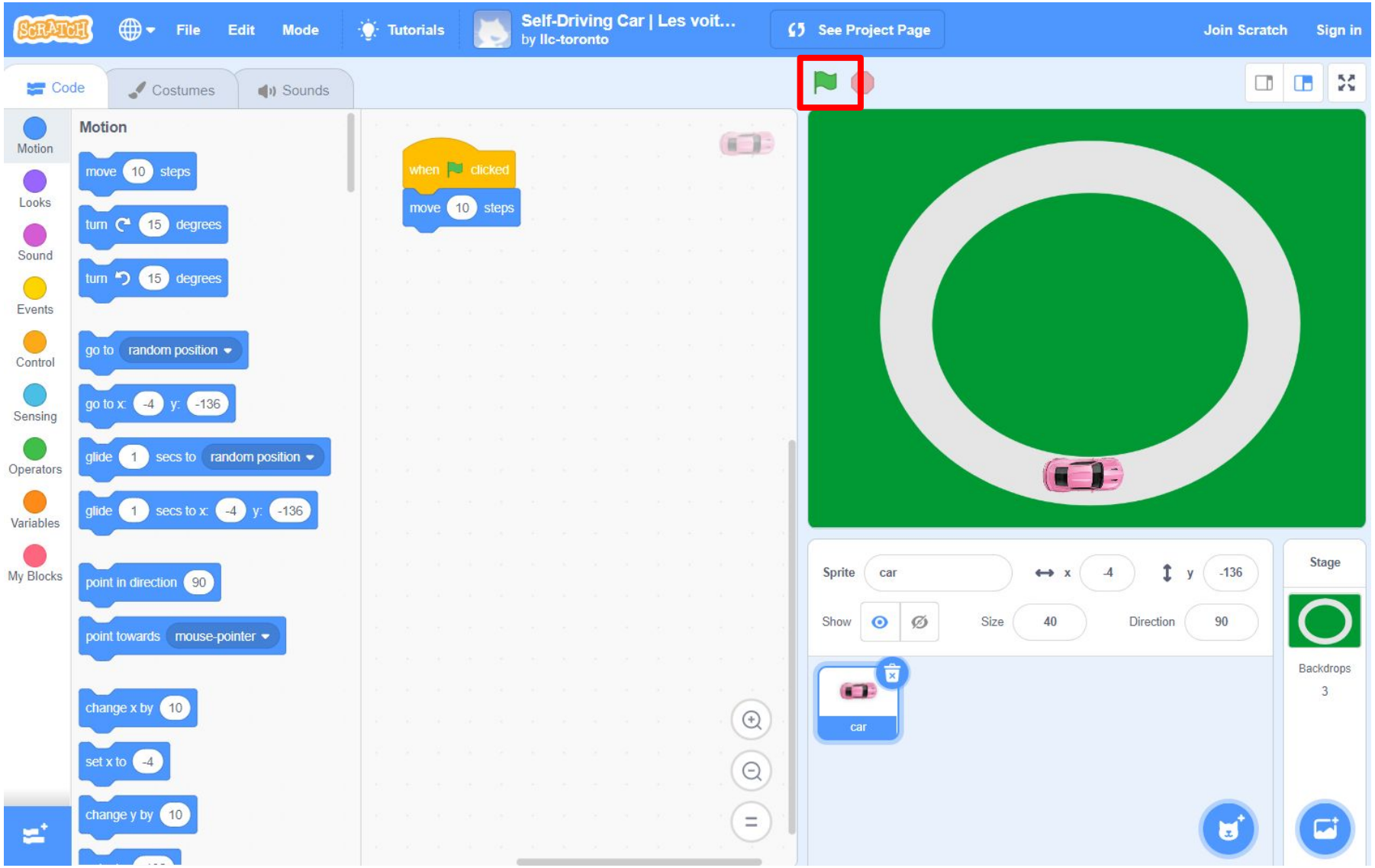
Drag this command under your other command



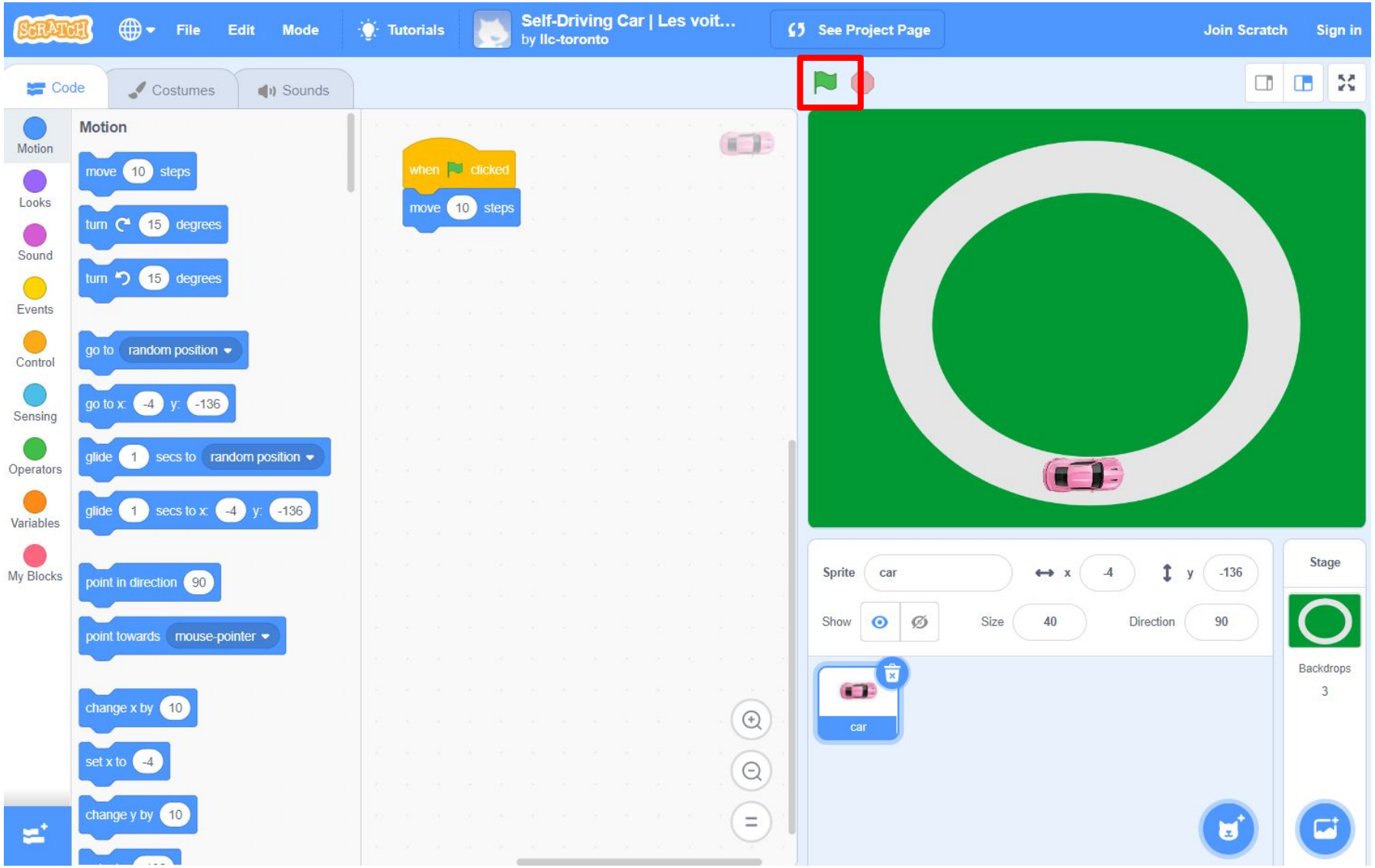
Let’s try it out! Click on the green flag.



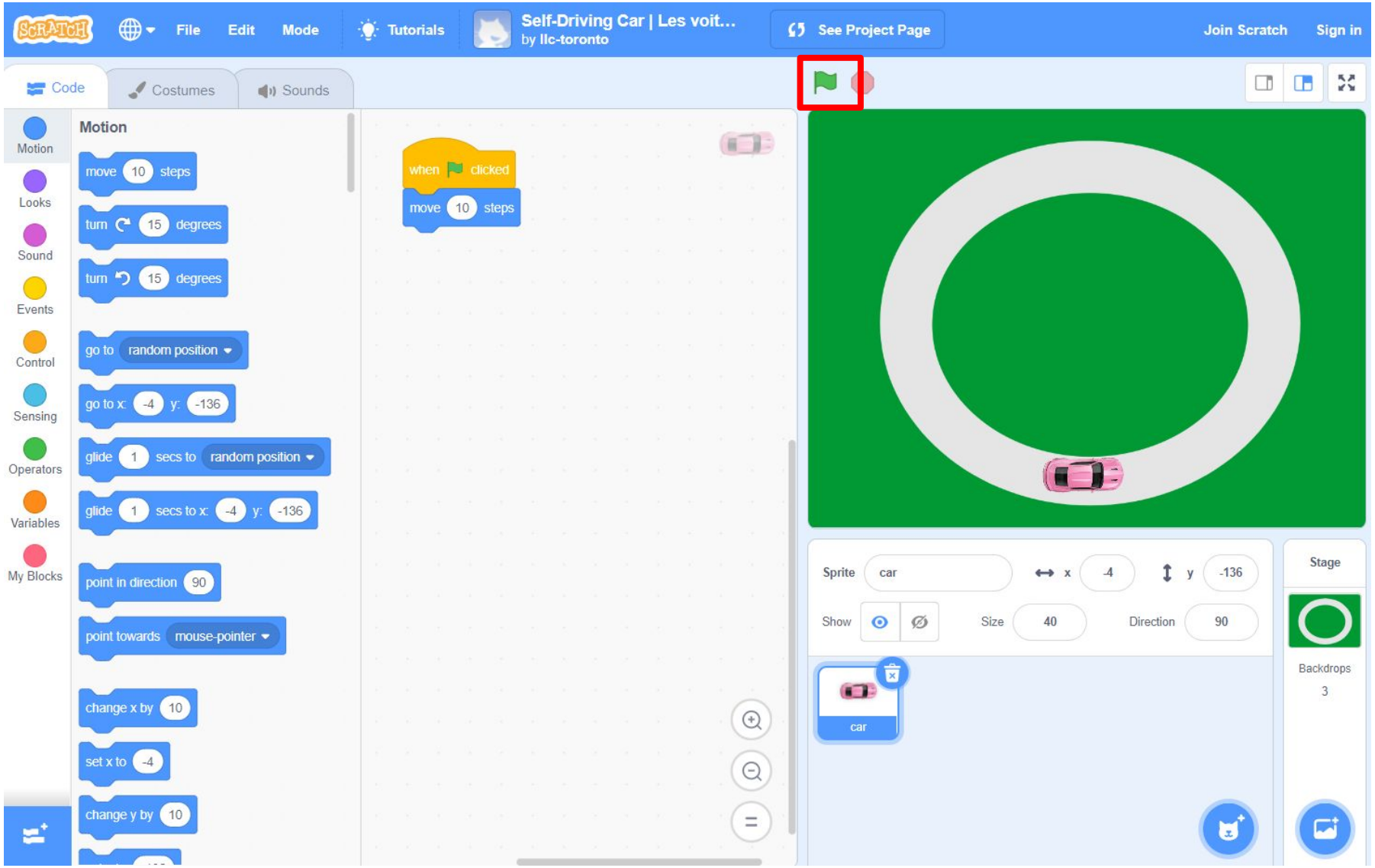
Did your car move? Great job!



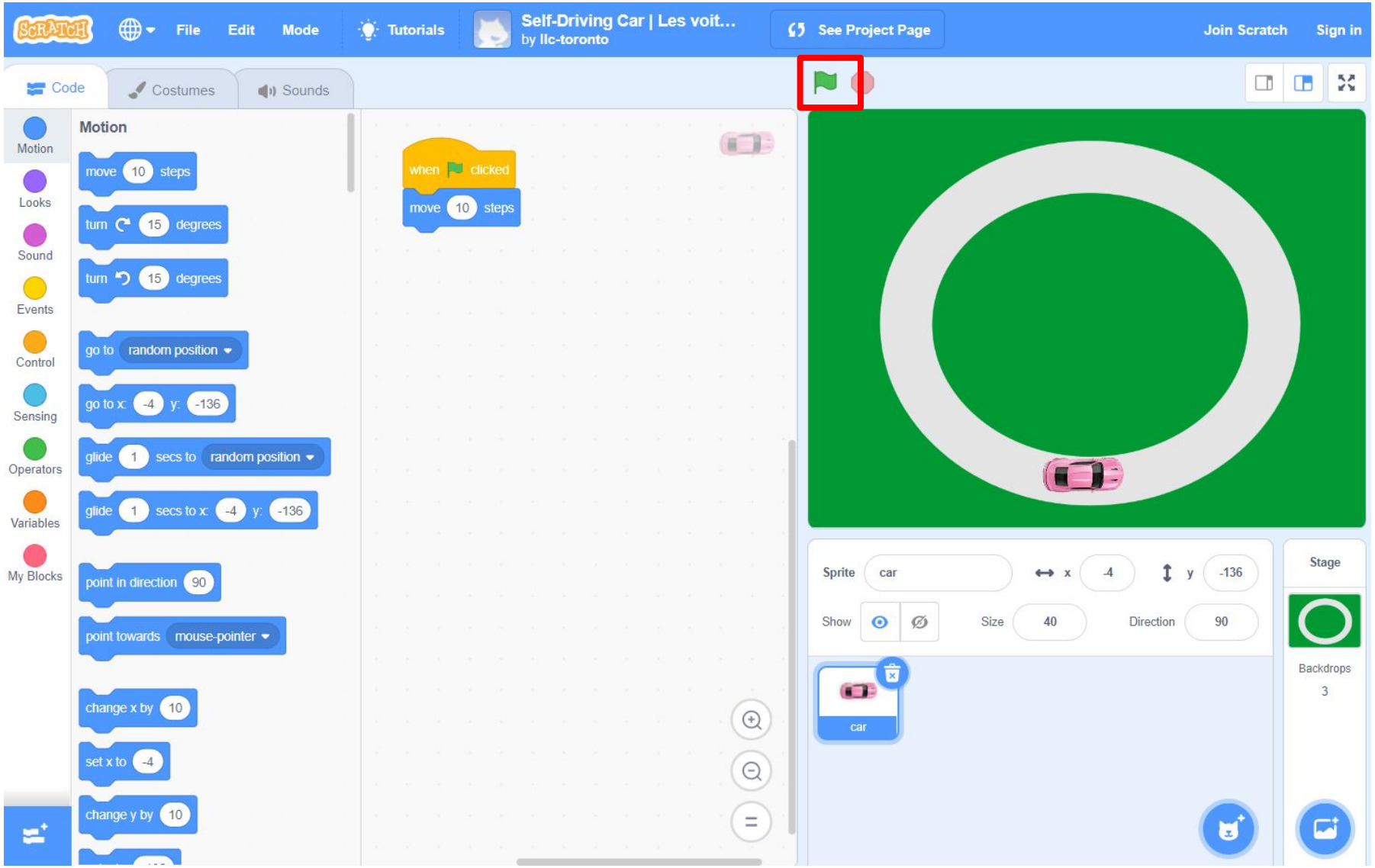
What happens if you put 100 instead of 10 and press the green flag again?



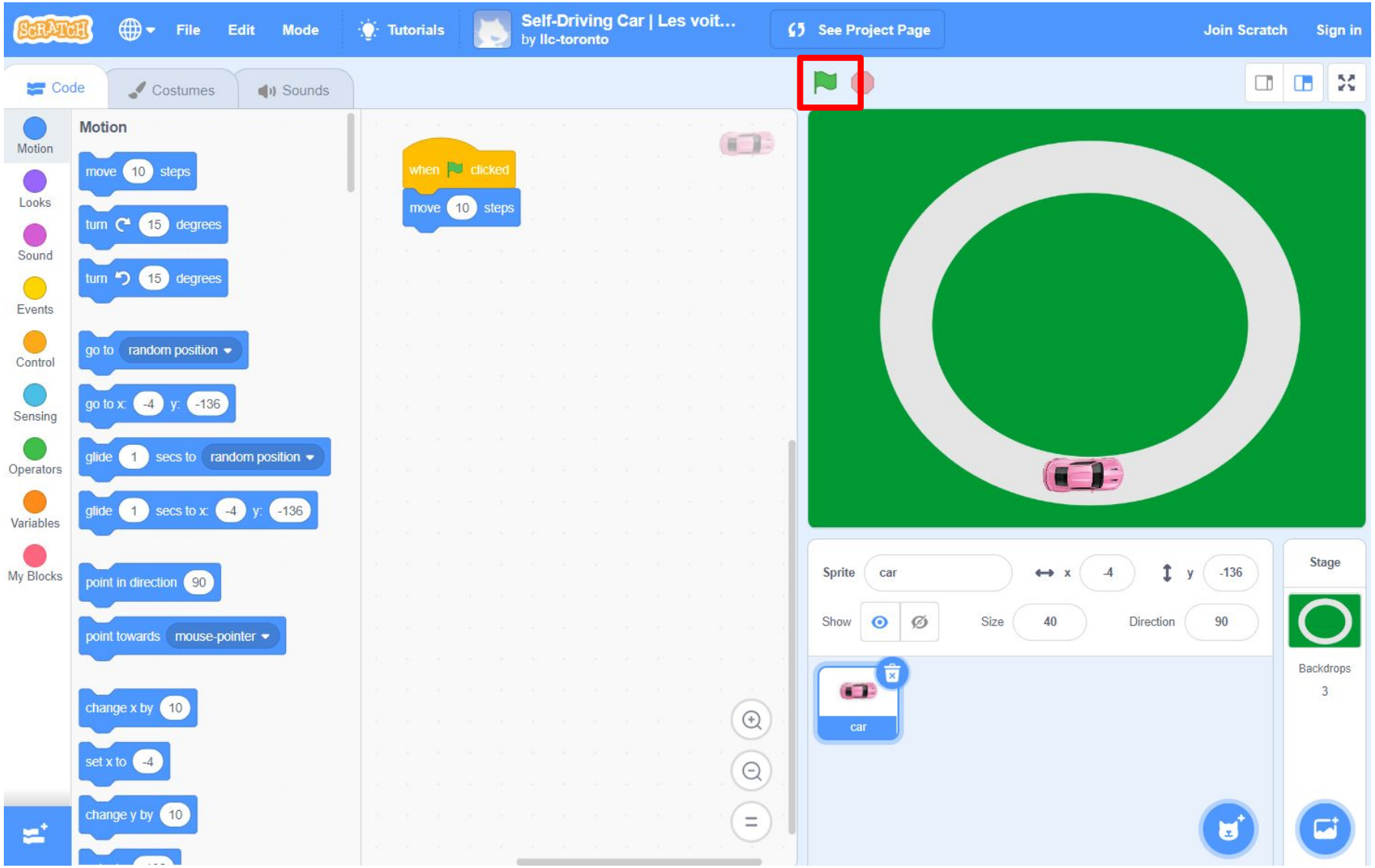
And -100?

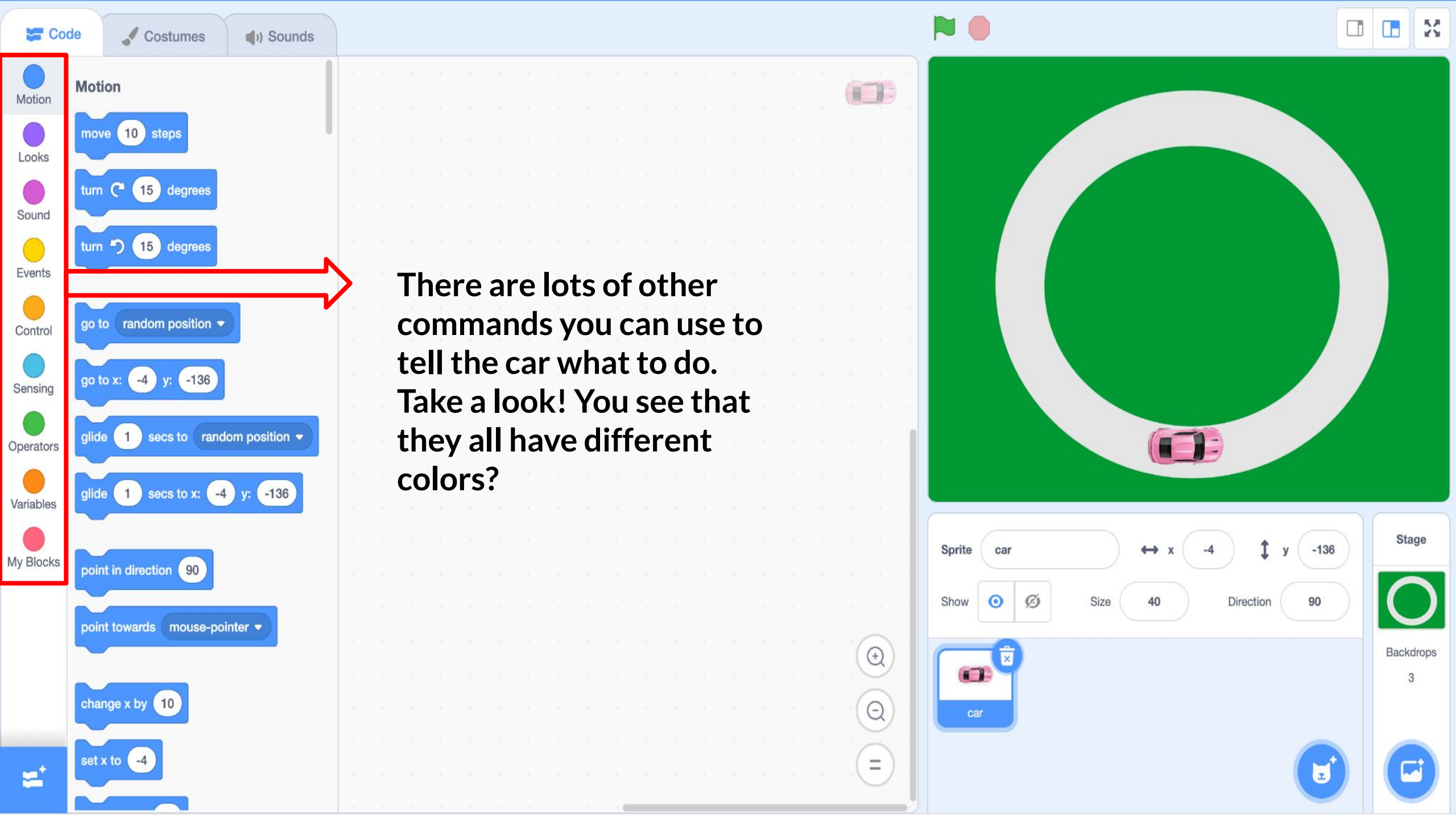

File
Edit
Mode
Tutorials
Self-Driving Car | Les voit...
by llc-toronto
See Project Page
Join Scratch
Sign in
Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
change y by 10
when clicked
move 10 steps
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
car
Stage
Backdrops
3

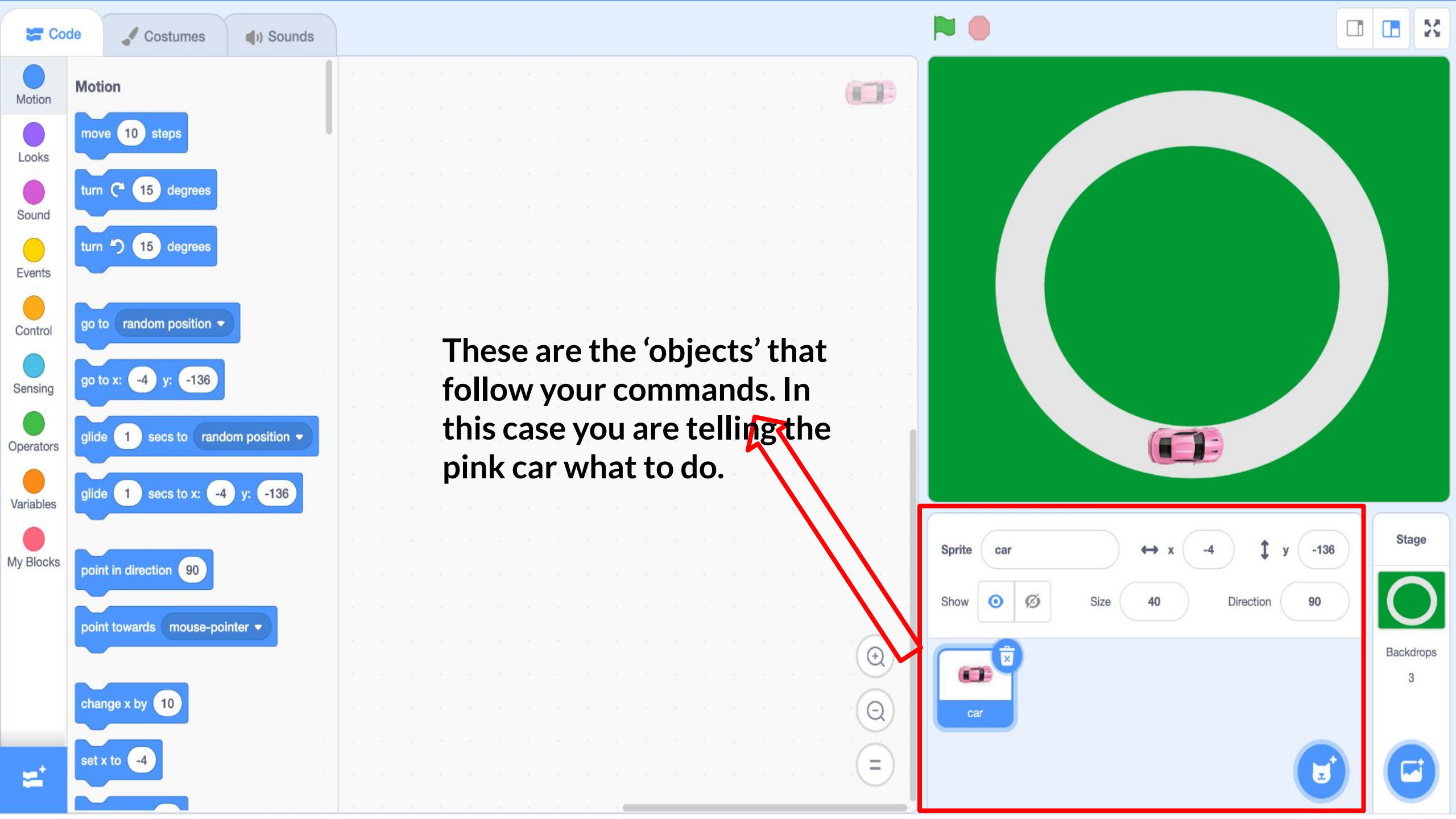
You can now move the car!

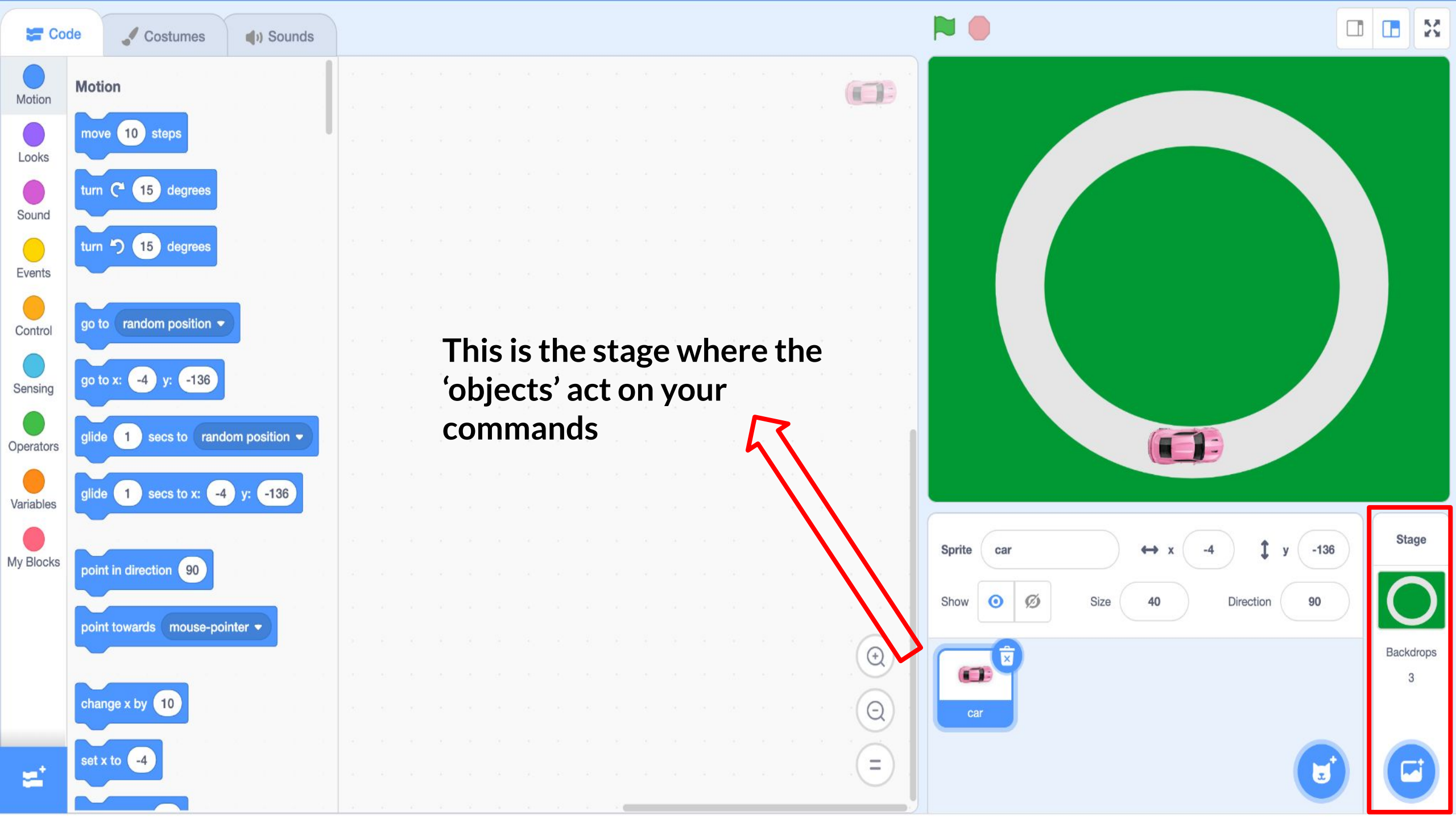


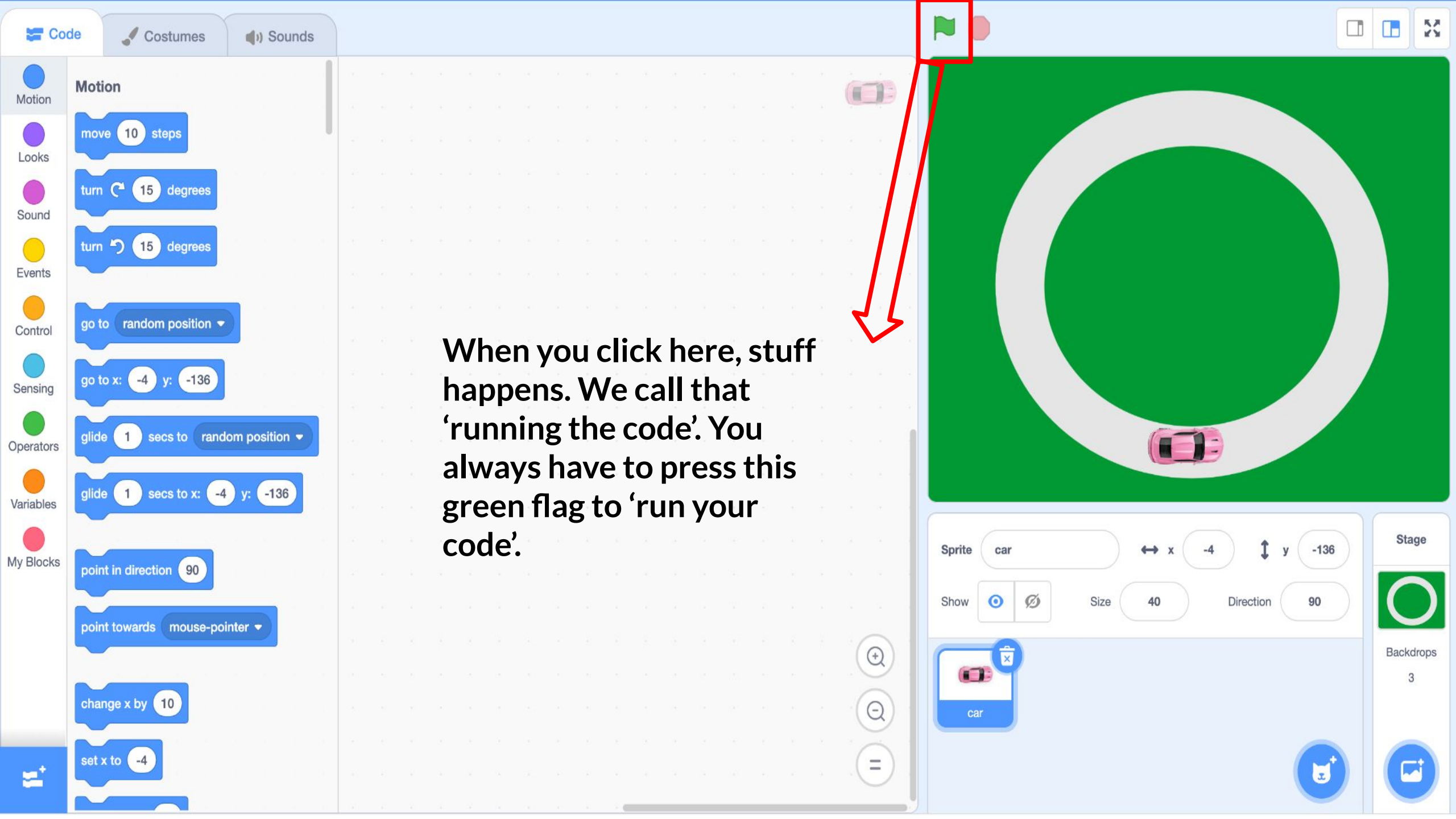
Let’s see what Scratch can do more!

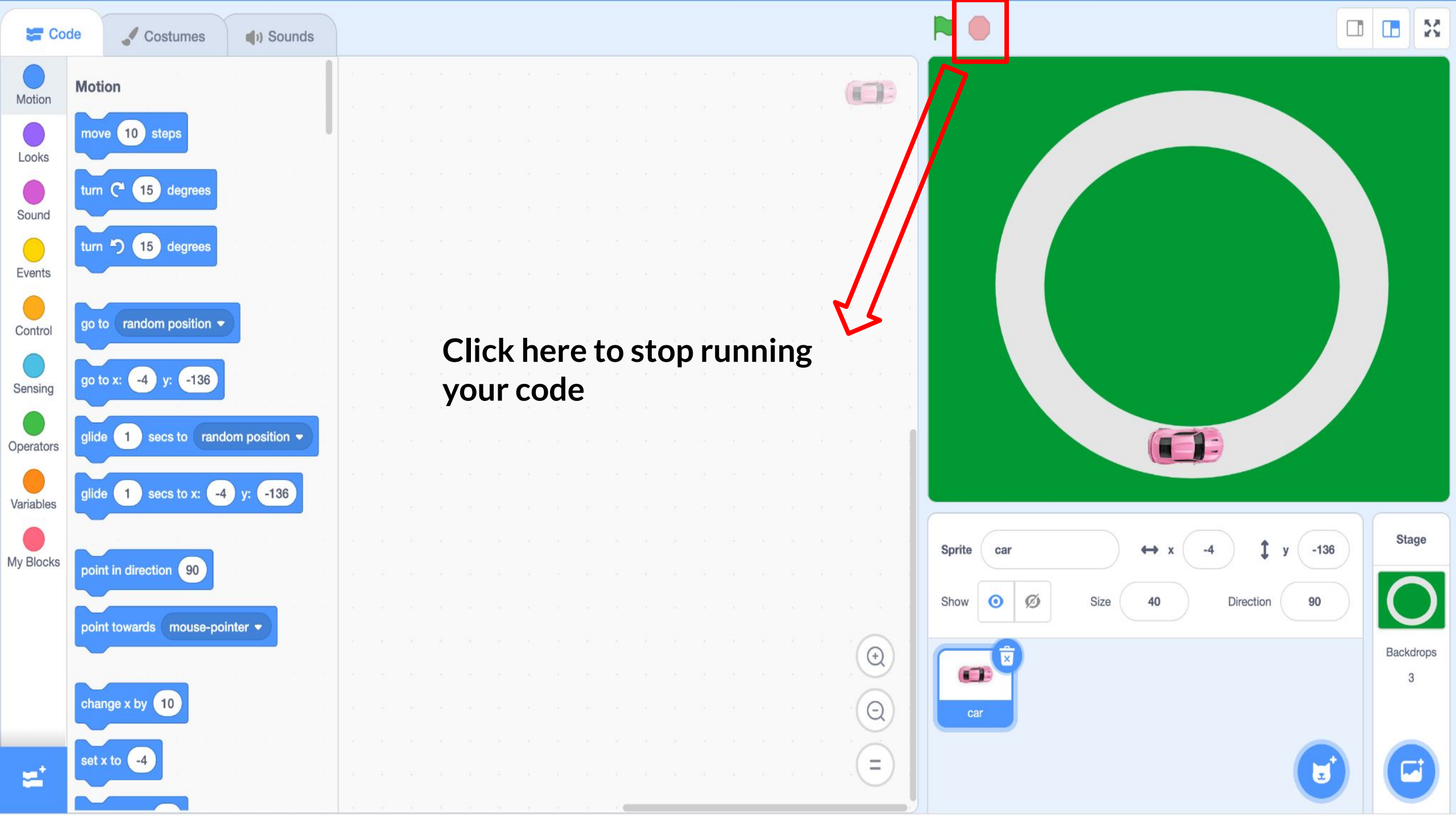


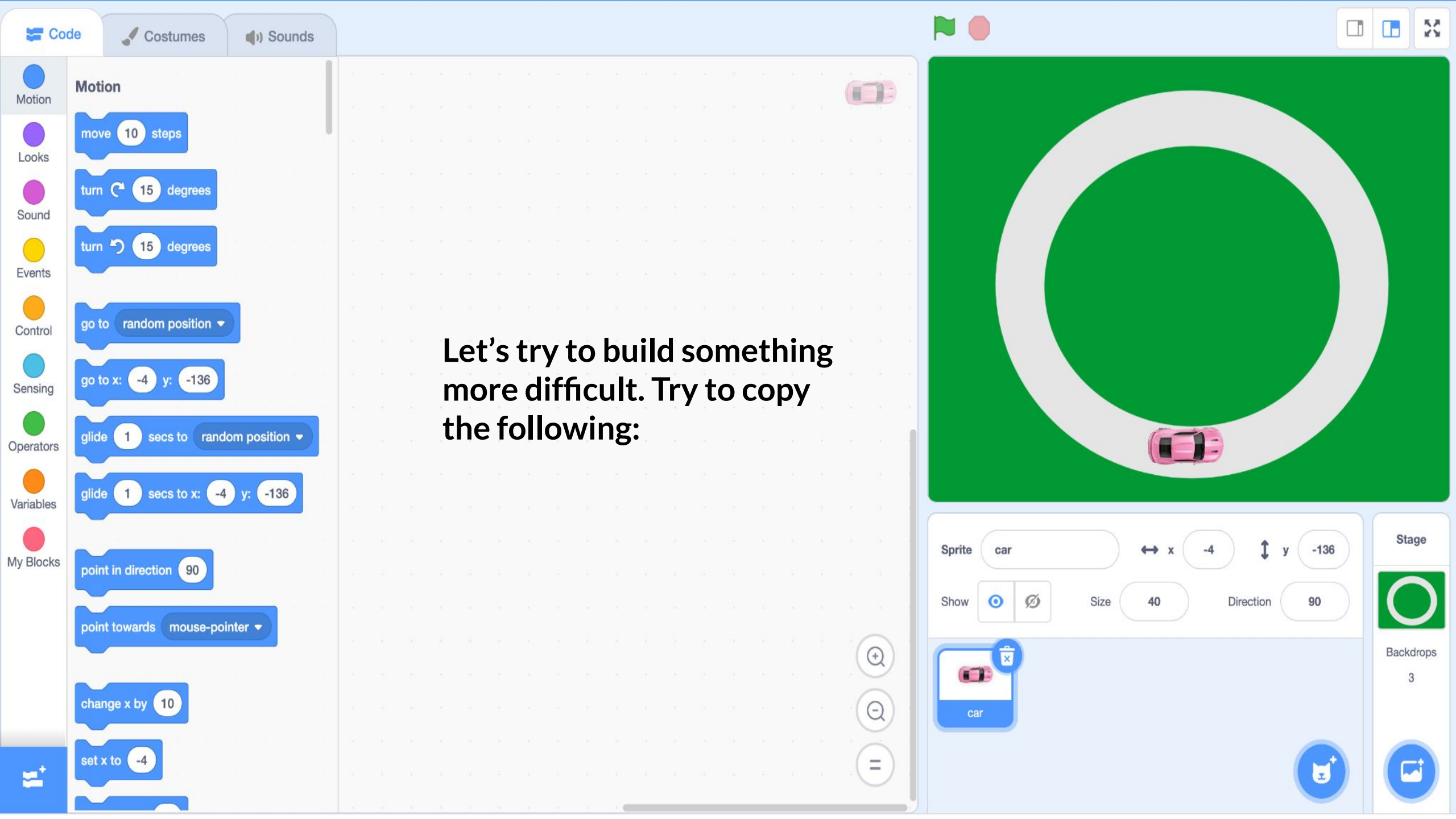

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
There are lots of other commands you can use to tell the car what to do. Take a look! You see that they all have different colors?
Sprite car
x -4
y -136
Show
Size 40
Direction 90
car
Stage
Backdrops 3

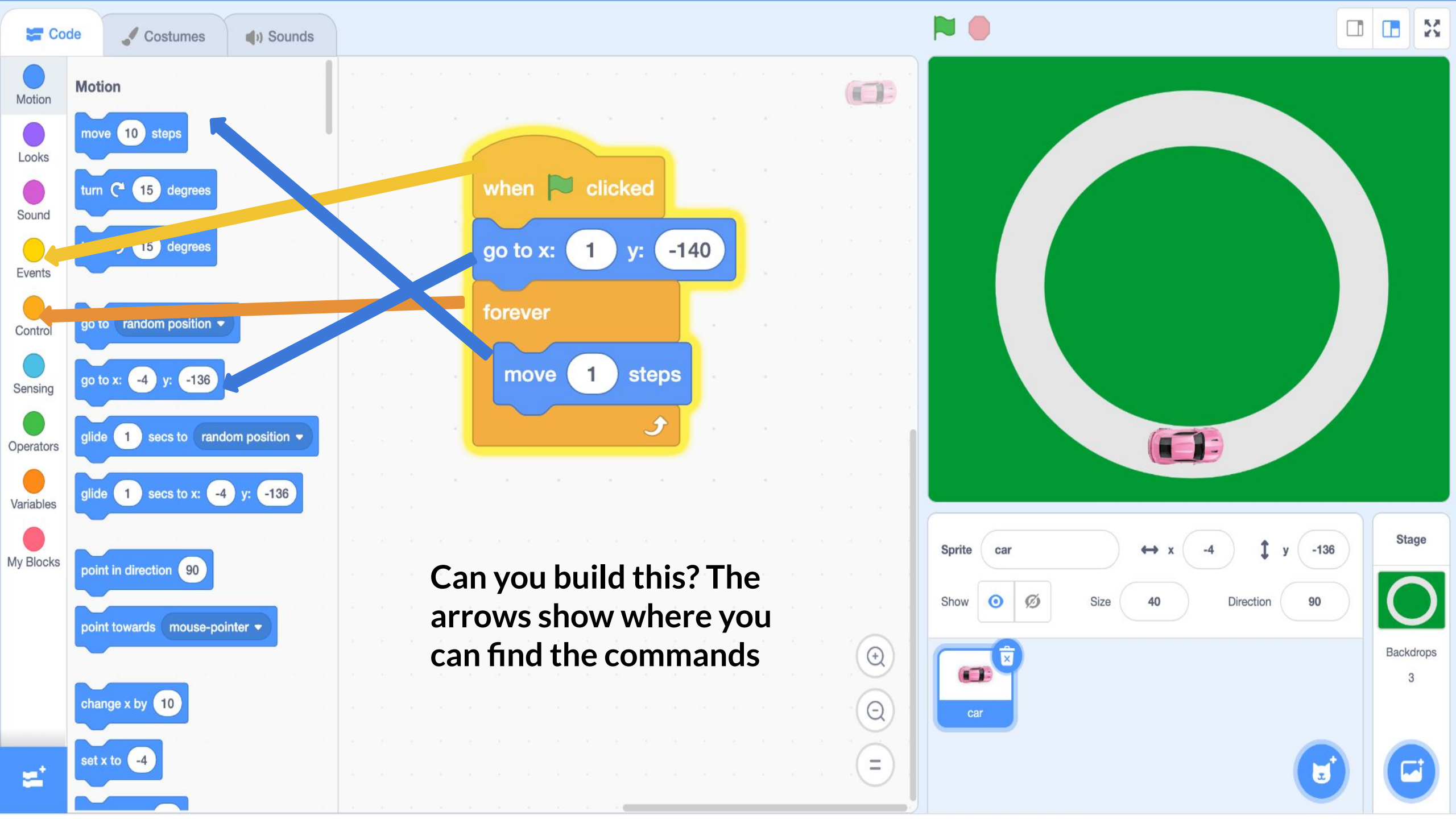

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
These are the 'objects' that follow your commands. In this case you are telling the pink car what to do.
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
car
Stage
Backdrops
3

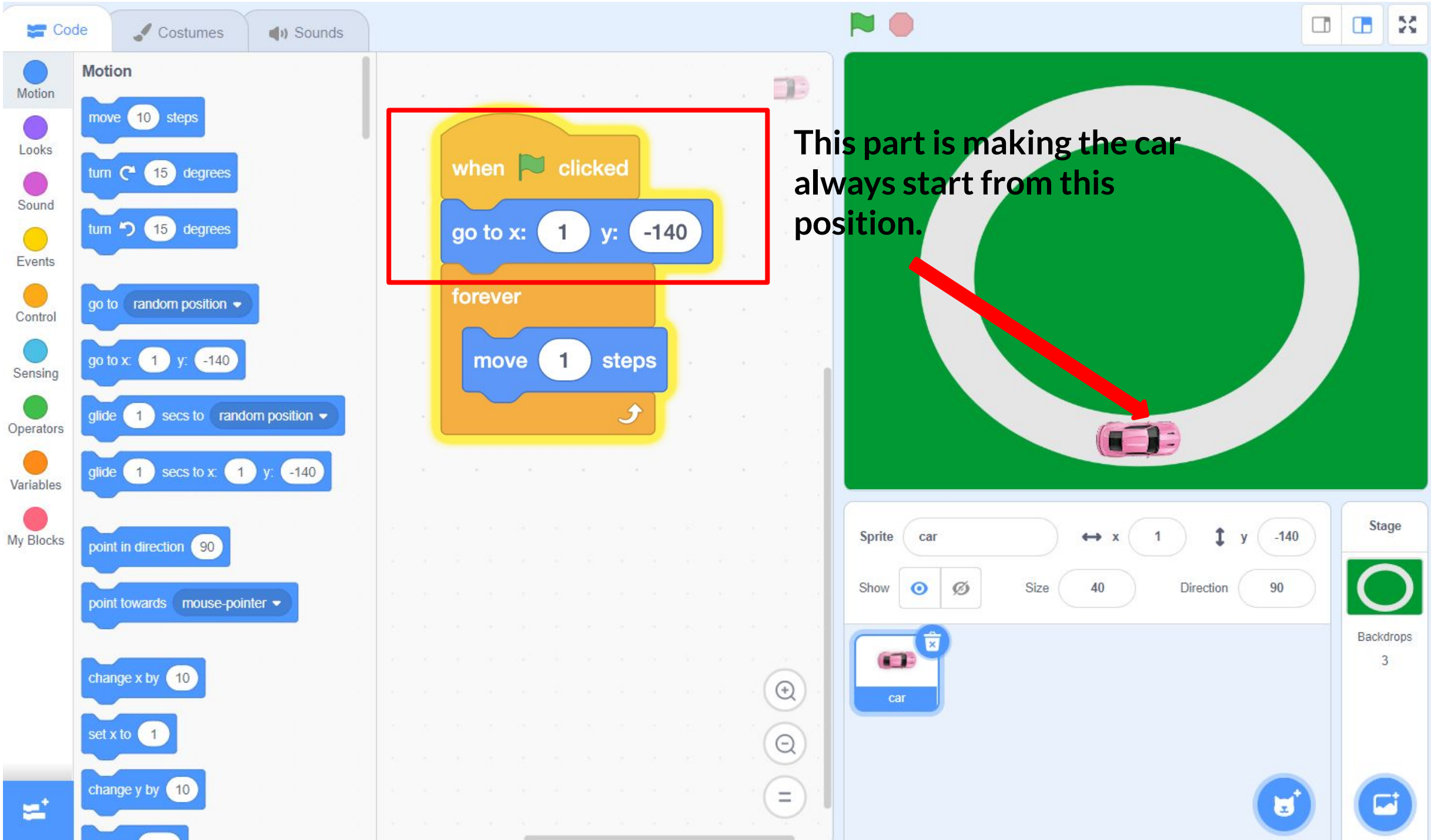

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
This is the stage where the 'objects' act on your commands
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
car
Stage
Backdrops
3

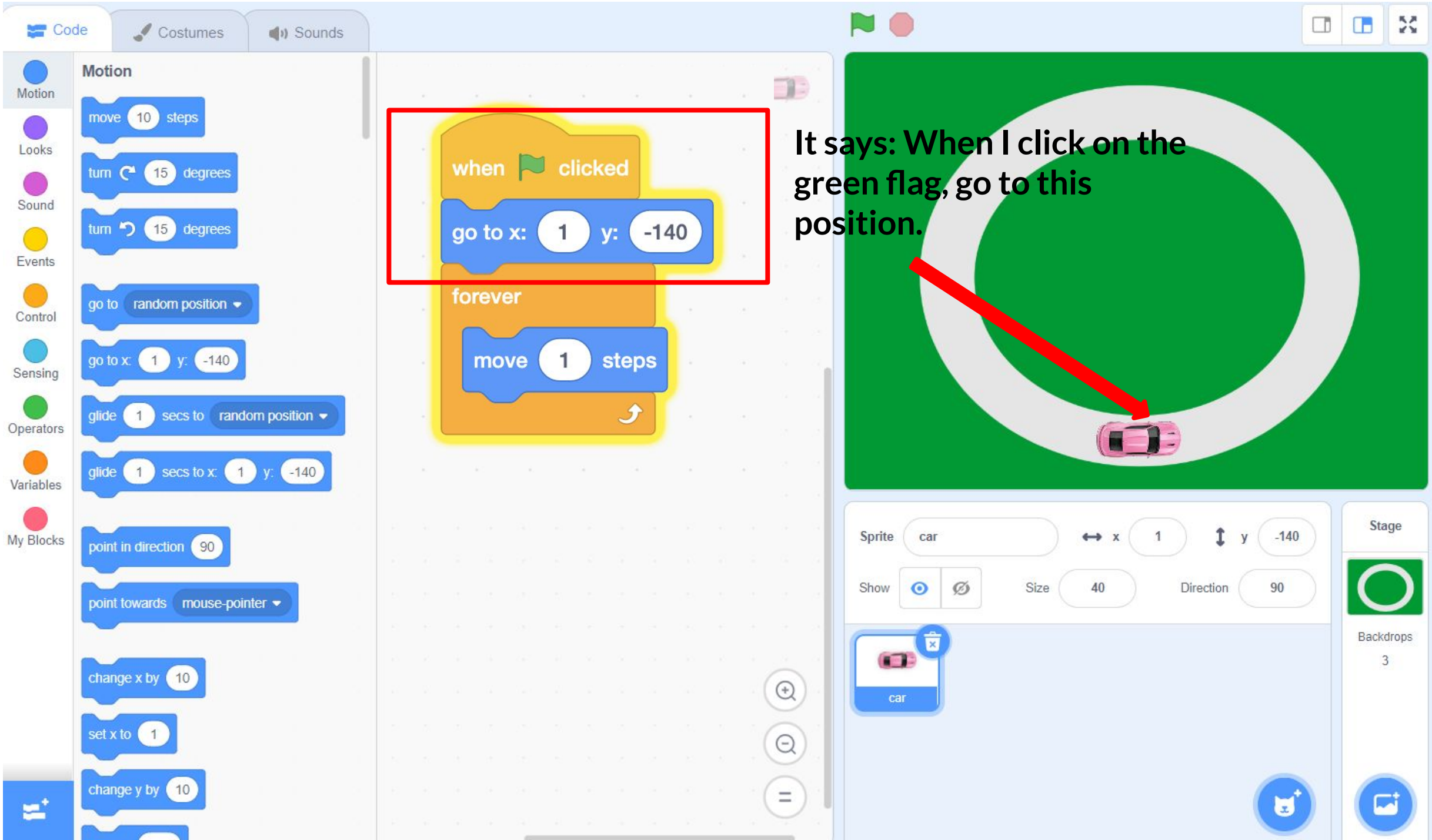

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
When you click here, stuff happens. We call that 'running the code'. You always have to press this green flag to 'run your code'.
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
Stage
Backdrops
3
car

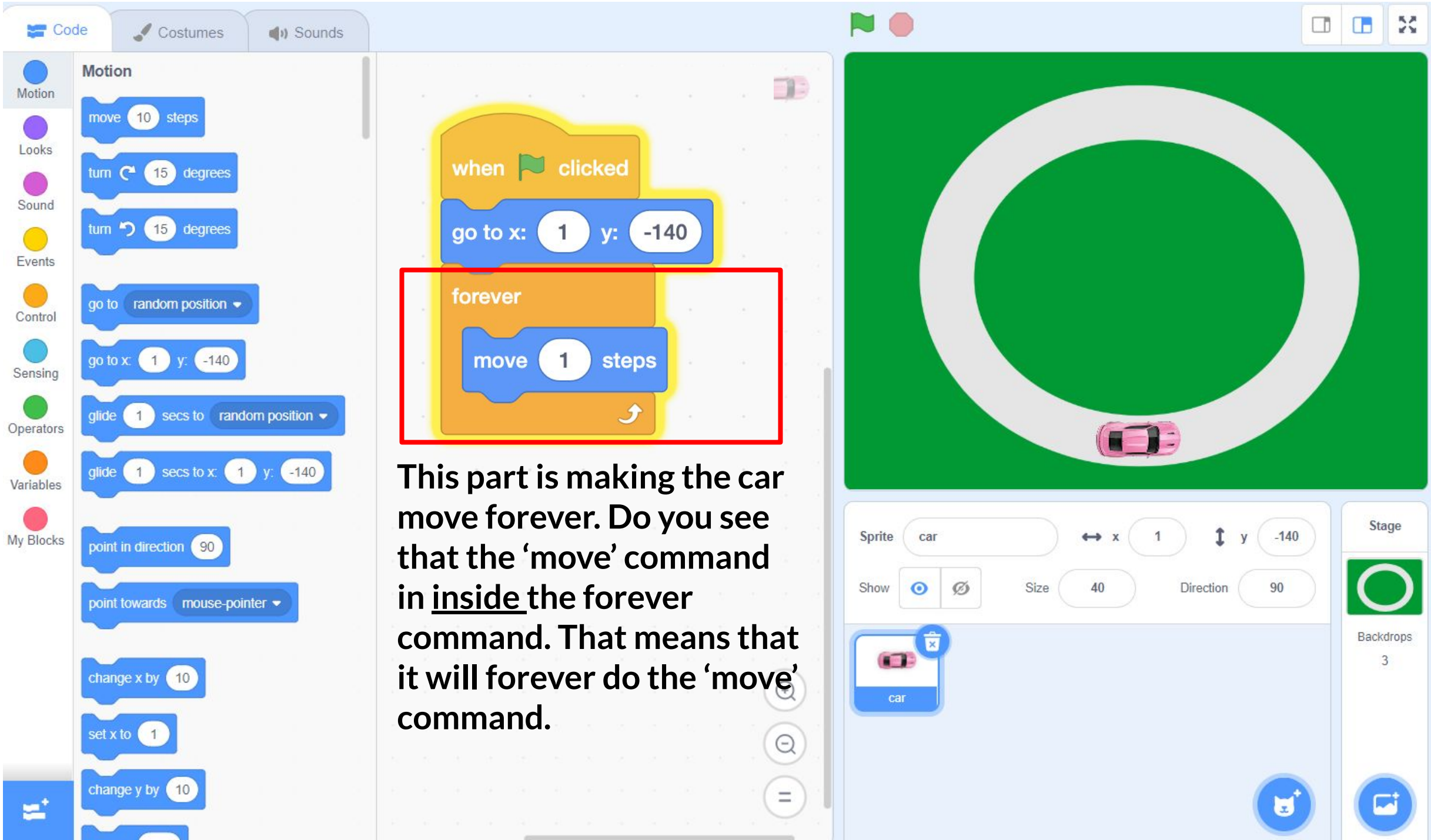

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
Click here to stop running your code
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
car
Stage
Backdrops
3

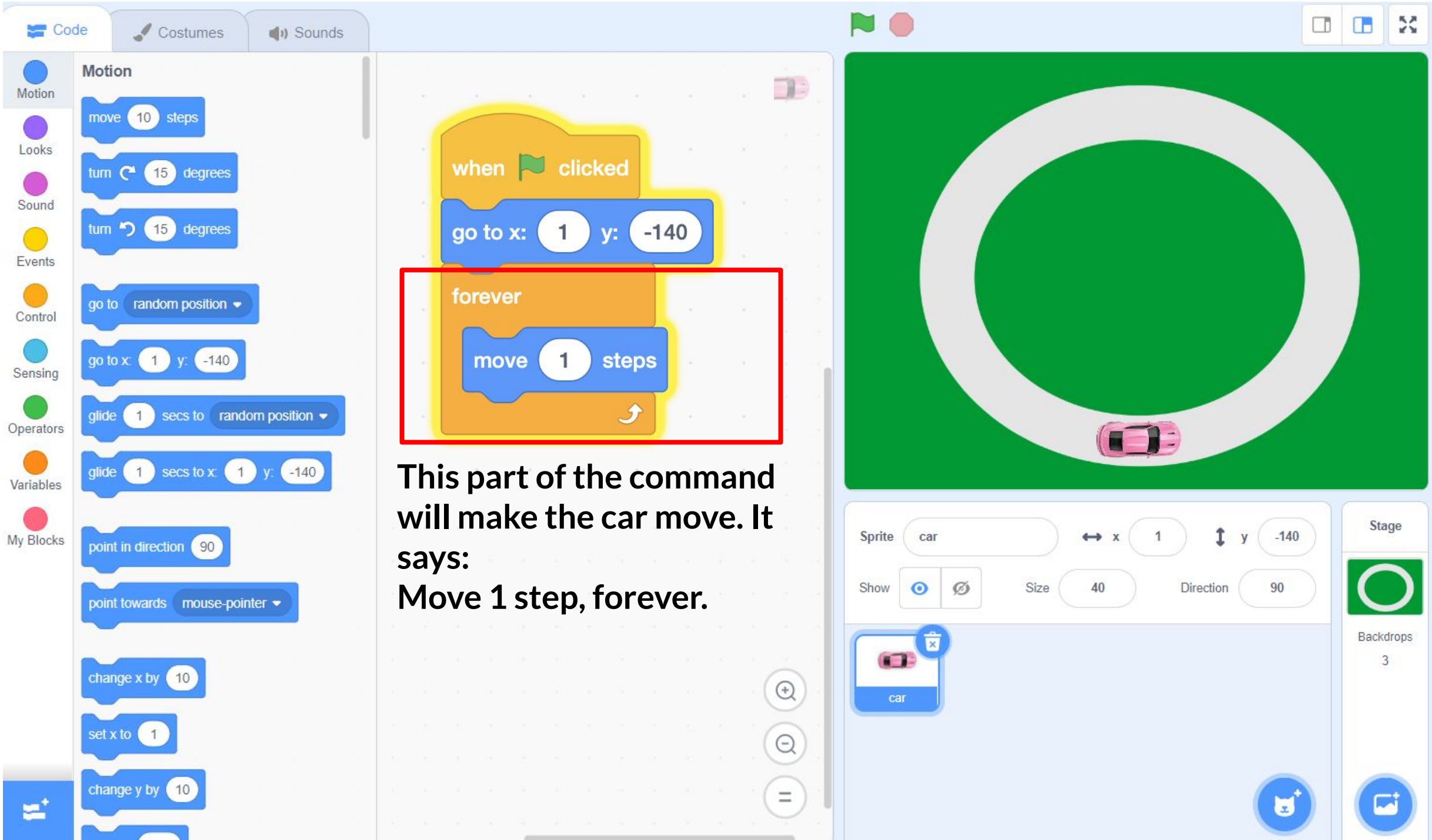

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
Let’s try to build something more difficult. Try to copy the following:
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
car
Stage
Backdrops
3

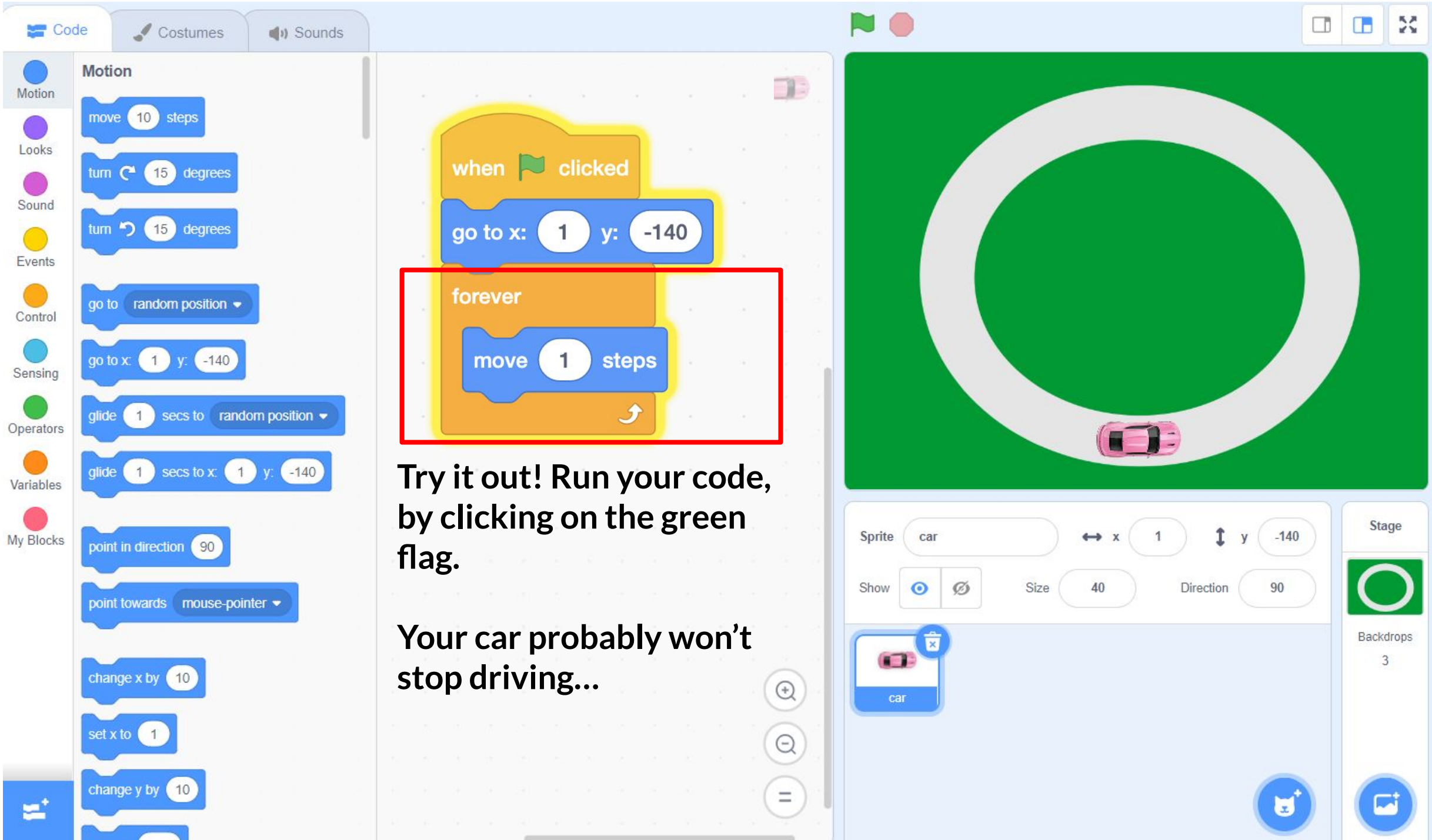

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
when clicked
go to x: 1 y: -140
forever
move 1 steps
Can you build this? The arrows show where you can find the commands
Sprite
car
x
-4
y
-136
Show
Size
40
Direction
90
car
Stage
Backdrops
3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 1 y: -140
glide 1 secs to random position
glide 1 secs to x: 1 y: -140
point in direction 90
point towards mouse-pointer
change x by 10
set x to 1
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
This part is making the car always start from this position.
Sprite car
x 1
y -140
Show
Size 40
Direction 90
car
Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 1 y: -140
glide 1 secs to random position
glide 1 secs to x: 1 y: -140
point in direction 90
point towards mouse-pointer
change x by 10
set x to 1
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
It says: When I click on the green flag, go to this position.
Sprite car
x 1
y -140
Show
Size 40
Direction 90
car
Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 1 y: -140
glide 1 secs to random position
glide 1 secs to x: 1 y: -140
point in direction 90
point towards mouse-pointer
change x by 10
set x to 1
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
This part is making the car move forever. Do you see that the 'move' command in inside the forever command. That means that it will forever do the 'move' command.
Sprite car
x 1
y -140
Show
Size 40
Direction 90
car
Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 1 y: -140
glide 1 secs to random position
glide 1 secs to x: 1 y: -140
point in direction 90
point towards mouse-pointer
change x by 10
set x to 1
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
This part of the command will make the car move. It says:
Move 1 step, forever.
Sprite car
x 1
y -140
Show
Size 40
Direction 90
car
Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 1 y: -140
glide 1 secs to random position
glide 1 secs to x: 1 y: -140
point in direction 90
point towards mouse-pointer
change x by 10
set x to 1
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
Try it out! Run your code, by clicking on the green flag.
Your car probably won't stop driving…
Sprite car
x 1
y -140
Show
Size 40
Direction 90
car
Stage
Backdrops 3

Code | Costumes | Sounds

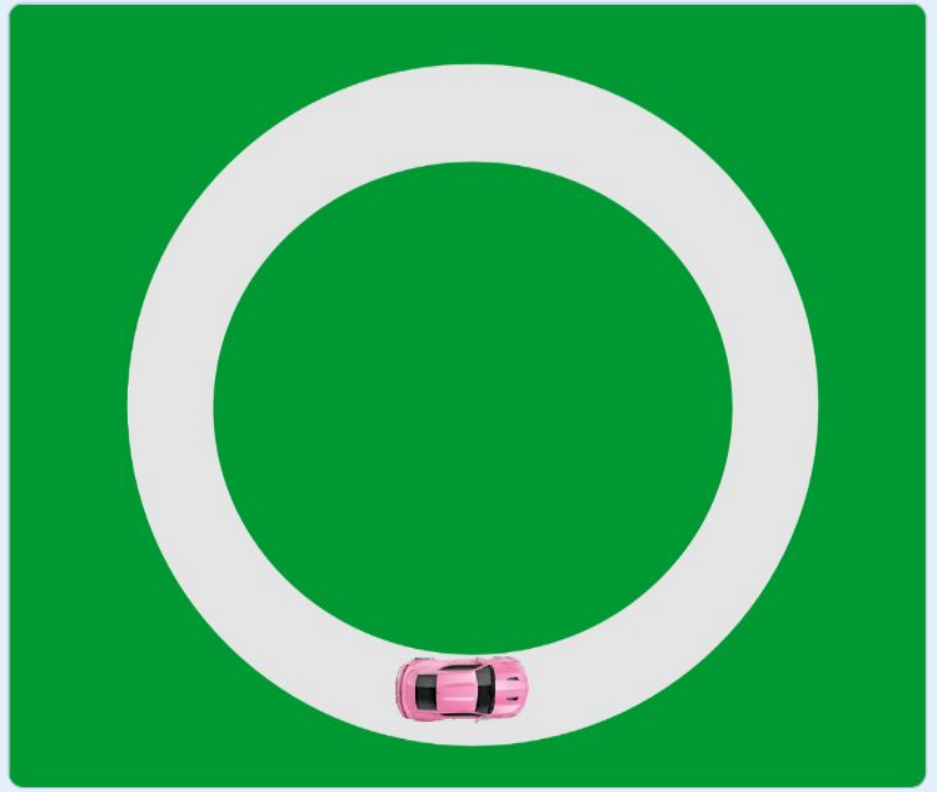
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Motion

move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4

To make it a self-driving car, that can follow the road. We need to add a sensor to it.

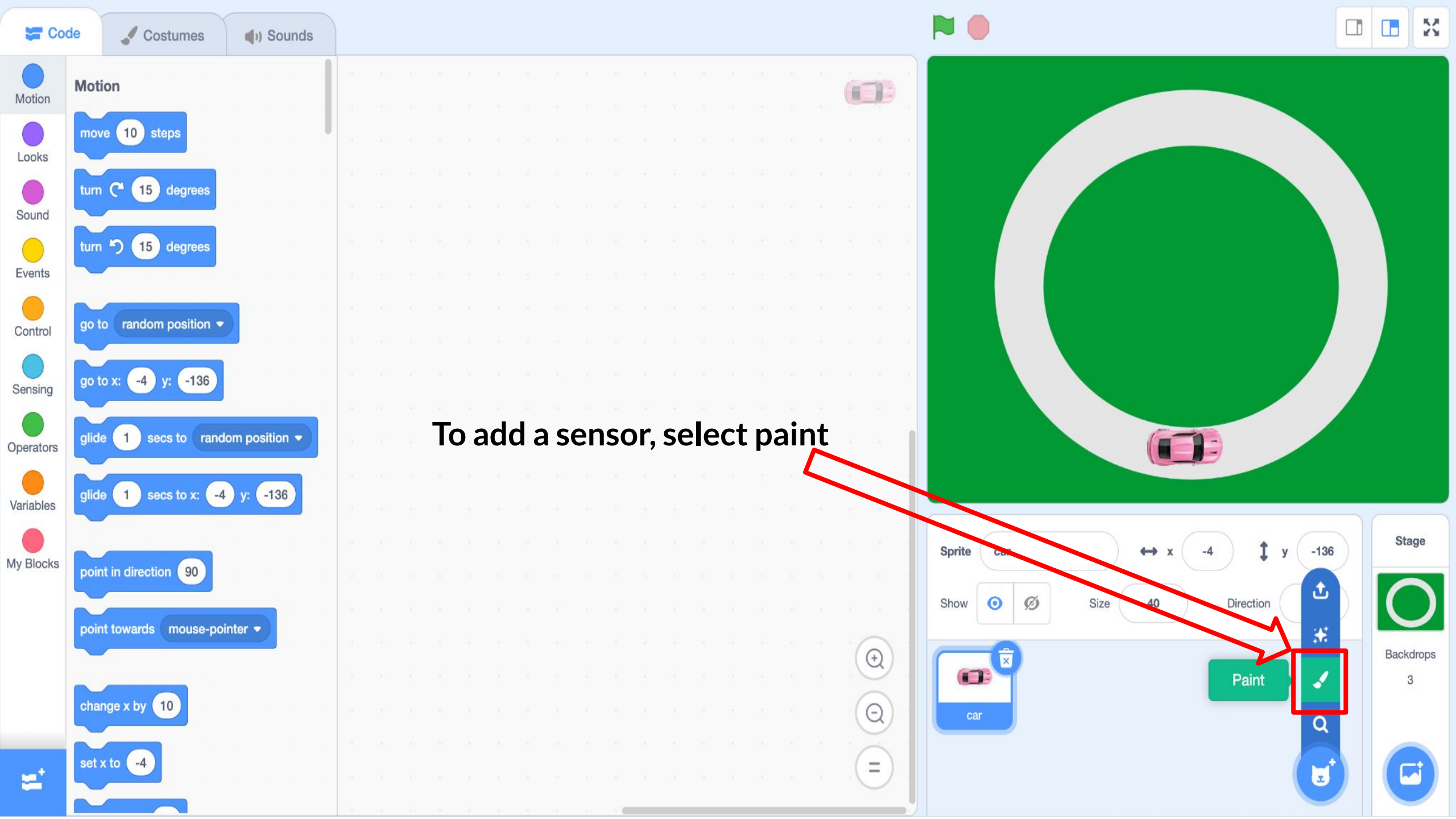
This sensor will tell the car where the road is.

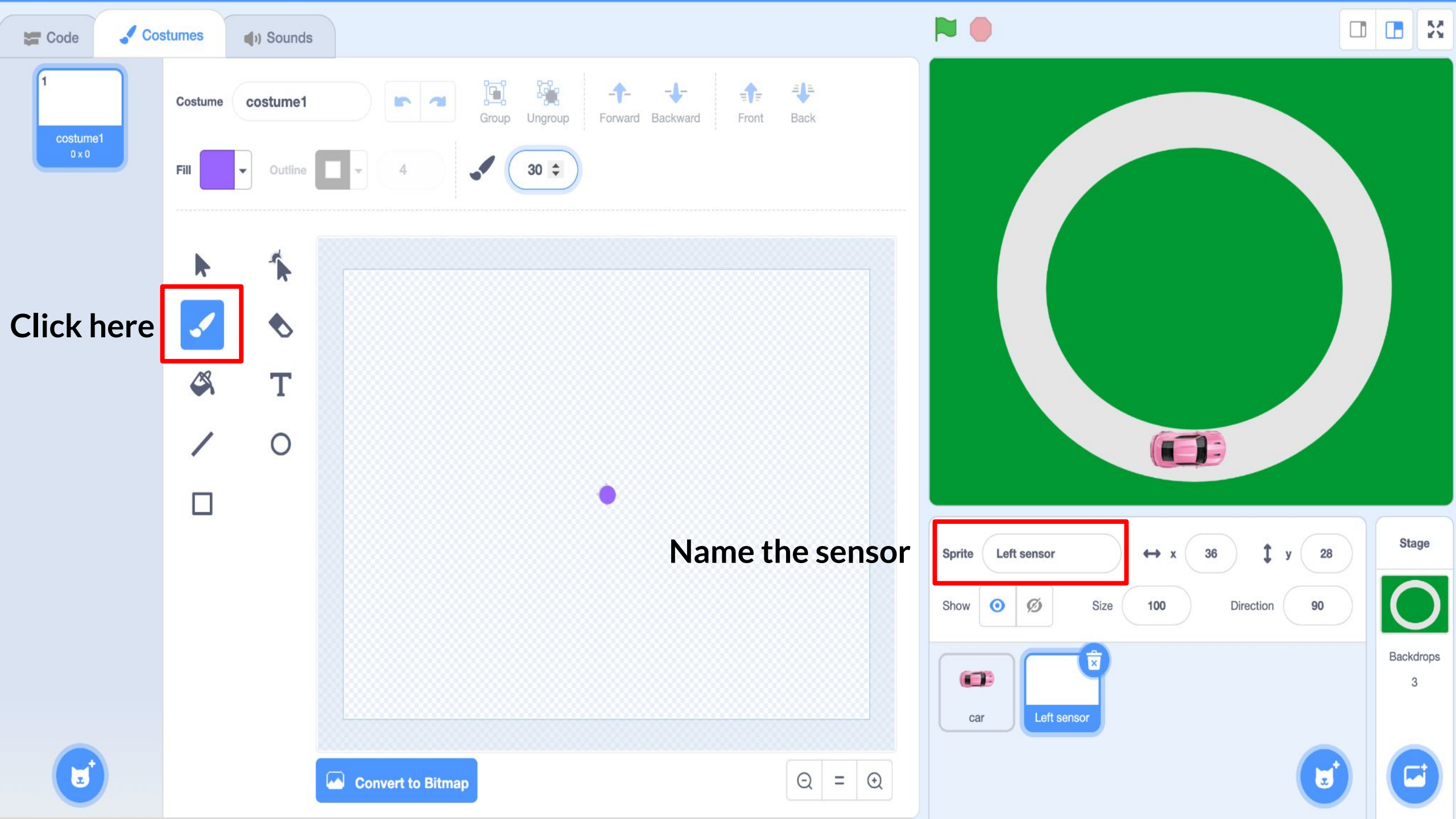


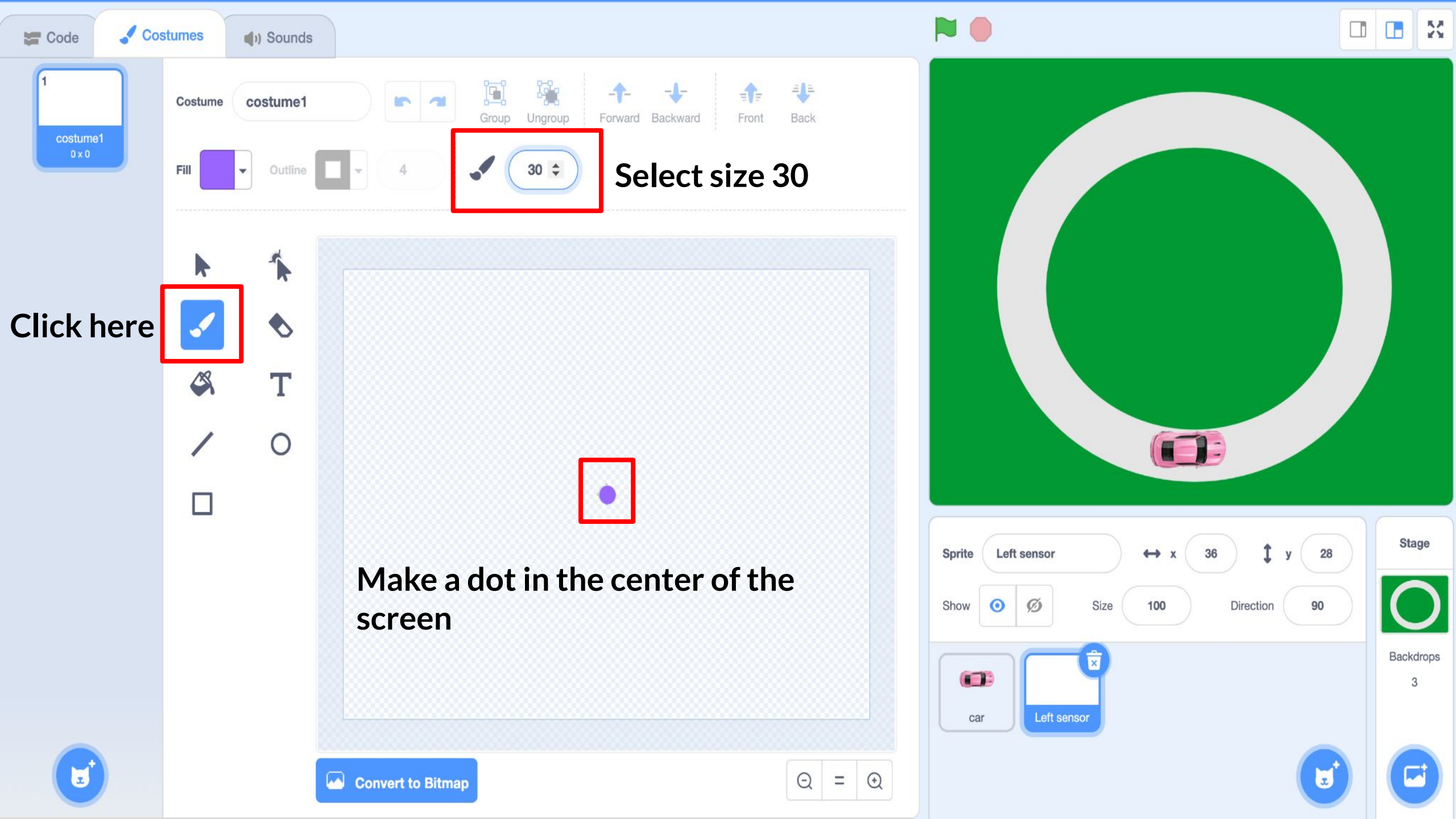
Sprite car x -4 y -136
Show Size 40 Direction 90

car

Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -4 y: -136
glide 1 secs to random position
glide 1 secs to x: -4 y: -136
point in direction 90
point towards mouse-pointer
change x by 10
set x to -4
To add a sensor, select paint
Sprite
x -4
y -136
Show
Size 40
Direction
car
Paint
Stage
Backdrops 3


Code
Costumes
Sounds
1
costume1
0 x 0
Costume
costume1
Group
Ungroup
Forward
Backward
Front
Back
Fill
Outline
4
30
Click here
Name the sensor
Convert to Bitmap
Sprite
Left sensor
x
36
y
28
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3


Code
Costumes
Sounds
1
costume1
0 x 0
Costume
costume1
Group
Ungroup
Forward
Backward
Front
Back
Fill
Outline
4
30
Select size 30
Click here
Make a dot in the center of the screen
Convert to Bitmap
Sprite
Left sensor
x
36
y
28
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3

Code | Costumes | Sounds

Go back to Code tab

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Events

when clicked

when space key pressed

when this sprite clicked

when backdrop switches to backdrop1

when loudness > 10

when I receive message1

broadcast message1

broadcast message1 and wait

Control

wait 1 seconds

when clicked

Drag the sensor on the top-left of the car

Sprite Left sensor x 37 y -118

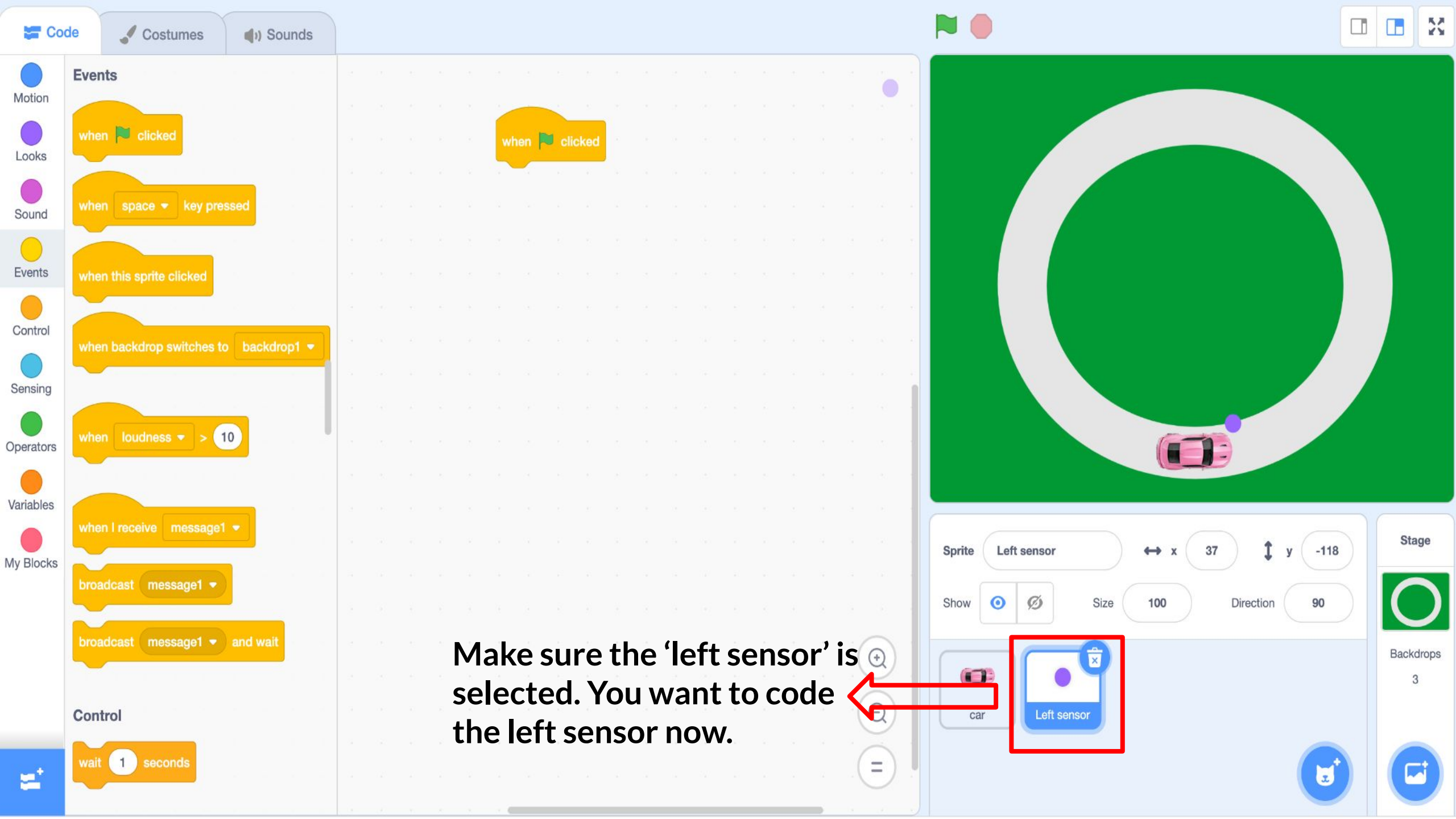
Show Size 100 Direction 90

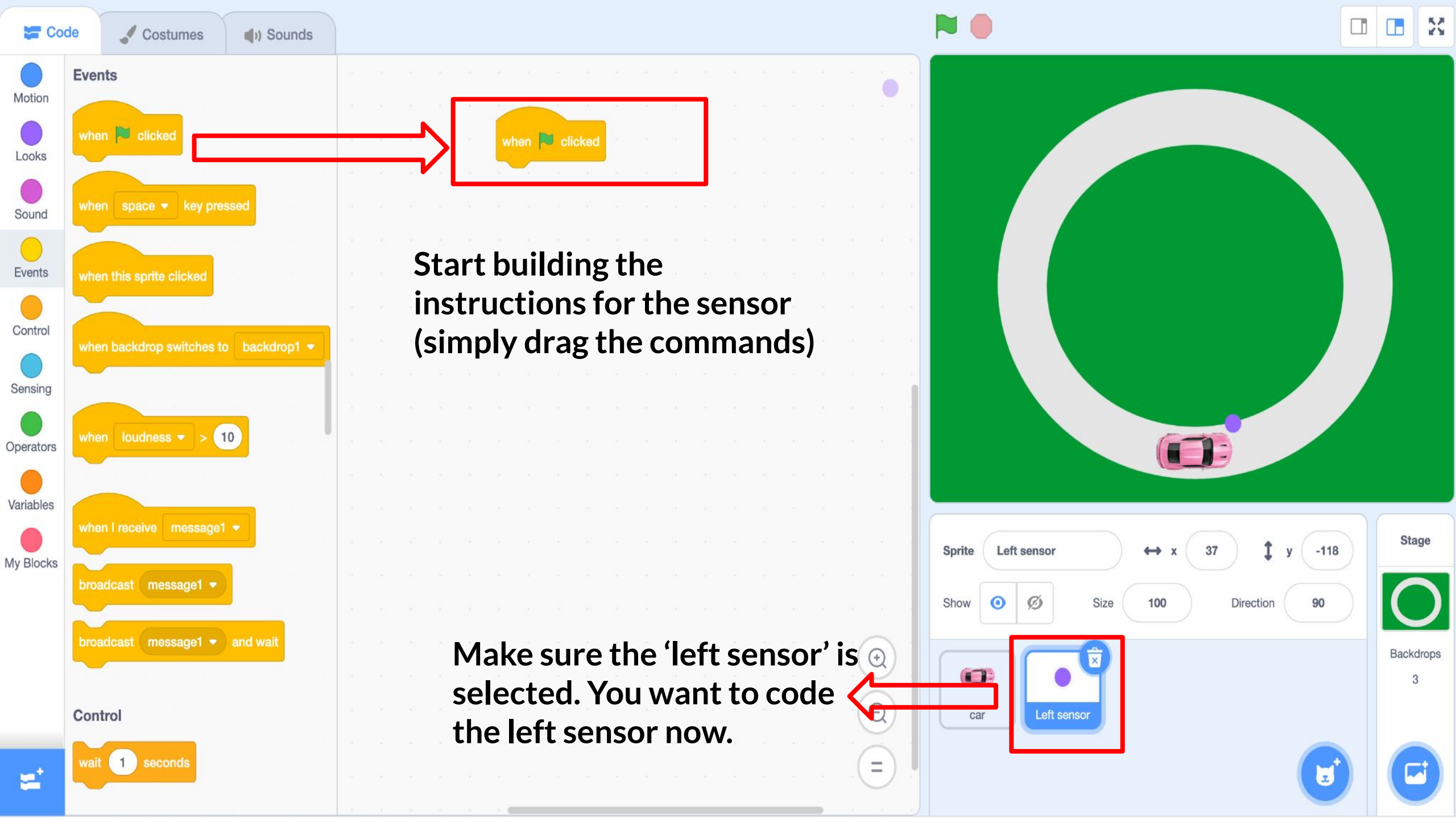
car

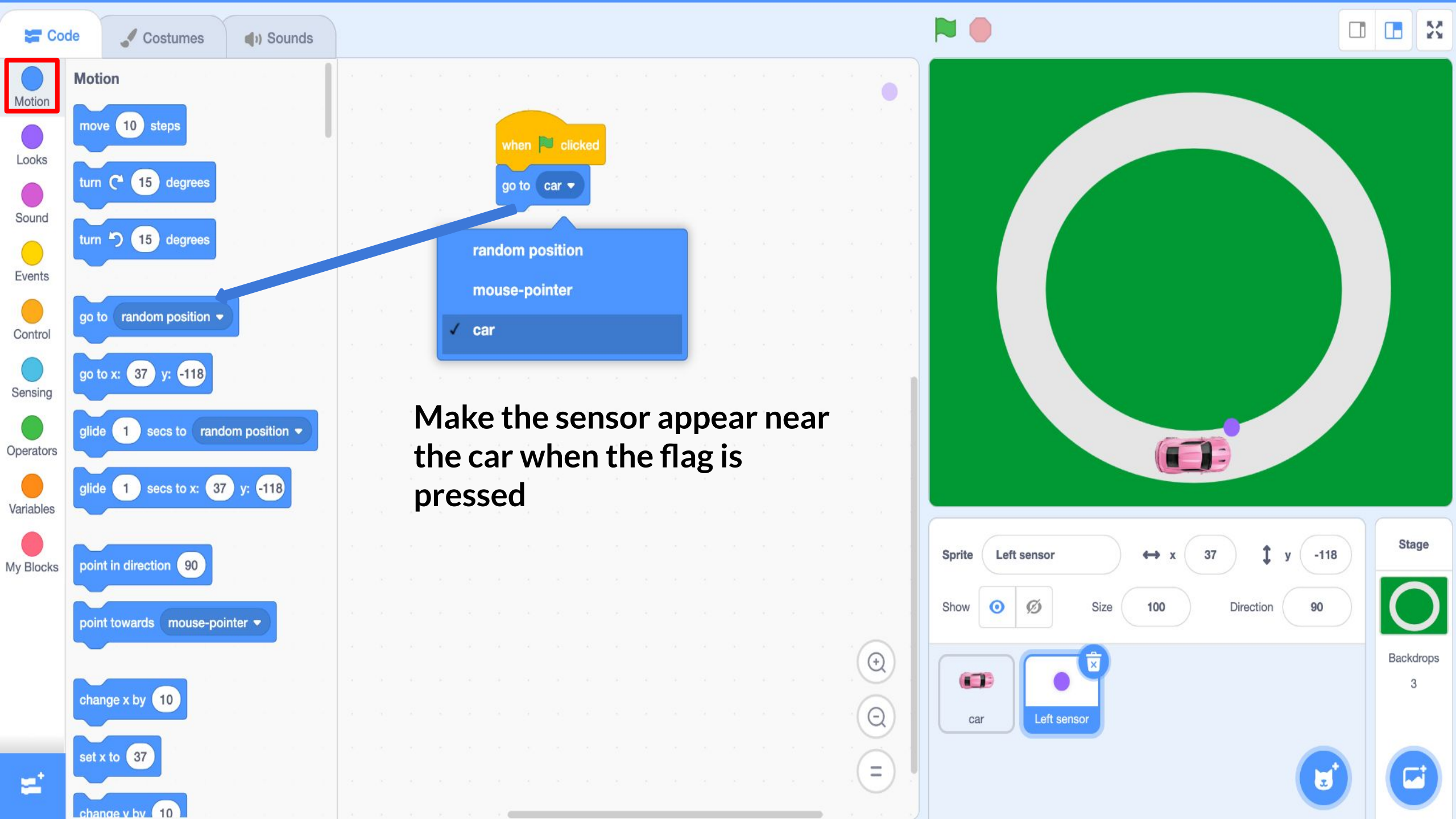
Left sensor

Stage

Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Events
when clicked
when space key pressed
when this sprite clicked
when backdrop switches to backdrop1
when loudness > 10
when I receive message1
broadcast message1
broadcast message1 and wait
Control
wait 1 seconds
when clicked
Make sure the 'left sensor' is selected. You want to code the left sensor now.
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Events
when clicked
when space key pressed
when this sprite clicked
when backdrop switches to backdrop1
when loudness > 10
when I receive message1
broadcast message1
broadcast message1 and wait
Control
wait 1 seconds
when clicked
Start building the instructions for the sensor (simply drag the commands)
Make sure the 'left sensor' is selected. You want to code the left sensor now.
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3

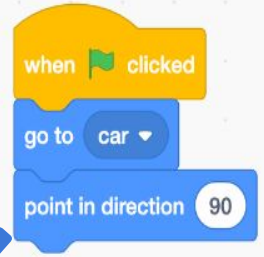

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 37 y: -118
glide 1 secs to random position
glide 1 secs to x: 37 y: -118
point in direction 90
point towards mouse-pointer
change x by 10
set x to 37
when clicked
go to car
random position
mouse-pointer
car
Make the sensor appear near the car when the flag is pressed
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3

Code | Costumes | Sounds

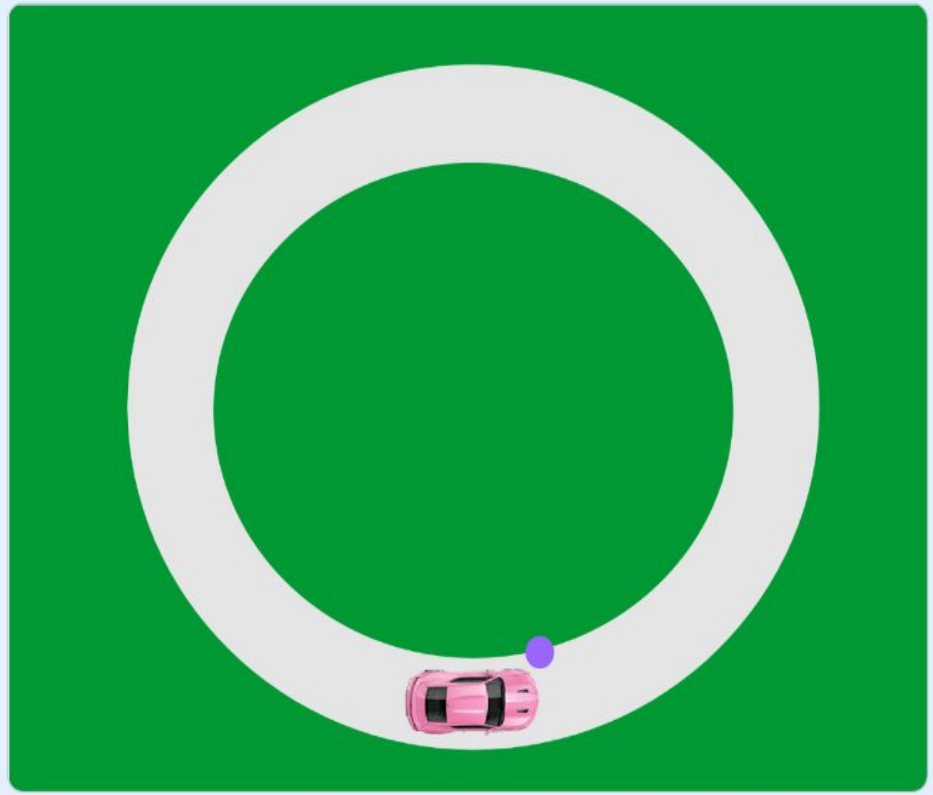
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Motion

- move 10 steps
- turn 15 degrees
- turn 15 degrees
- go to random position
- go to x: 37 y: -118
- glide 1 secs to random position
- glide 1 secs to x: 37 y: -118
- point in direction 90
- point towards mouse-pointer
- change x by 10
- set x to 37
- change y by 10



Start making the sensor follow the car



Sprite: Left sensor | x: 37 | y: -118
Show | Size: 100 | Direction: 90

car
Left sensor

Stage
Backdrops 3

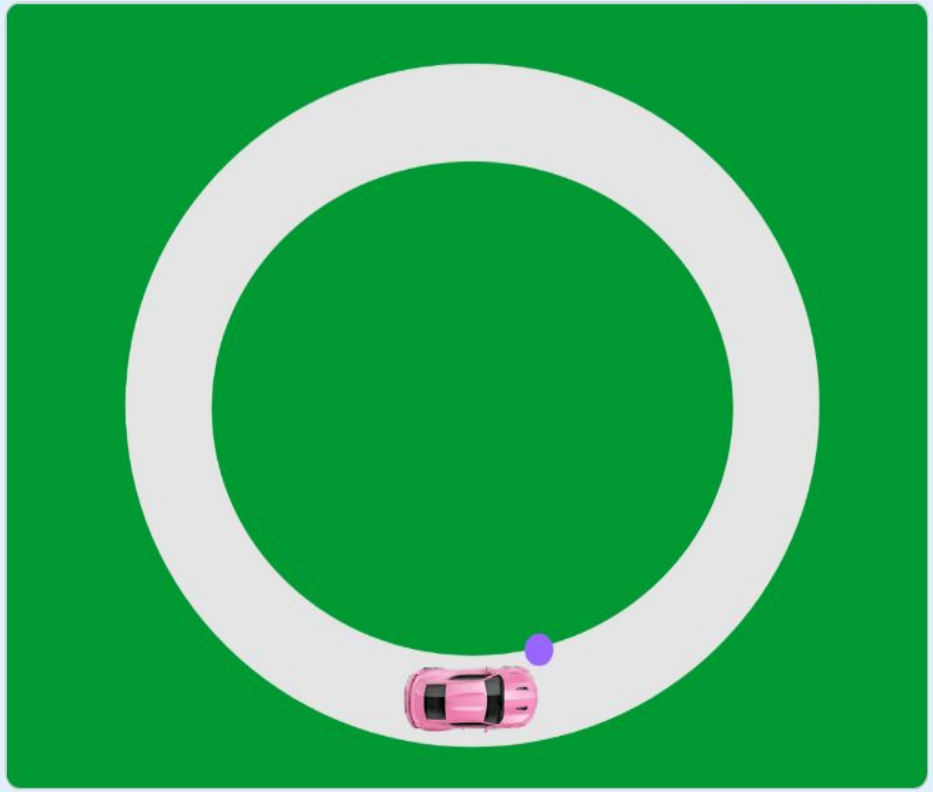
Code | Costumes | Sounds

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

mouse down?
mouse x
mouse y
set drag mode draggable
loudness
timer
reset timer
backdrop # of Stage
current year
days since 2000
username

Operators

when clicked
go to car
point in direction backdrop # of Stage



Sprite Left sensor x 37 y -118
Show Size 100 Direction 90

car
Left sensor

Stage
Backdrops 3

Code | Costumes | Sounds

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

mouse down?
mouse x
mouse y

set drag mode draggable

loudness

timer
reset timer

backdrop # of Stage

current year
days since 2000

username

Operators

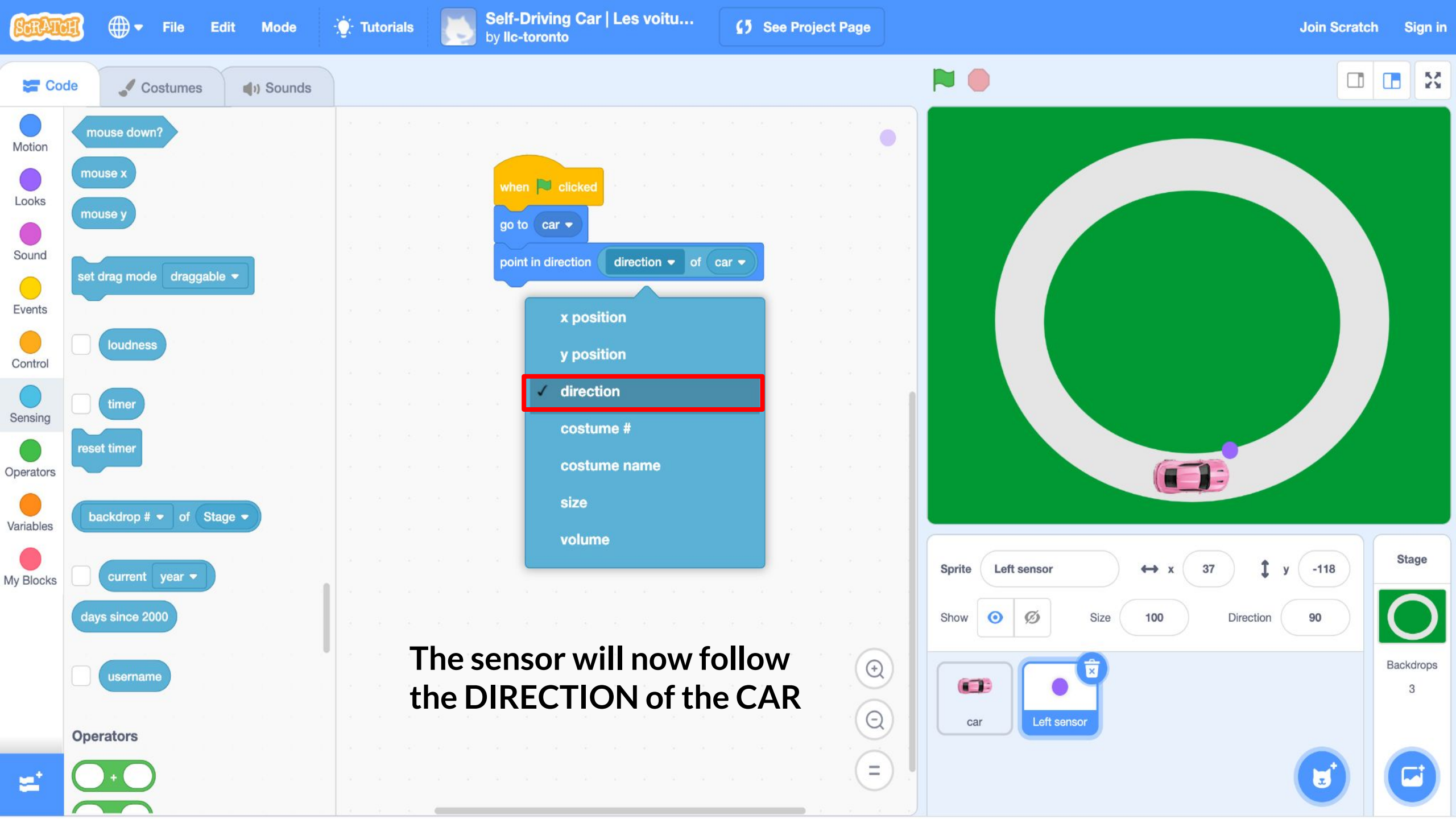
when clicked
go to car
point in direction x position of car

Stage
✓ car

Sprite Left sensor x 37 y -118
Show Size 100 Direction 90

car
Left sensor

Stage
Backdrops 3


File
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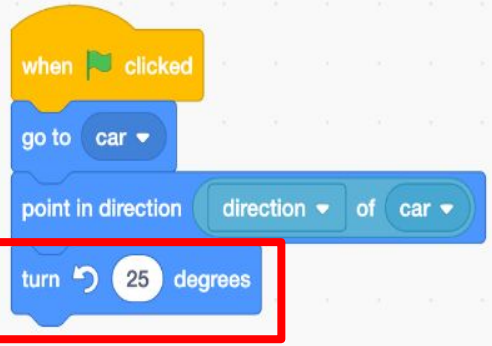
Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
mouse down?
mouse x
mouse y
set drag mode draggable
loudness
timer
reset timer
backdrop # of Stage
current year
days since 2000
username
Operators
when clicked
go to car
point in direction direction of car
x position
y position
direction
costume #
costume name
size
volume
The sensor will now follow the DIRECTION of the CAR
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3

Code | Costumes | Sounds

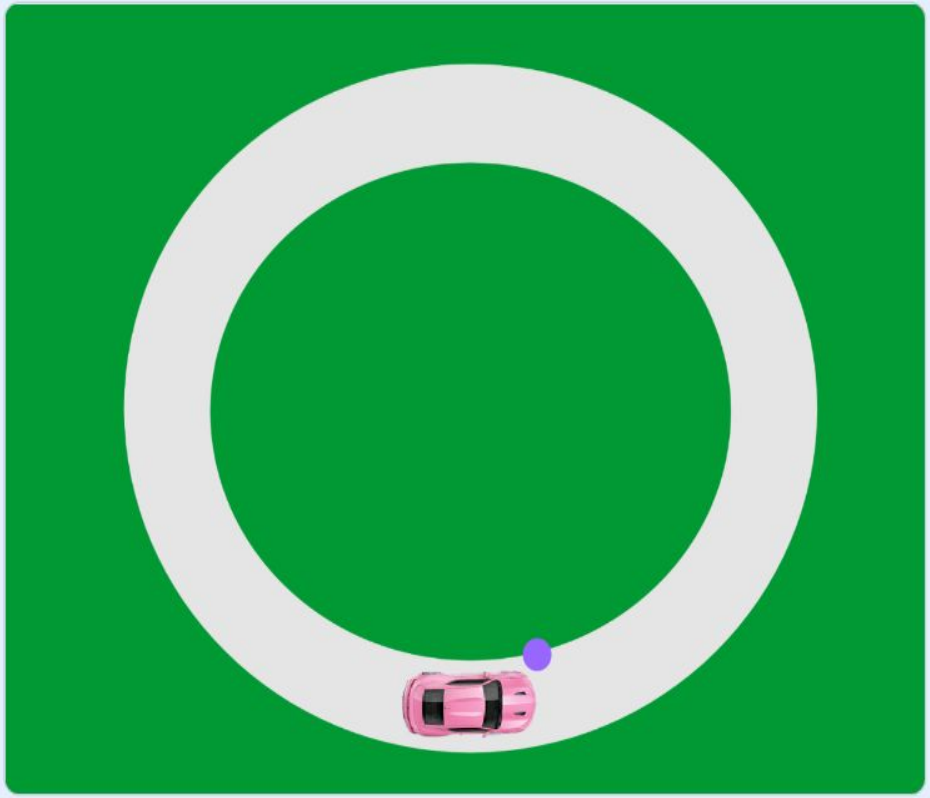
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Motion

- move 10 steps
- turn 15 degrees
- turn 15 degrees
- go to random position
- go to x: 37 y: -118
- glide 1 secs to random position
- glide 1 secs to x: 37 y: -118
- point in direction 90
- point towards mouse-pointer
- change x by 10
- set x to 37
- change y by 10



Place the sensor of the left side of the car



Sprite: Left sensor | x: 37 | y: -118
Show | Size: 100 | Direction: 90

car
Left sensor

Stage
Backdrops 3

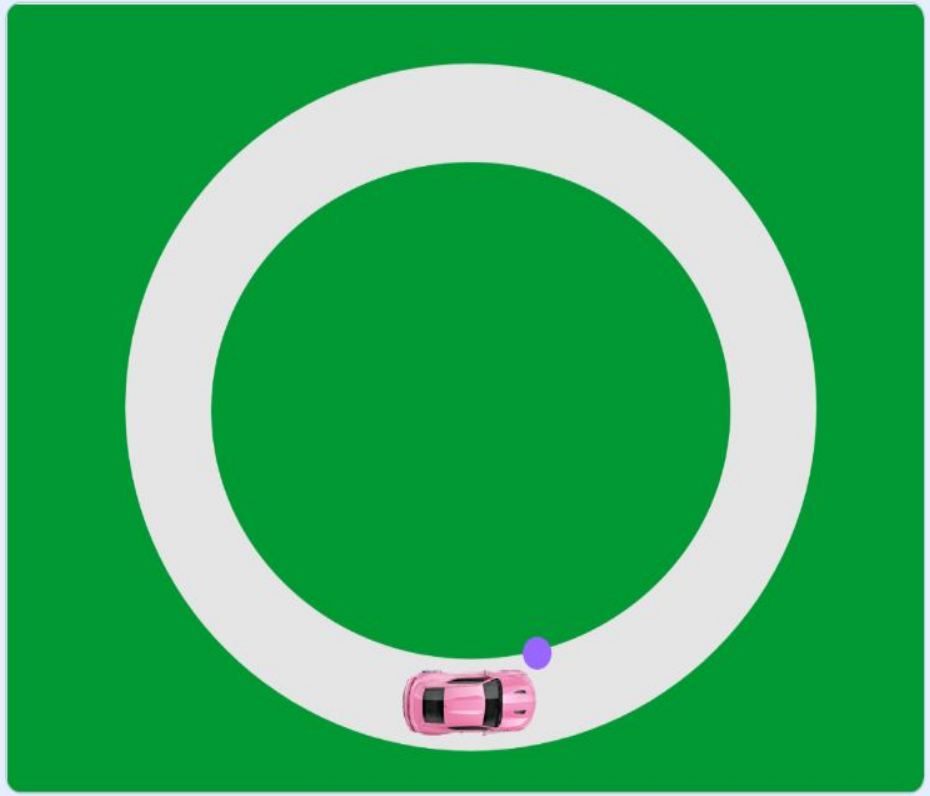
Code | Costumes | Sounds

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Motion

- move 10 steps
- turn 15 degrees
- turn 15 degrees
- go to random position
- go to x: 37 y: -118
- glide 1 secs to random position
- glide 1 secs to x: 37 y: -118
- point in direction 90
- point towards mouse-pointer
- change x by 10
- set x to 37
- change y by 10

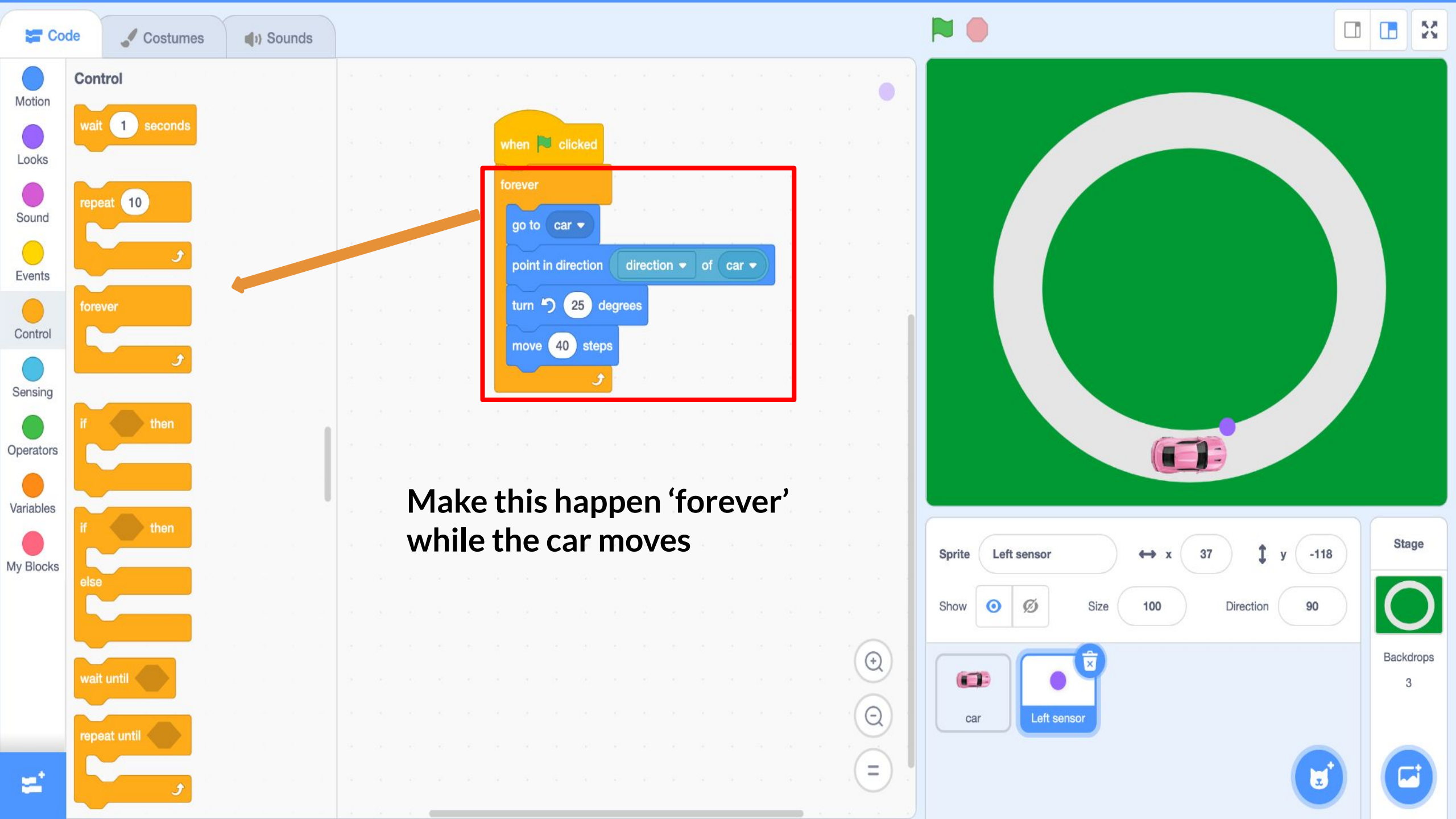
Place the sensor in the front of the car

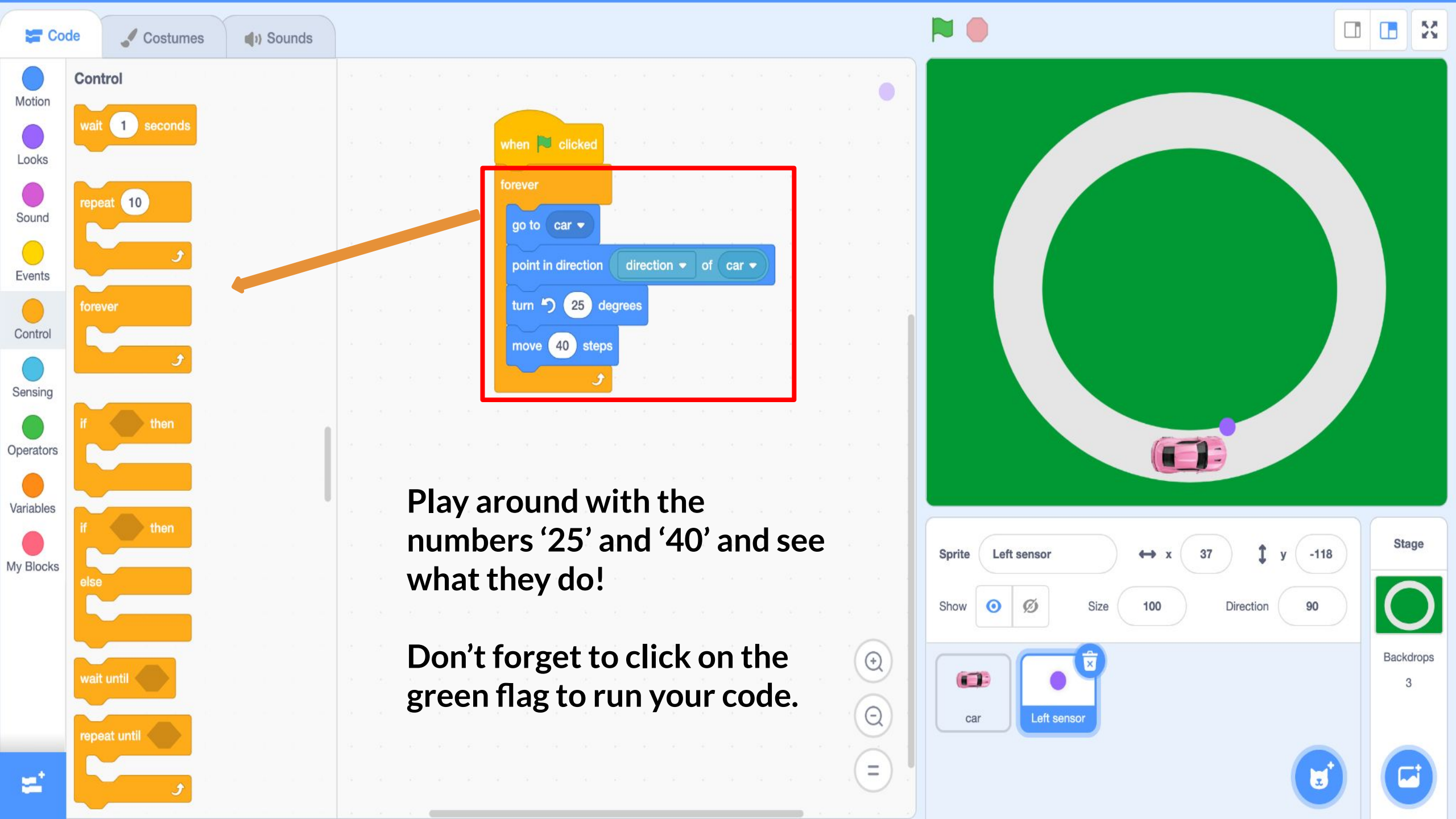


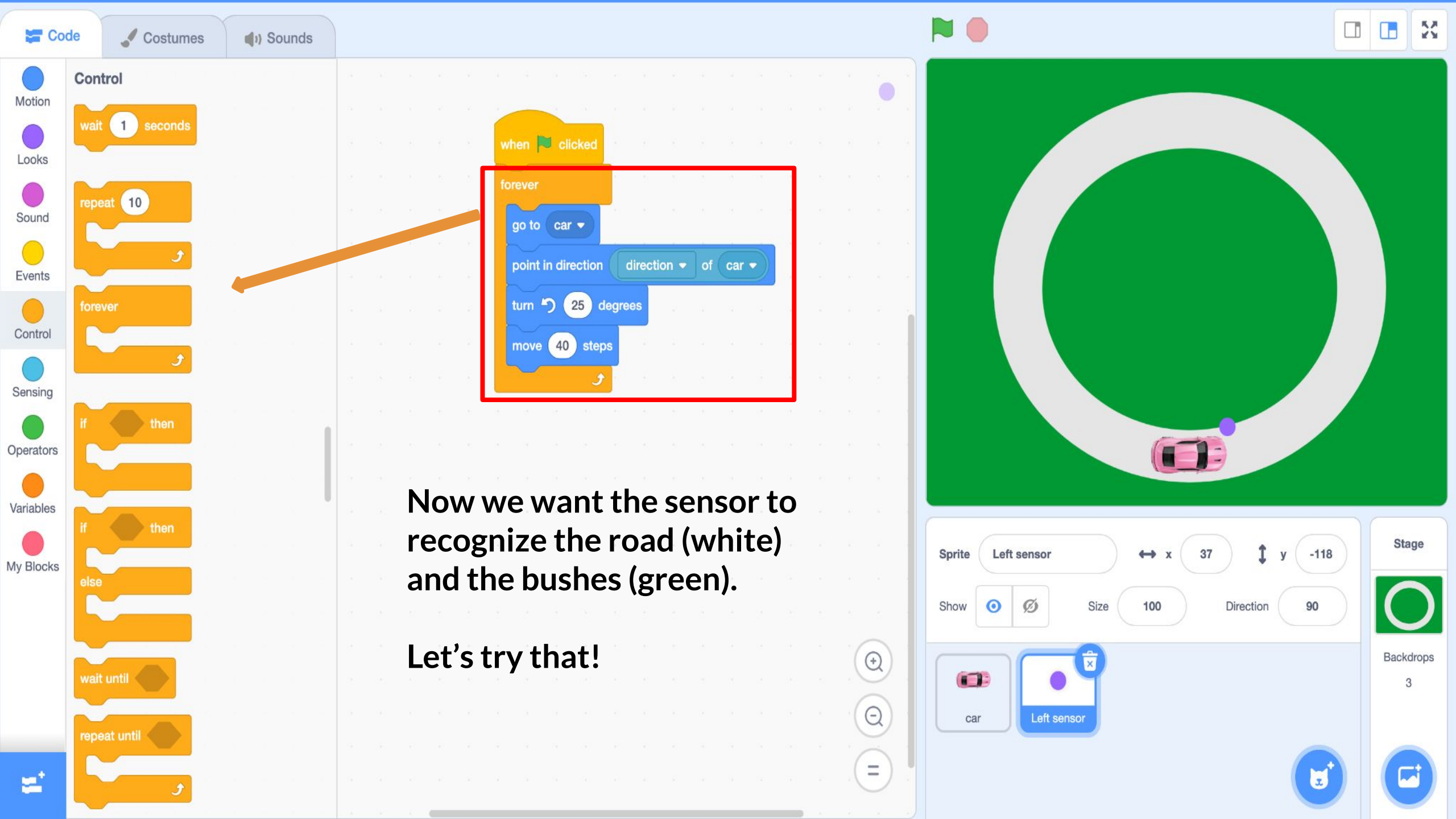
Sprite: Left sensor | x: 37 | y: -118
Show | Size: 100 | Direction: 90

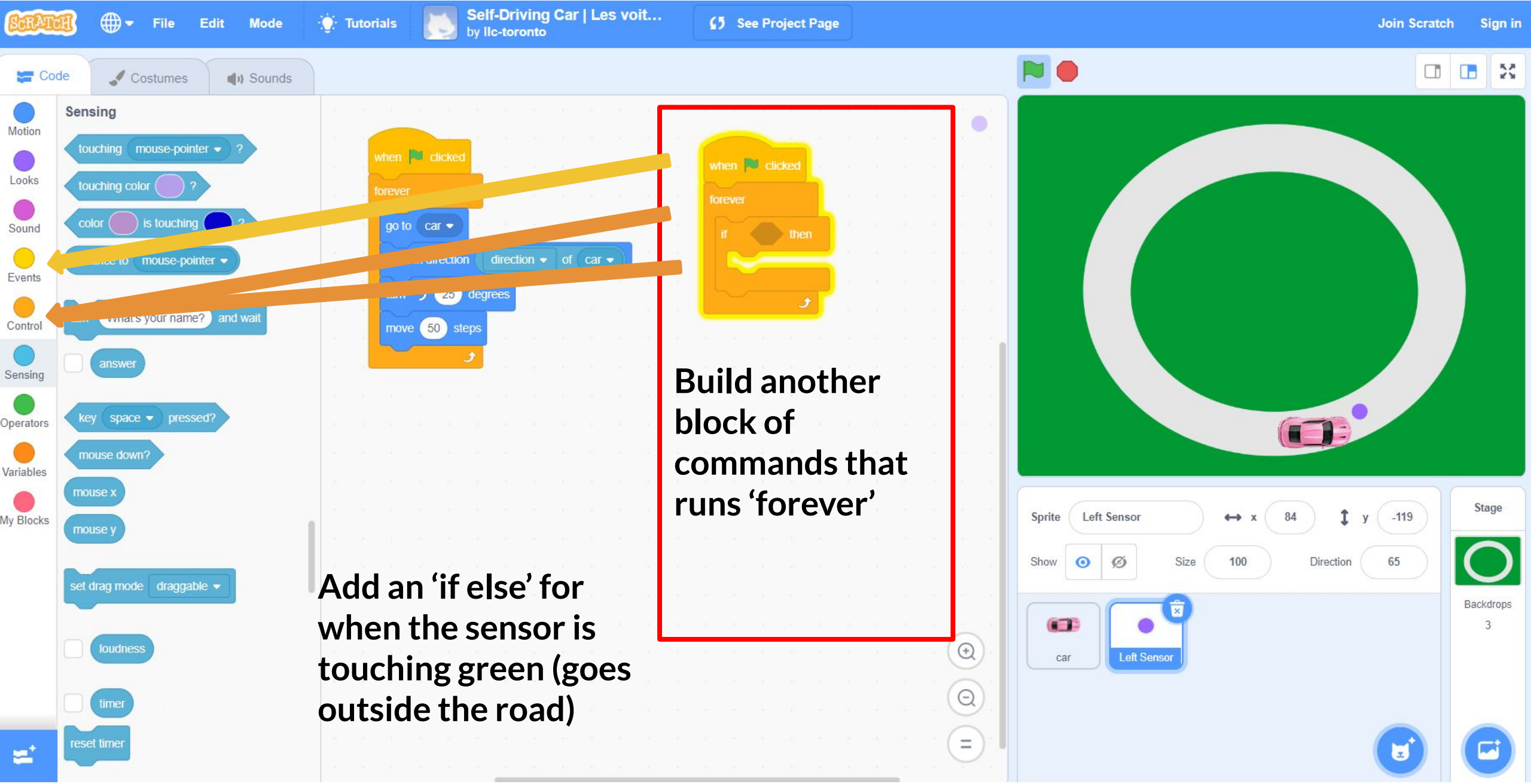
car | Left sensor

Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Control
wait 1 seconds
repeat 10
forever
if then
if then
else
wait until
repeat until
when clicked
forever
go to car
point in direction direction of car
turn 25 degrees
move 40 steps
Make this happen ‘forever’ while the car moves
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Control
wait 1 seconds
repeat 10
forever
if then
if then
else
wait until
repeat until
when clicked
forever
go to car
point in direction direction of car
turn 25 degrees
move 40 steps
Play around with the numbers ‘25’ and ‘40’ and see what they do!
Don’t forget to click on the green flag to run your code.
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Control
wait 1 seconds
repeat 10
forever
if then
if then
else
wait until
repeat until
when clicked
forever
go to car
point in direction direction of car
turn 25 degrees
move 40 steps
Now we want the sensor to recognize the road (white) and the bushes (green).
Let's try that!
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
car
Left sensor
Stage
Backdrops
3


File
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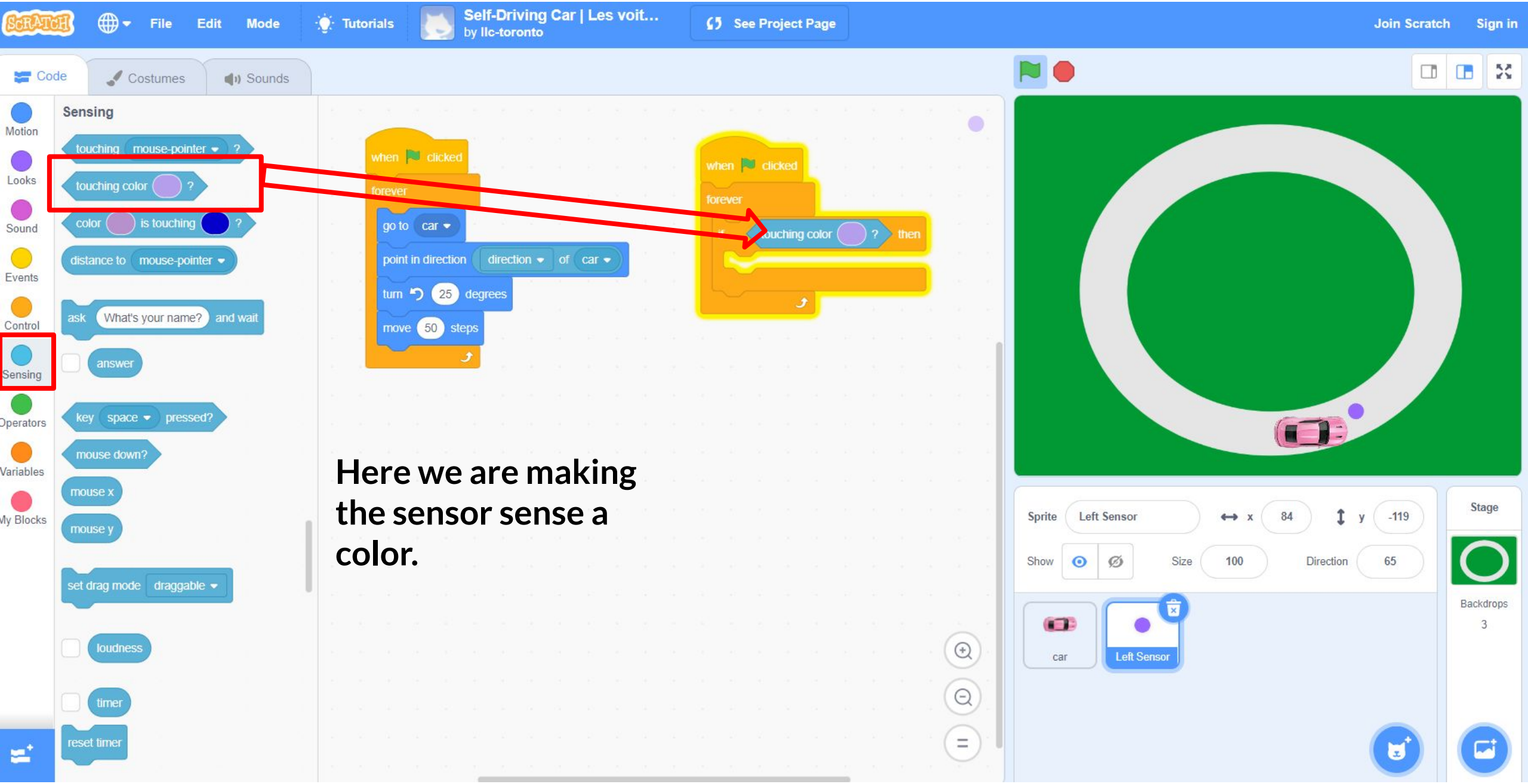
Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Sensing
touching mouse-pointer ?
touching color ?
color is touching ?
mouse-pointer
What's your name? and wait
answer
key space pressed?
mouse down?
mouse x
mouse y
set drag mode draggable
loudness
timer
reset timer
when clicked
forever
go to car
direction of car
degrees
move 50 steps
when clicked
forever
if then
Build another block of commands that runs 'forever'
Add an 'if else' for when the sensor is touching green (goes outside the road)
Sprite
Left Sensor
x
84
y
-119
Show
Size
100
Direction
65
Stage
Backdrops
3
car
Left Sensor


File
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Self-Driving Car | Les voit...
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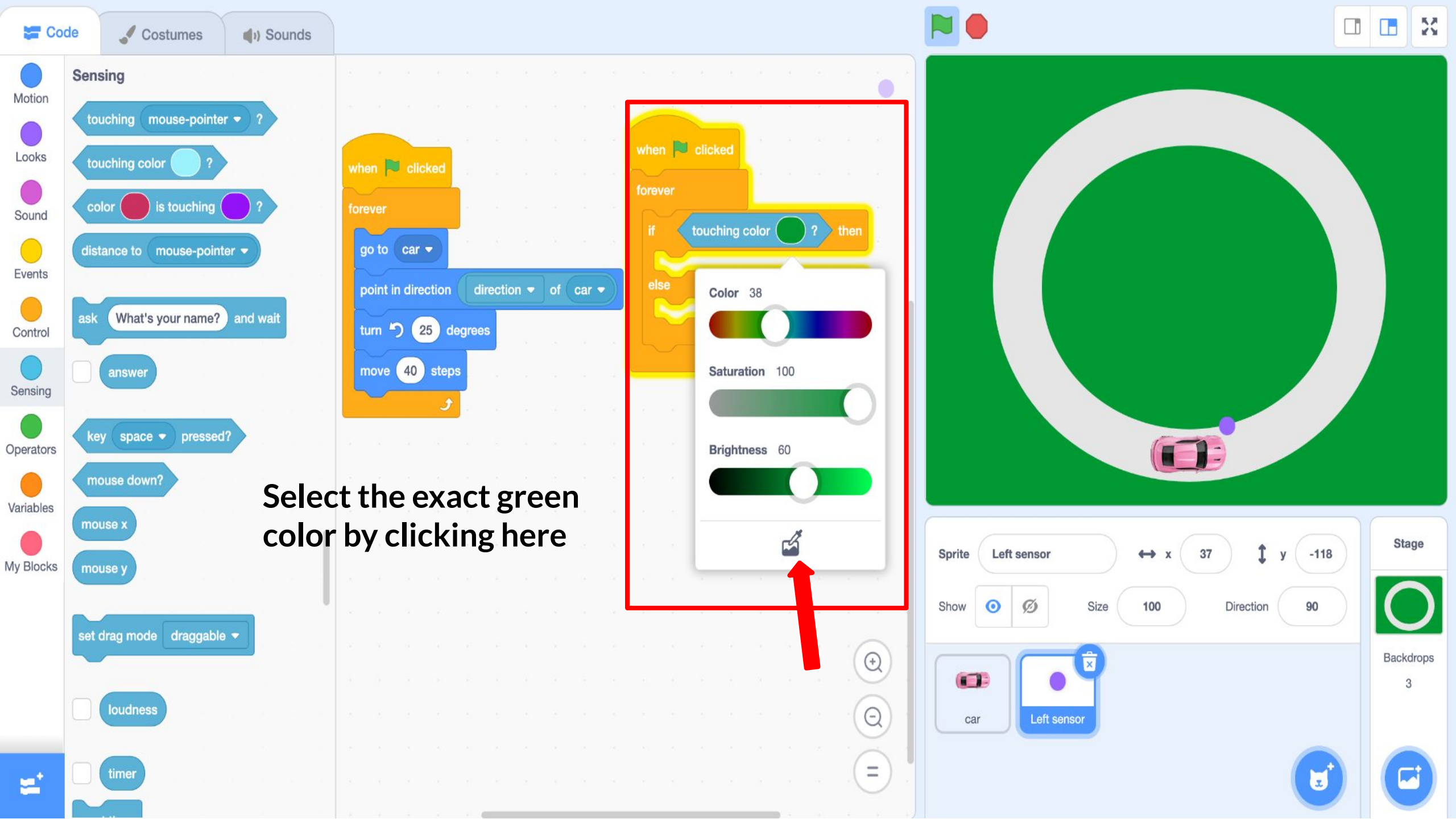
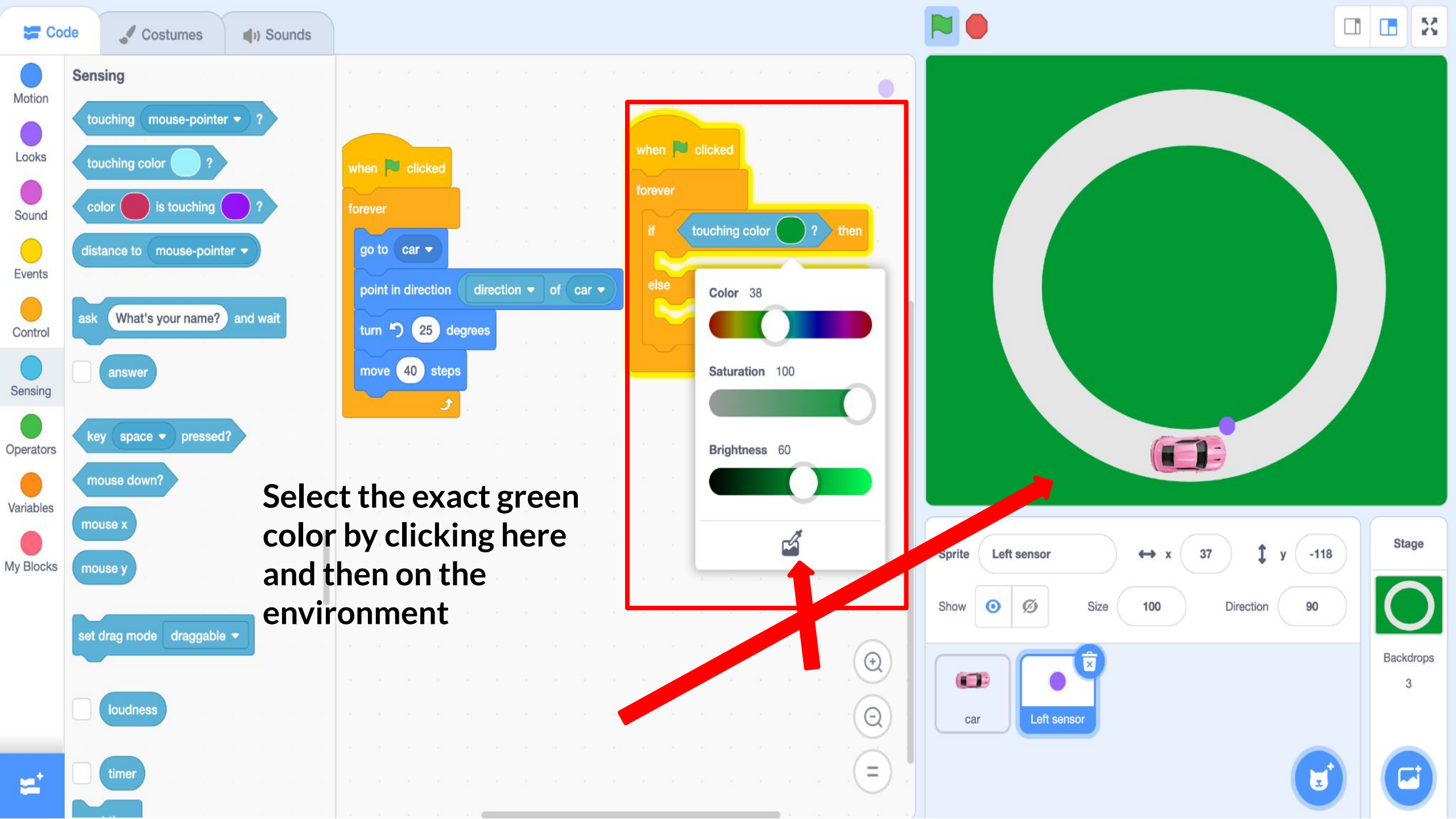
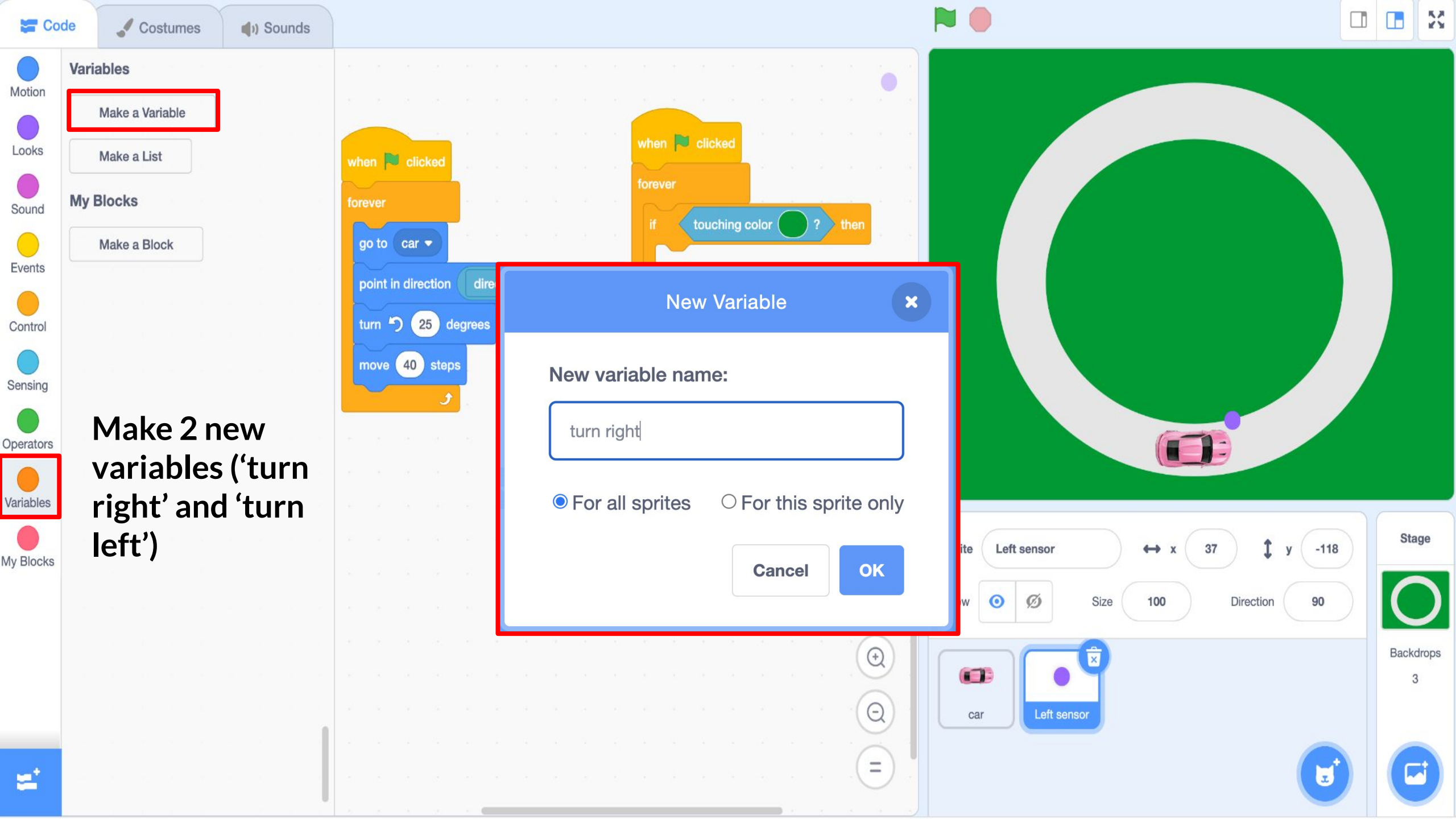
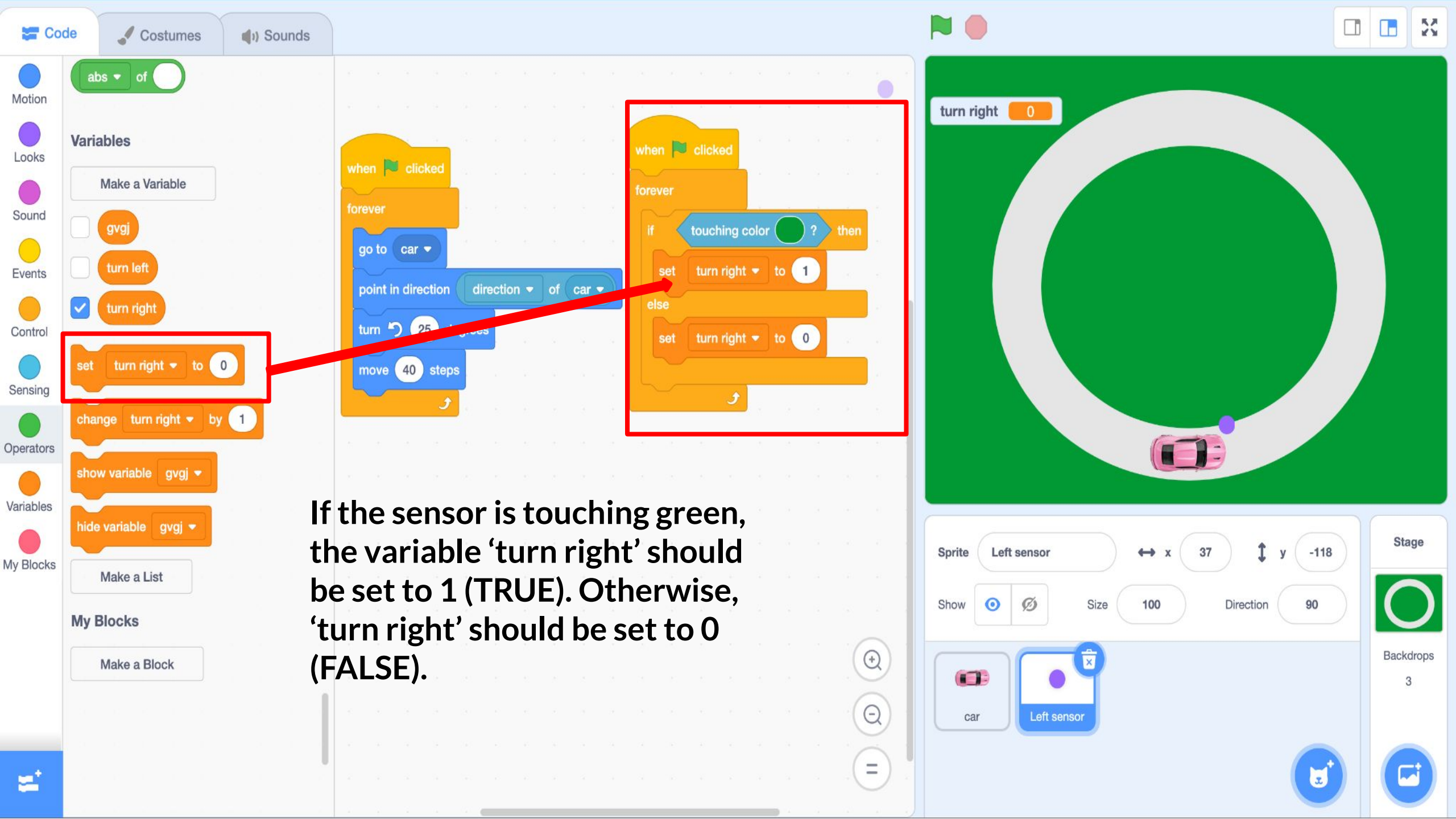
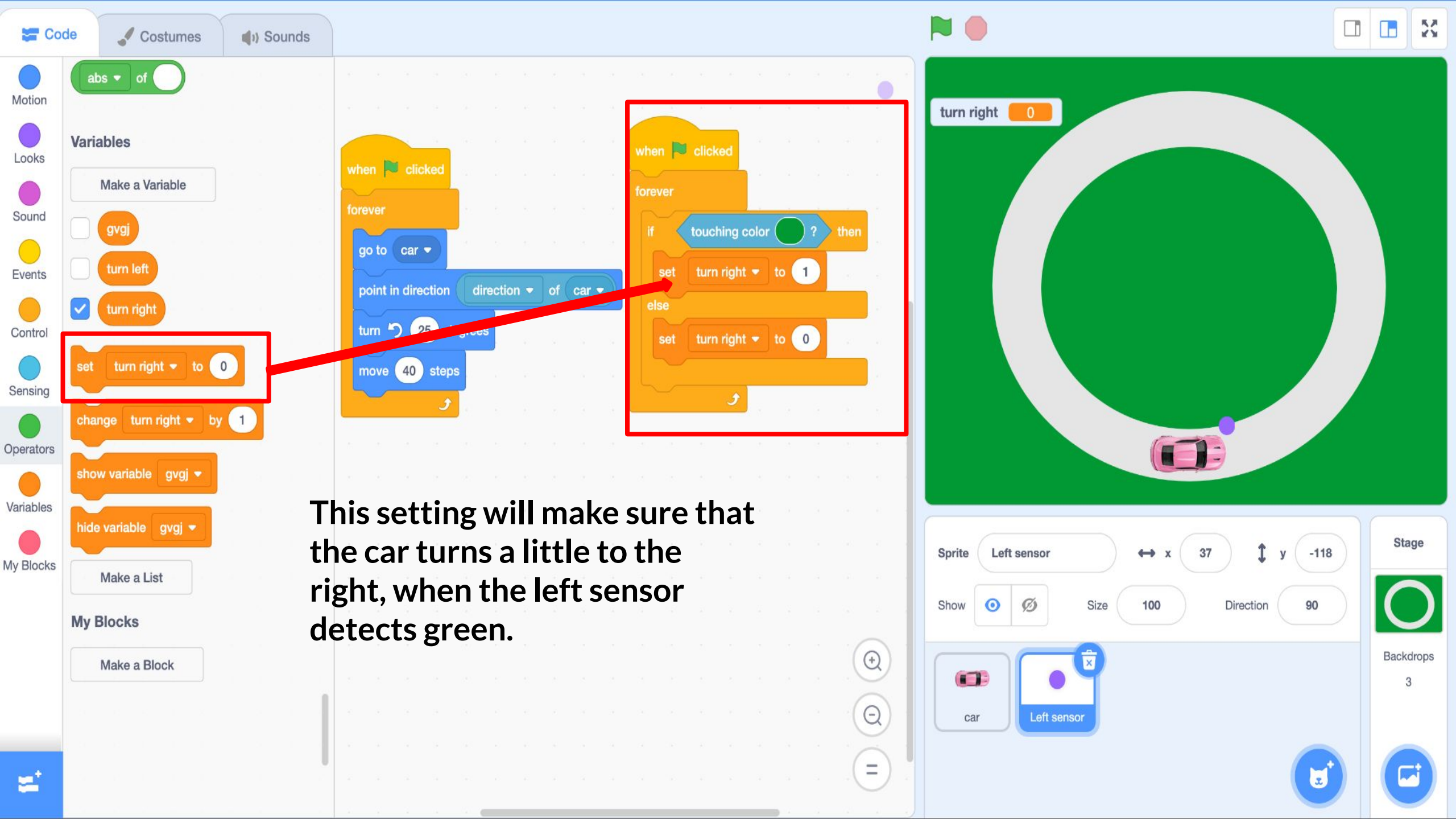
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Sensing
touching mouse-pointer ?
touching color ?
color is touching ?
distance to mouse-pointer
ask What's your name? and wait
answer
key space pressed?
mouse down?
mouse x
mouse y
set drag mode draggable
loudness
timer
reset timer
when clicked
forever
go to car
point in direction direction of car
turn 25 degrees
move 50 steps
when clicked
forever
touching color ? then
Here we are making the sensor sense a color.
Sprite
Left Sensor
x
84
y
-119
Show
Size
100
Direction
65
Stage
Backdrops
3
car
Left Sensor

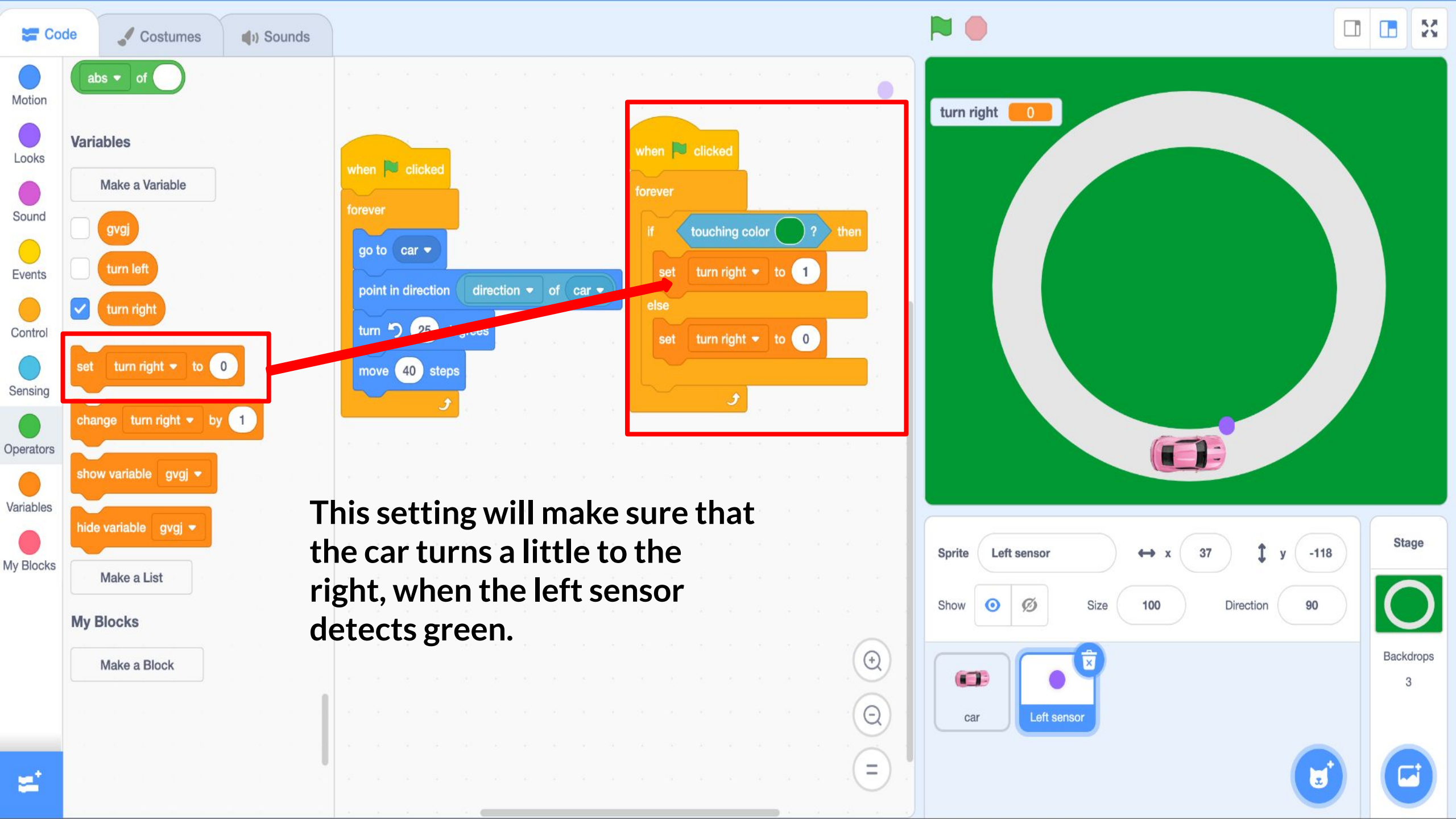

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Sensing
touching mouse-pointer ?
touching color ?
color is touching ?
distance to mouse-pointer
ask What's your name? and wait
answer
key space pressed?
mouse down?
mouse x
mouse y
set drag mode draggable
loudness
timer
when clicked
forever
go to car
point in direction direction of car
turn 25 degrees
move 40 steps
when clicked
forever
if touching color ? then
else
Color 38
Saturation 100
Brightness 60
Select the exact green color by clicking here
Sprite Left sensor
x 37
y -118
Show
Size 100
Direction 90
car
Left sensor
Stage
Backdrops 3

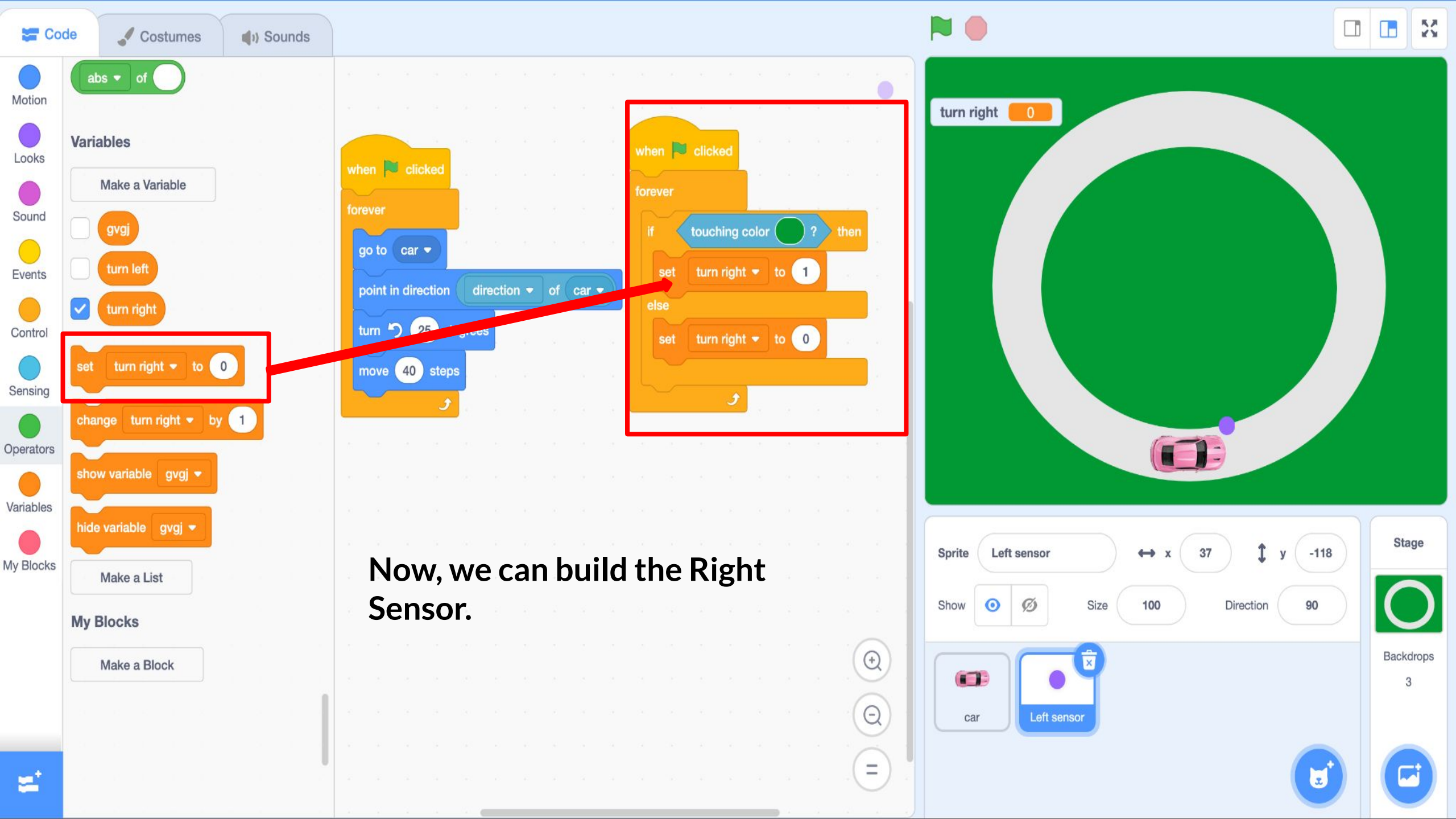

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Sensing
touching mouse-pointer ?
touching color ?
color is touching ?
distance to mouse-pointer
ask What's your name? and wait
answer
key space pressed?
mouse down?
mouse x
mouse y
set drag mode draggable
loudness
timer
when clicked
forever
go to car
point in direction direction of car
turn 25 degrees
move 40 steps
when clicked
forever
if touching color ? then
else
Color 38
Saturation 100
Brightness 60
Select the exact green color by clicking here and then on the environment
Sprite Left sensor
x 37
y -118
Show
Size 100
Direction 90
car
Left sensor
Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Variables
Make a Variable
Make a List
My Blocks
Make a Block
when clicked
forever
go to car
point in direction
turn 25 degrees
move 40 steps
when clicked
forever
if touching color ? then
New Variable
New variable name:
turn right
For all sprites
For this sprite only
Cancel
OK
Left sensor
x 37
y -118
Size 100
Direction 90
Stage
Backdrops 3
car
Left sensor
Make 2 new variables (‘turn right’ and ‘turn left’)

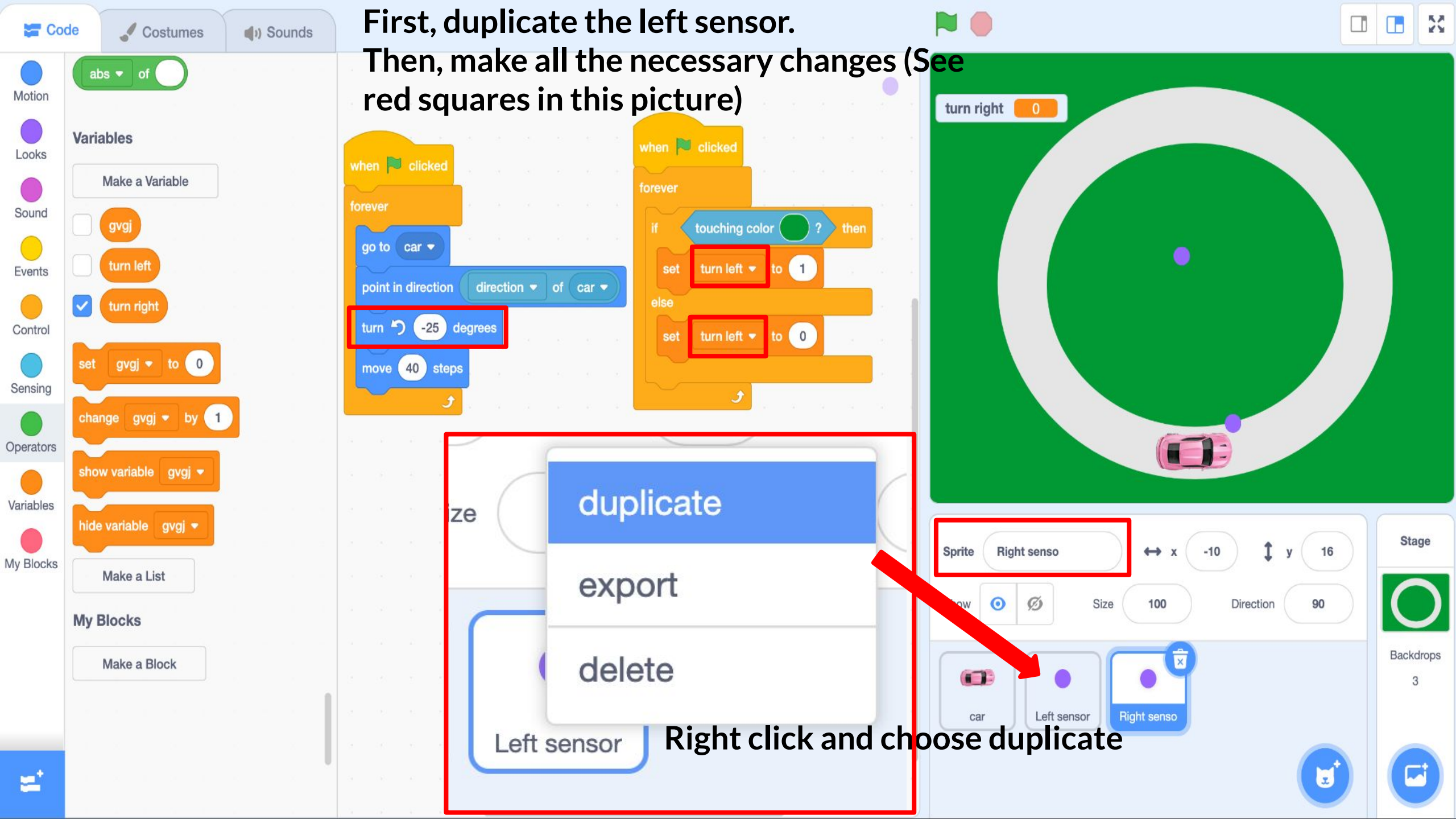

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
abs of
Variables
Make a Variable
gvgj
turn left
turn right
set turn right to 0
change turn right by 1
show variable gvgj
hide variable gvgj
Make a List
My Blocks
Make a Block
when clicked
forever
go to car
point in direction direction of car
turn 25
move 40 steps
when clicked
forever
if touching color ? then
set turn right to 1
else
set turn right to 0
turn right 0
Sprite
Left sensor
x 37
y -118
Show
Size 100
Direction 90
Stage
Backdrops 3
car
Left sensor
If the sensor is touching green, the variable ‘turn right’ should be set to 1 (TRUE). Otherwise, ‘turn right’ should be set to 0 (FALSE).


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
abs of
Variables
Make a Variable
gvgj
turn left
turn right
set turn right to 0
change turn right by 1
show variable gvgj
hide variable gvgj
Make a List
My Blocks
Make a Block
when clicked
forever
go to car
point in direction direction of car
turn 25
move 40 steps
when clicked
forever
if touching color ? then
set turn right to 1
else
set turn right to 0
turn right 0
This setting will make sure that the car turns a little to the right, when the left sensor detects green.
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
Stage
Backdrops
3
car
Left sensor

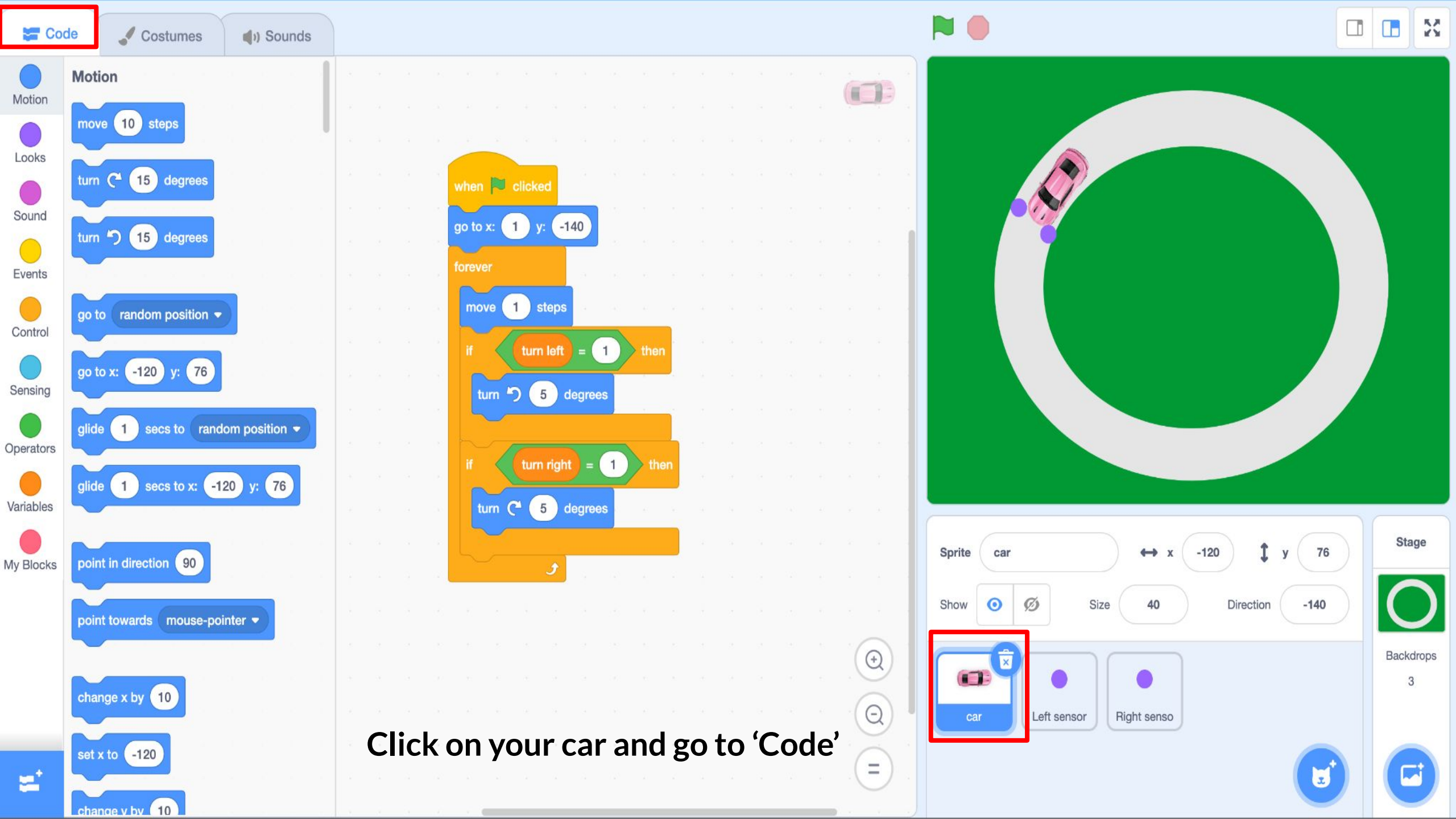

Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
abs of
Variables
Make a Variable
gvgj
turn left
turn right
set turn right to 0
change turn right by 1
show variable gvgj
hide variable gvgj
Make a List
My Blocks
Make a Block
when clicked
forever
go to car
point in direction direction of car
turn 25
move 40 steps
when clicked
forever
if touching color ? then
set turn right to 1
else
set turn right to 0
turn right 0
This setting will make sure that the car turns a little to the right, when the left sensor detects green.
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
Stage
Backdrops
3
car
Left sensor


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
abs of
Variables
Make a Variable
gvgj
turn left
turn right
set turn right to 0
change turn right by 1
show variable gvgj
hide variable gvgj
Make a List
My Blocks
Make a Block
when clicked
forever
go to car
point in direction direction of car
turn 25
move 40 steps
when clicked
forever
if touching color ? then
set turn right to 1
else
set turn right to 0
turn right 0
Now, we can build the Right Sensor.
Sprite
Left sensor
x
37
y
-118
Show
Size
100
Direction
90
Stage
Backdrops
3
car
Left sensor

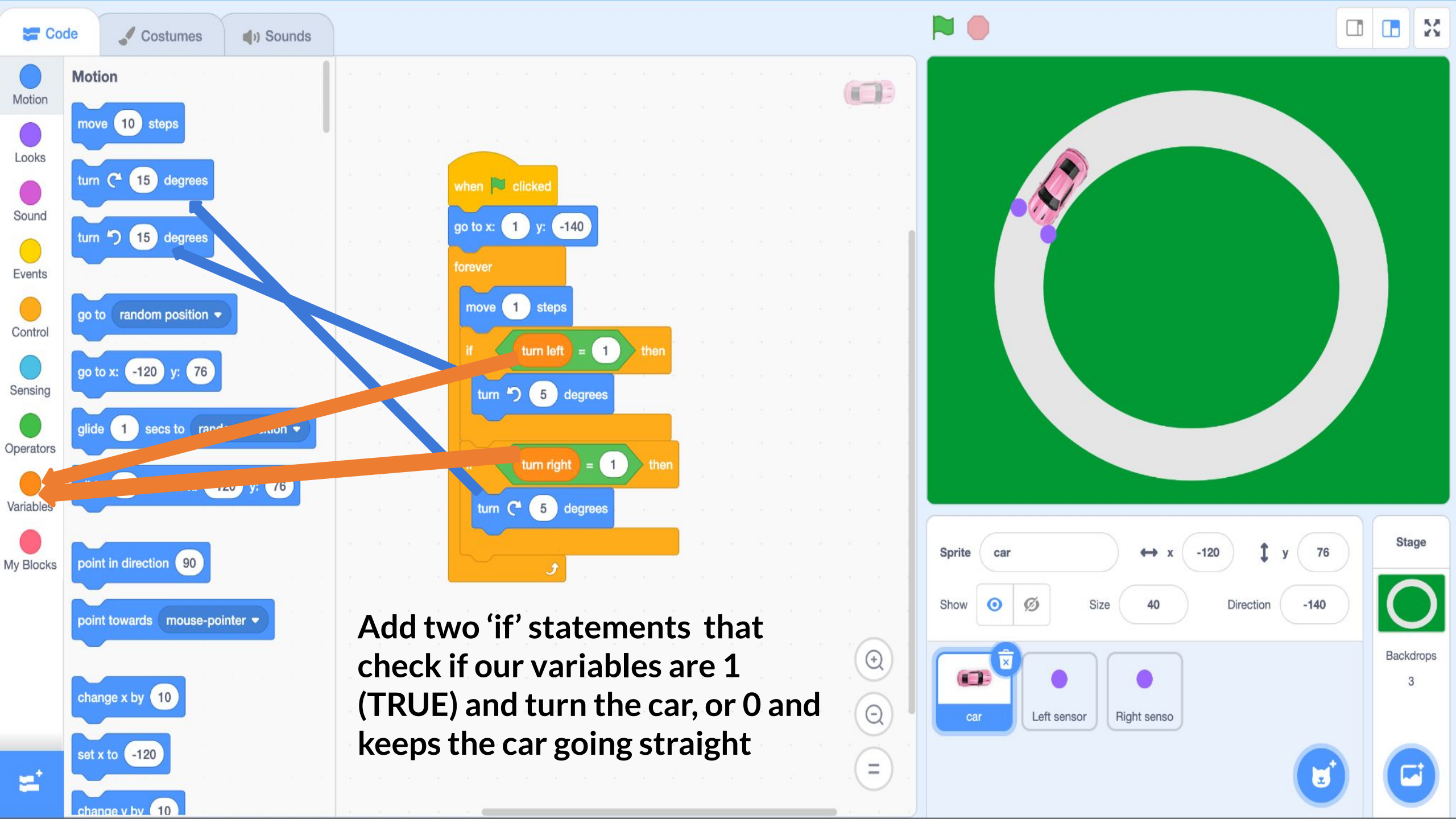
First, duplicate the left sensor.
Then, make all the necessary changes (See red squares in this picture)

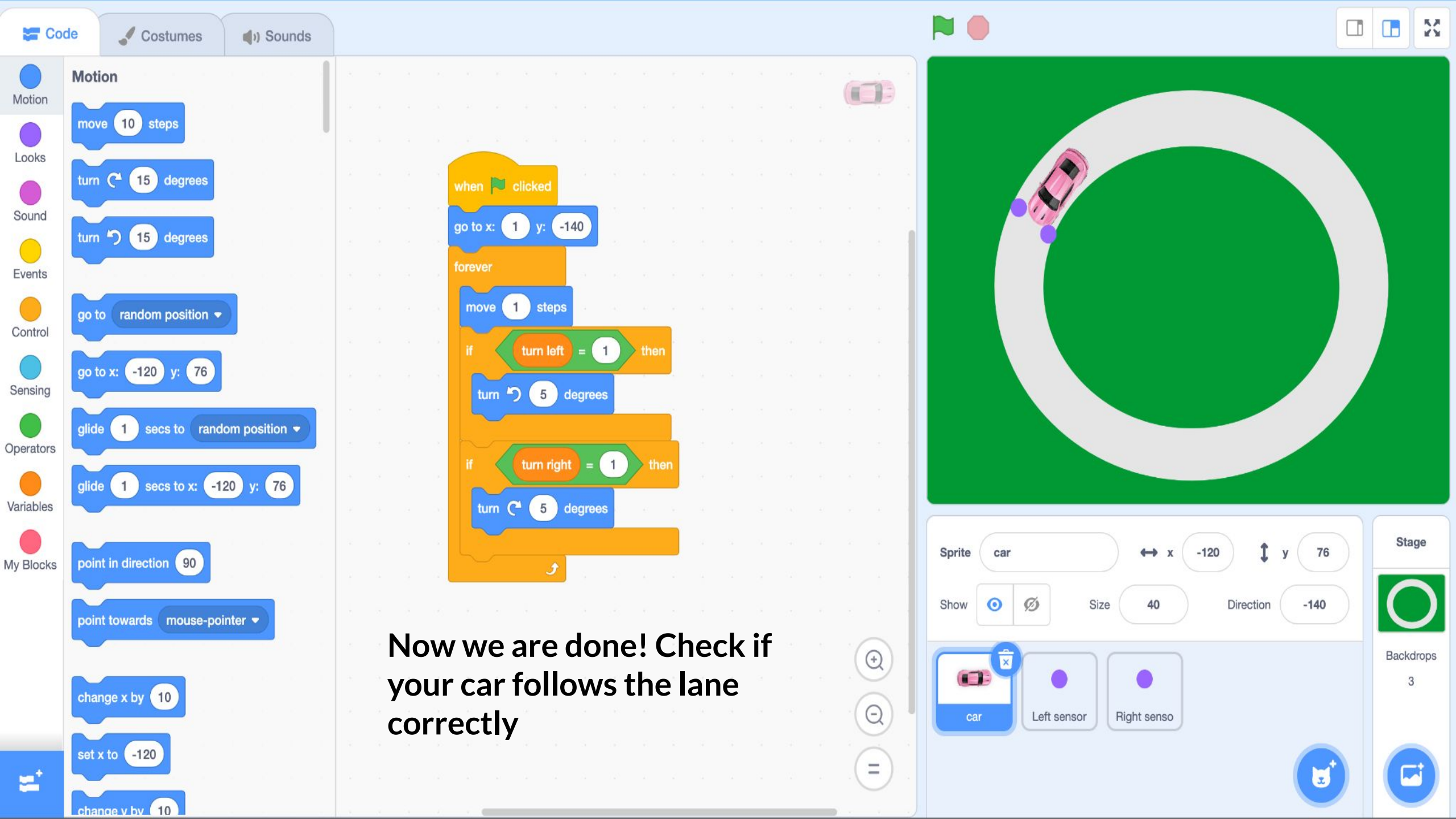


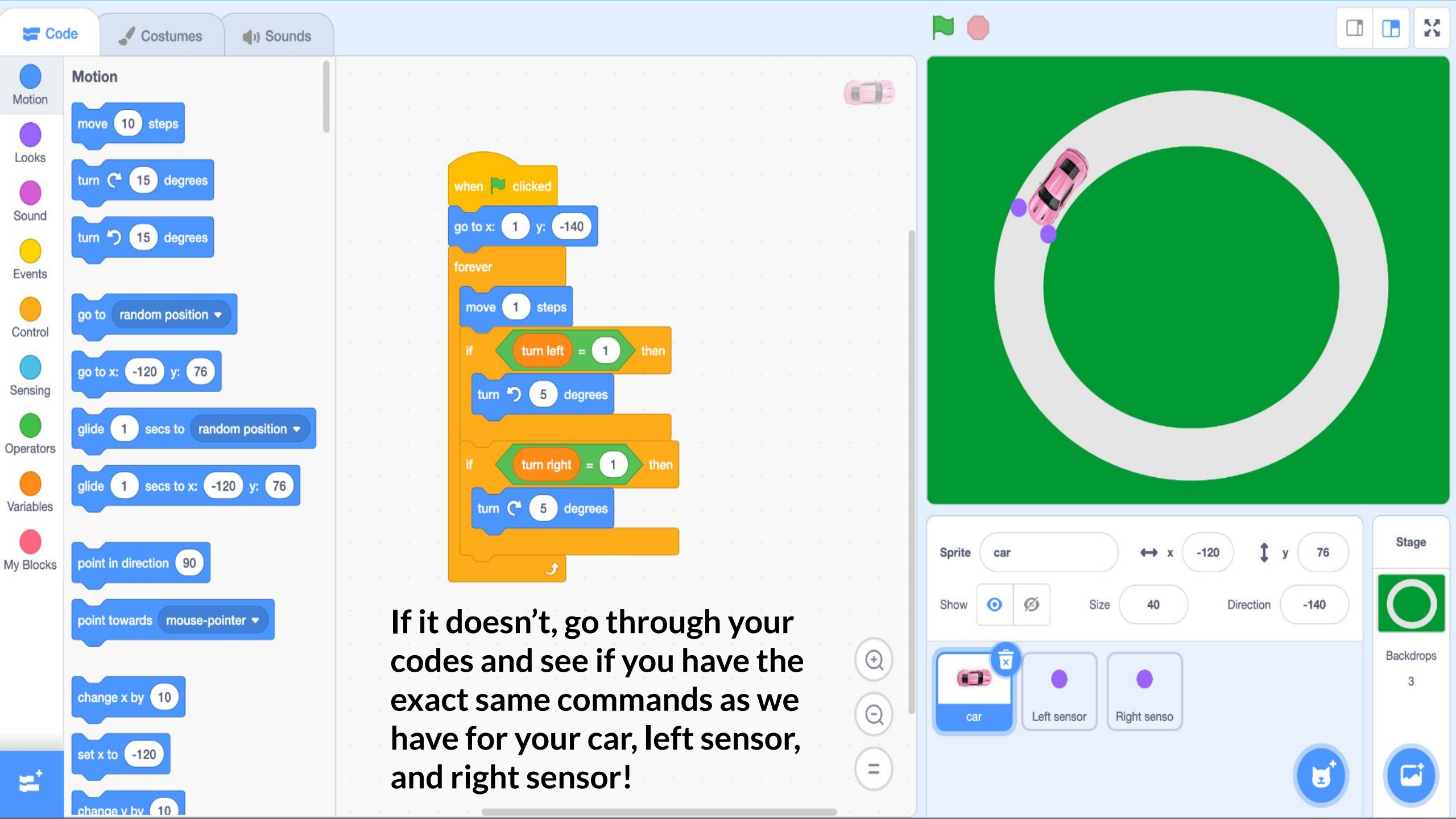
Right click and choose duplicate

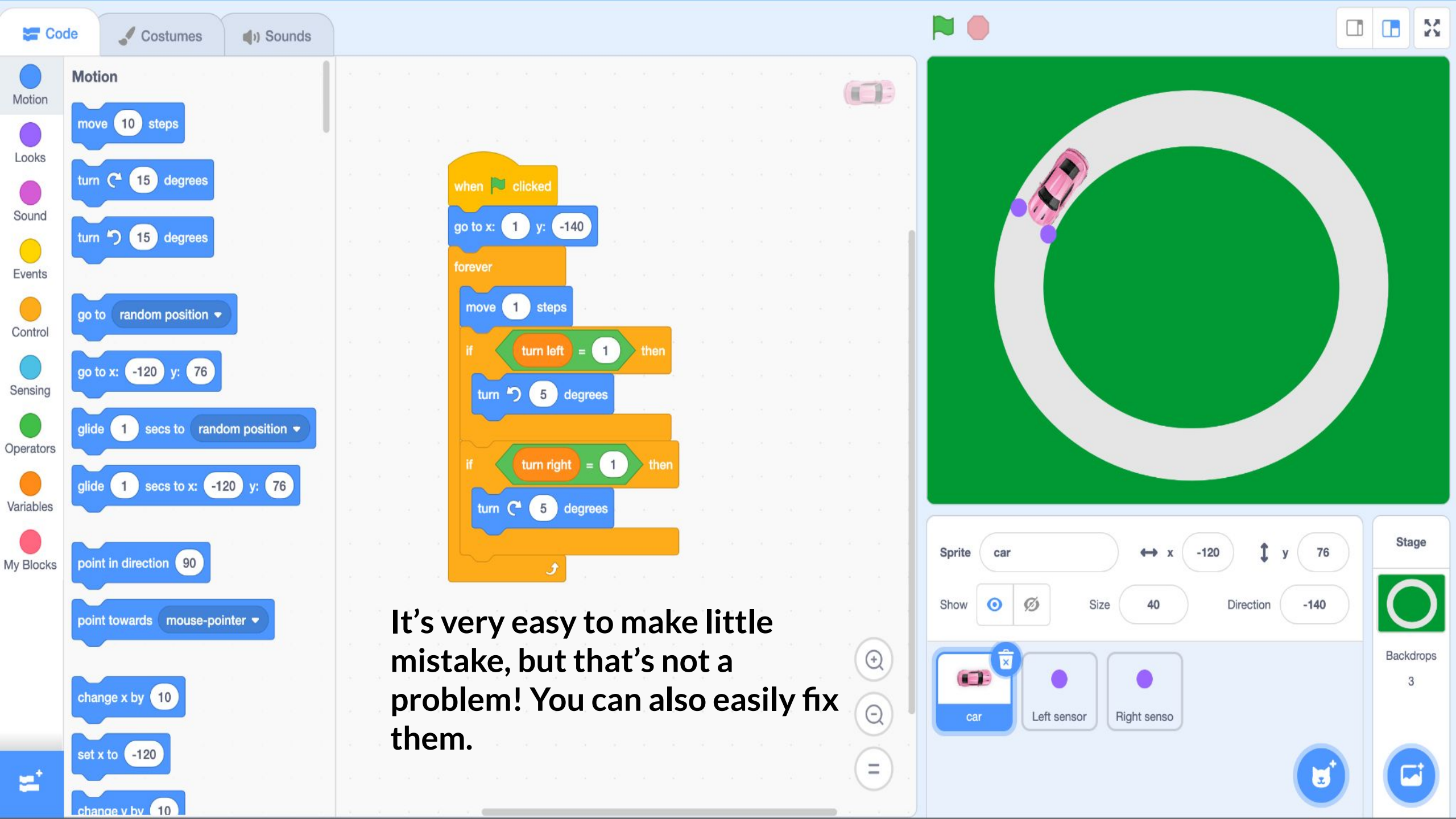


Click on your car and go to ‘Code’


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -120 y: 76
glide 1 secs to
point in direction 90
point towards mouse-pointer
change x by 10
set x to -120
when clicked
go to x: 1 y: -140
forever
move 1 steps
if turn left = 1 then
turn 5 degrees
turn right = 1 then
turn 5 degrees
Add two 'if' statements that check if our variables are 1 (TRUE) and turn the car, or 0 and keeps the car going straight
Sprite
car
x
-120
y
76
Show
Size
40
Direction
-140
Stage
Backdrops
3
car
Left sensor
Right senso


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -120 y: 76
glide 1 secs to random position
glide 1 secs to x: -120 y: 76
point in direction 90
point towards mouse-pointer
change x by 10
set x to -120
when clicked
go to x: 1 y: -140
forever
move 1 steps
if turn left = 1 then
turn 5 degrees
if turn right = 1 then
turn 5 degrees
Now we are done! Check if your car follows the lane correctly
Sprite
car
x
-120
y
76
Show
Size
40
Direction
-140
Stage
Backdrops
3
car
Left sensor
Right senso


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -120 y: 76
glide 1 secs to random position
glide 1 secs to x: -120 y: 76
point in direction 90
point towards mouse-pointer
change x by 10
set x to -120
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
if turn left = 1 then
turn 5 degrees
if turn right = 1 then
turn 5 degrees
If it doesn't, go through your codes and see if you have the exact same commands as we have for your car, left sensor, and right sensor!
Sprite
car
x
-120
y
76
Show
Size
40
Direction
-140
car
Left sensor
Right senso
Stage
Backdrops
3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -120 y: 76
glide 1 secs to random position
glide 1 secs to x: -120 y: 76
point in direction 90
point towards mouse-pointer
change x by 10
set x to -120
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
if turn left = 1 then
turn 5 degrees
if turn right = 1 then
turn 5 degrees
It's very easy to make little mistake, but that's not a problem! You can also easily fix them.
Sprite
car
x
-120
y
76
Show
Size
40
Direction
-140
car
Left sensor
Right senso
Stage
Backdrops
3

Code | Costumes | Sounds

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

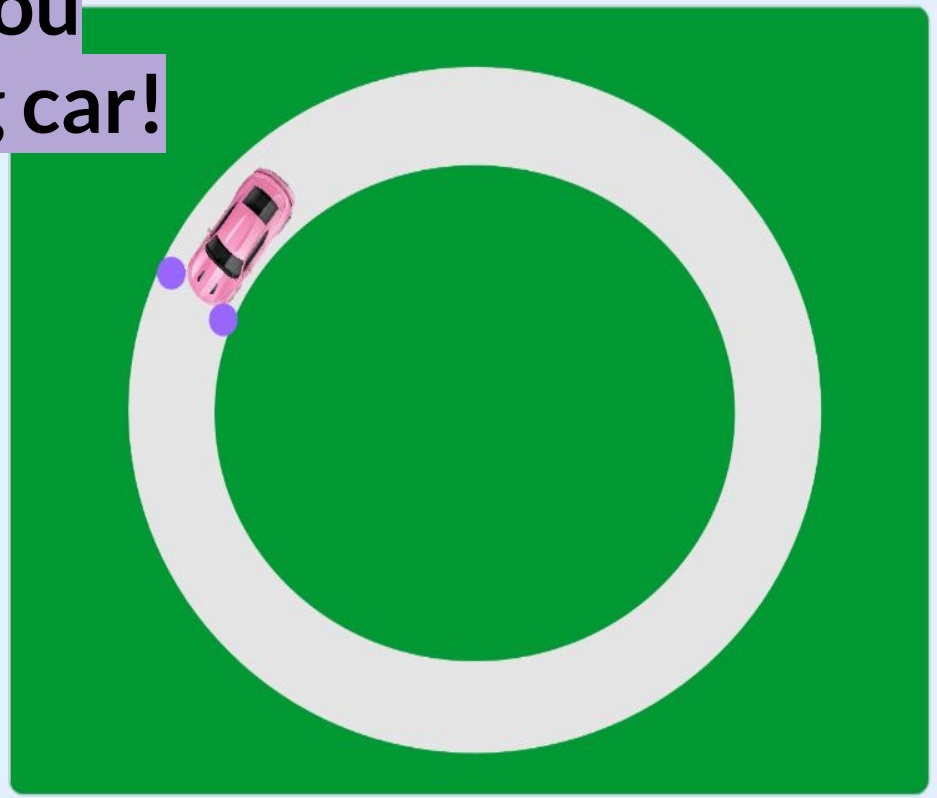
Motion

move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -120 y: 76
glide 1 secs to random position
glide 1 secs to x: -120 y: 76
point in direction 90
point towards mouse-pointer
change x by 10
set x to -120
change y by 10

Does it work? Good job! You built your first self-driving car!

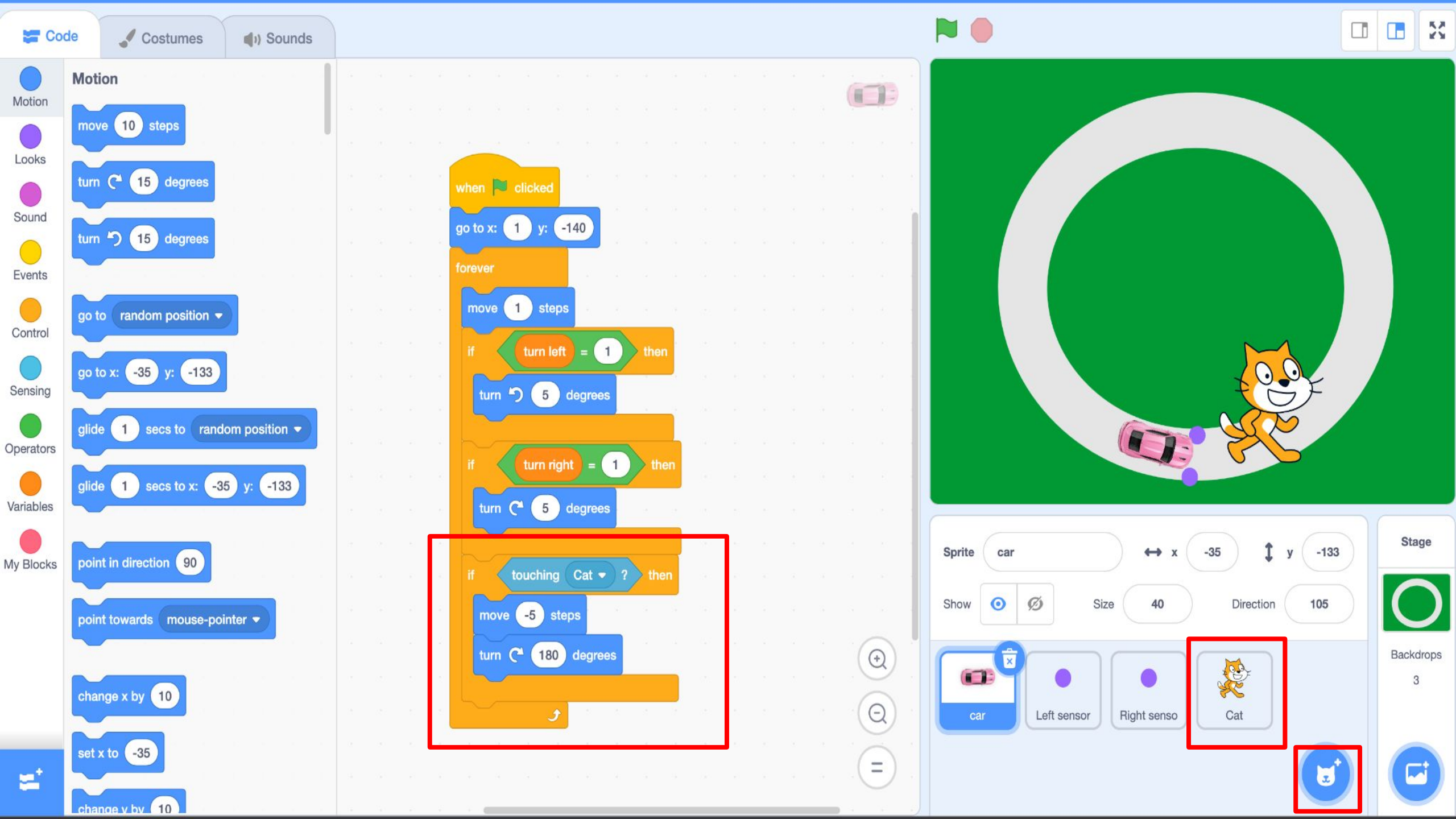
```
when clicked
go to x: 1 y: -140
forever
  move 1 steps
  if turn left = 1 then
    turn 5 degrees
  if turn right = 1 then
    turn 5 degrees
```

Can you implement an ethical choice now? For example: turn around if you encounter a cat?



Sprite car | x -120 | y 76
Size 40 | Direction -140
Left sensor | Right senso

Stage
Backdrops 3


Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: -35 y: -133
glide 1 secs to random position
glide 1 secs to x: -35 y: -133
point in direction 90
point towards mouse-pointer
change x by 10
set x to -35
change y by 10
when clicked
go to x: 1 y: -140
forever
move 1 steps
if turn left = 1 then
turn 5 degrees
if turn right = 1 then
turn 5 degrees
if touching Cat ? then
move -5 steps
turn 180 degrees
Sprite car
x -35
y -133
Show
Size 40
Direction 105
car
Left sensor
Right senso
Cat
Stage
Backdrops 3

Code | Backdrops | Sounds

1 backdrop1 482 x 362

2 backdrop2 480 x 360

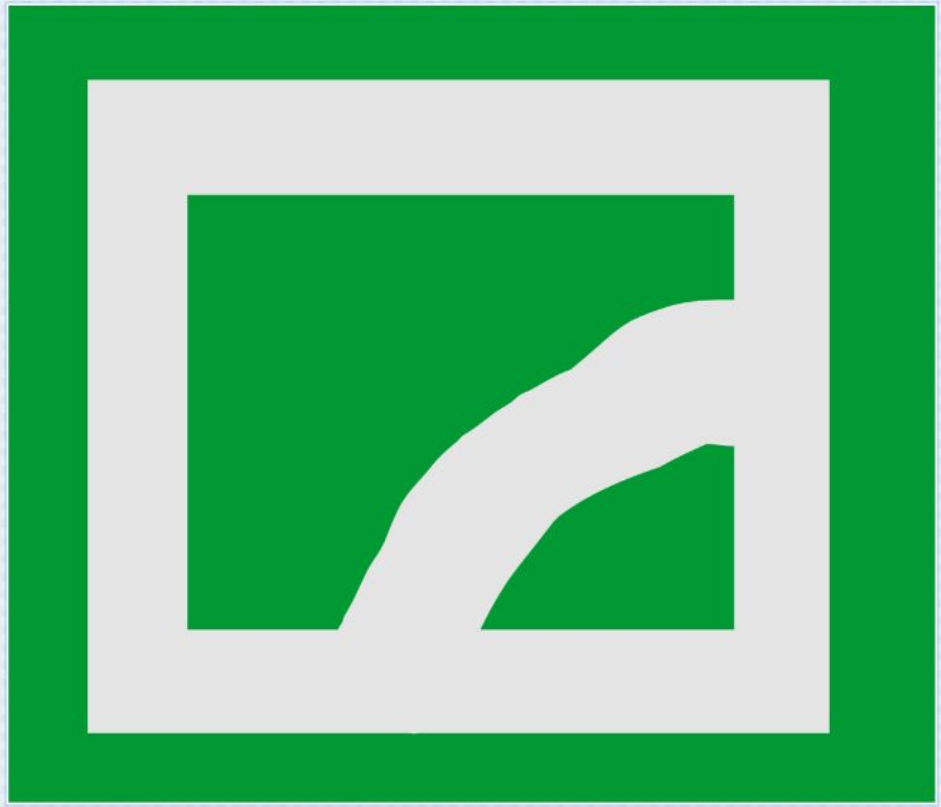
3 backdrop3 481 x 361

4 backdrop4 0 x 0

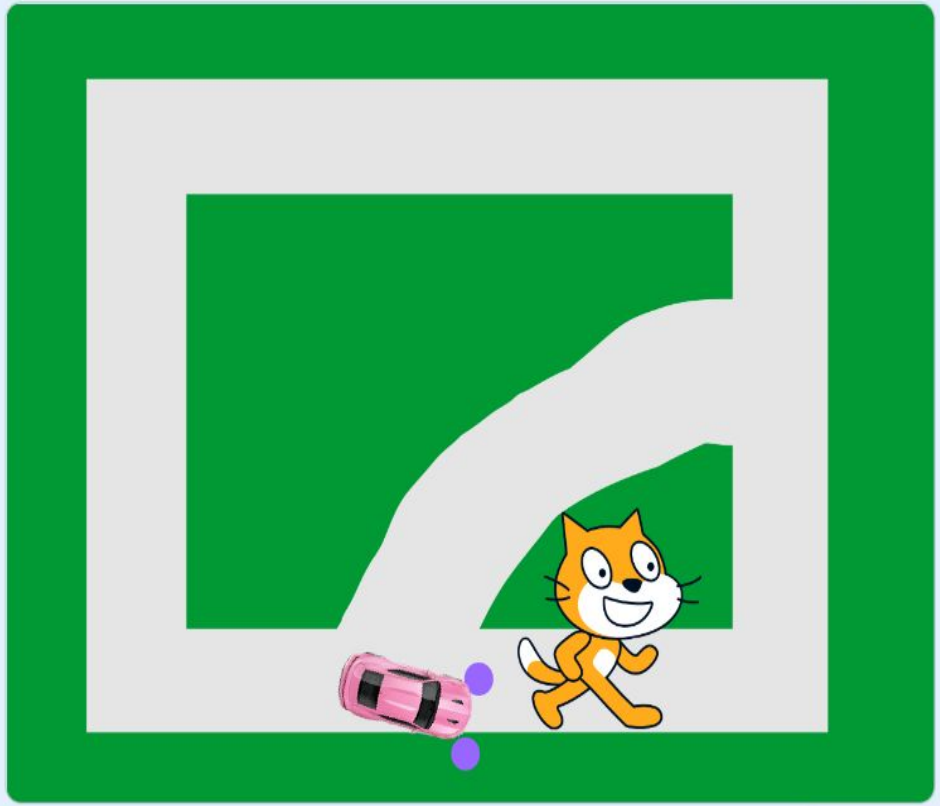
Costume backdrop2

Fill Outline

Can you make a new stage and make the car choose the obstacle-free path?



Convert to Bitmap



Sprite Name x x y y

Show Size Direction

car Left sensor Right senso Cat

Stage

Backdrops 4

Code | Costumes | Sounds

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

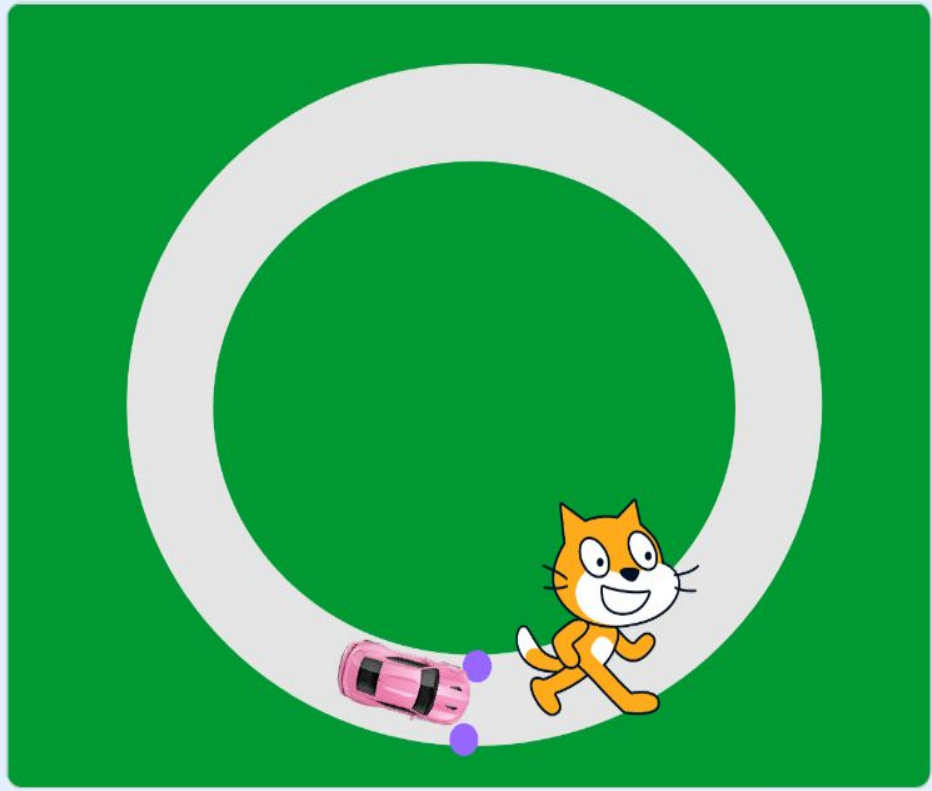
Motion

- move 10 steps
- turn 15 degrees
- turn 15 degrees
- go to random position
- go to x: -35 y: -133
- glide 1 secs to random position
- glide 1 secs to x: -35 y: -133
- point in direction 90
- point towards mouse-pointer
- change x by 10
- set x to -35
- change y by 10

Well done! If you liked programming, try out other challenges with Scratch! Check out:

https://scratch.mit.edu/projects/editor/?tutorial=getStarted

```
turn 5 degrees
if turn right = 1 then
    turn 5 degrees
if touching Cat ? then
    move -5 steps
    turn 180 degrees
```



Sprite: car | x: -35 | y: -133
Show | Size: 40 | Direction: 105

car | Left sensor | Right senso | Cat

Stage
Backdrops 3