

# Breakout Game, Step-by-Step



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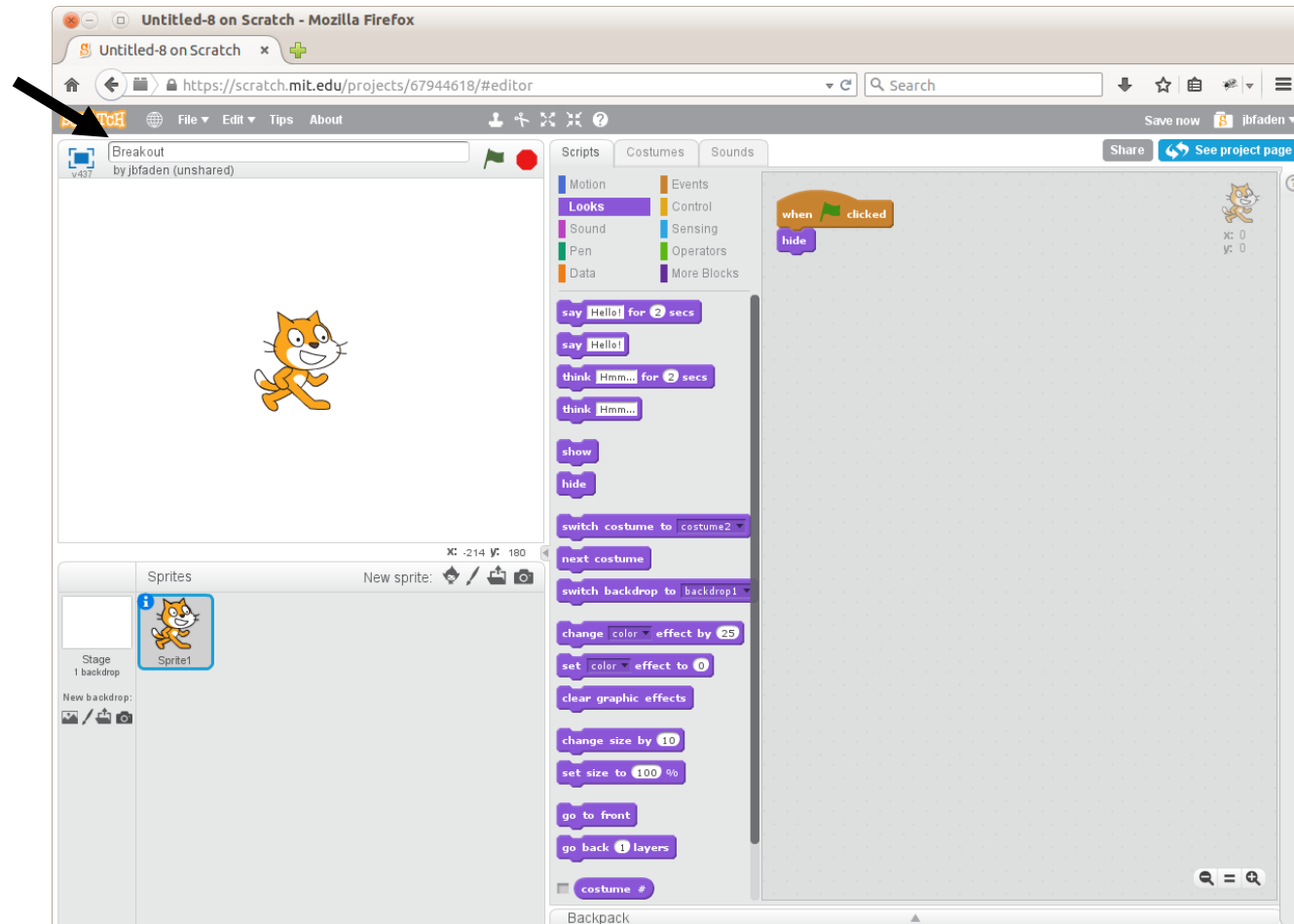
- It's pretty easy to make the game “Breakout,” where you hit the ball with your paddle to knock out bricks.
- This shows how to make this game, step-by-step, showing how to use parts of Scratch along the way.

# Breakout Game, Step-by-Step


- We need to do several smaller sub-projects to make our game:
  - Set up the new project
  - Make the paddle for the ball
  - Make the ball
  - Make the ball go, bouncing off the walls
  - Detect when the ball is missed
  - Make the bricks, using sprite “cloning”
  - Broadcast messages so sprites work together
  - Add a variable for the score and one for the number of balls

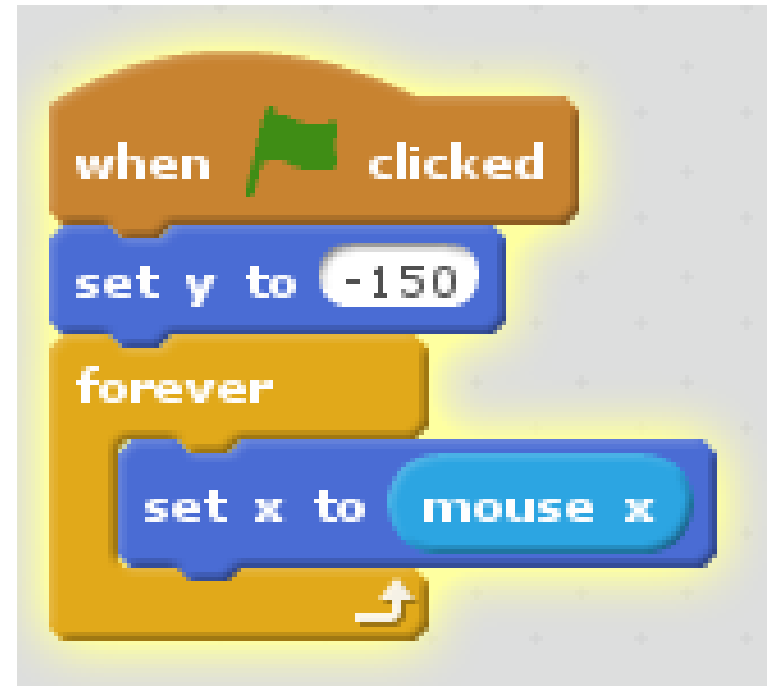
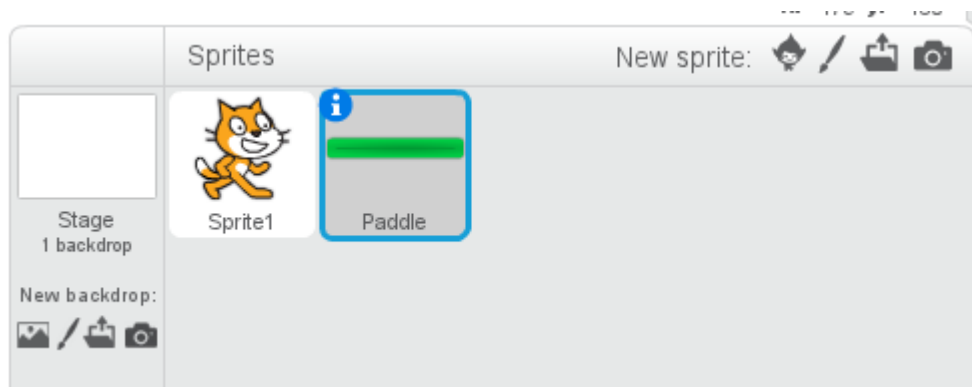
# 1. Set up the new project

- New Project, call it “Breakout”
- Hide the cat when the green flag is clicked, we'll use him later.
- It's important that you follow the steps exactly, and you can add your own improvements later.




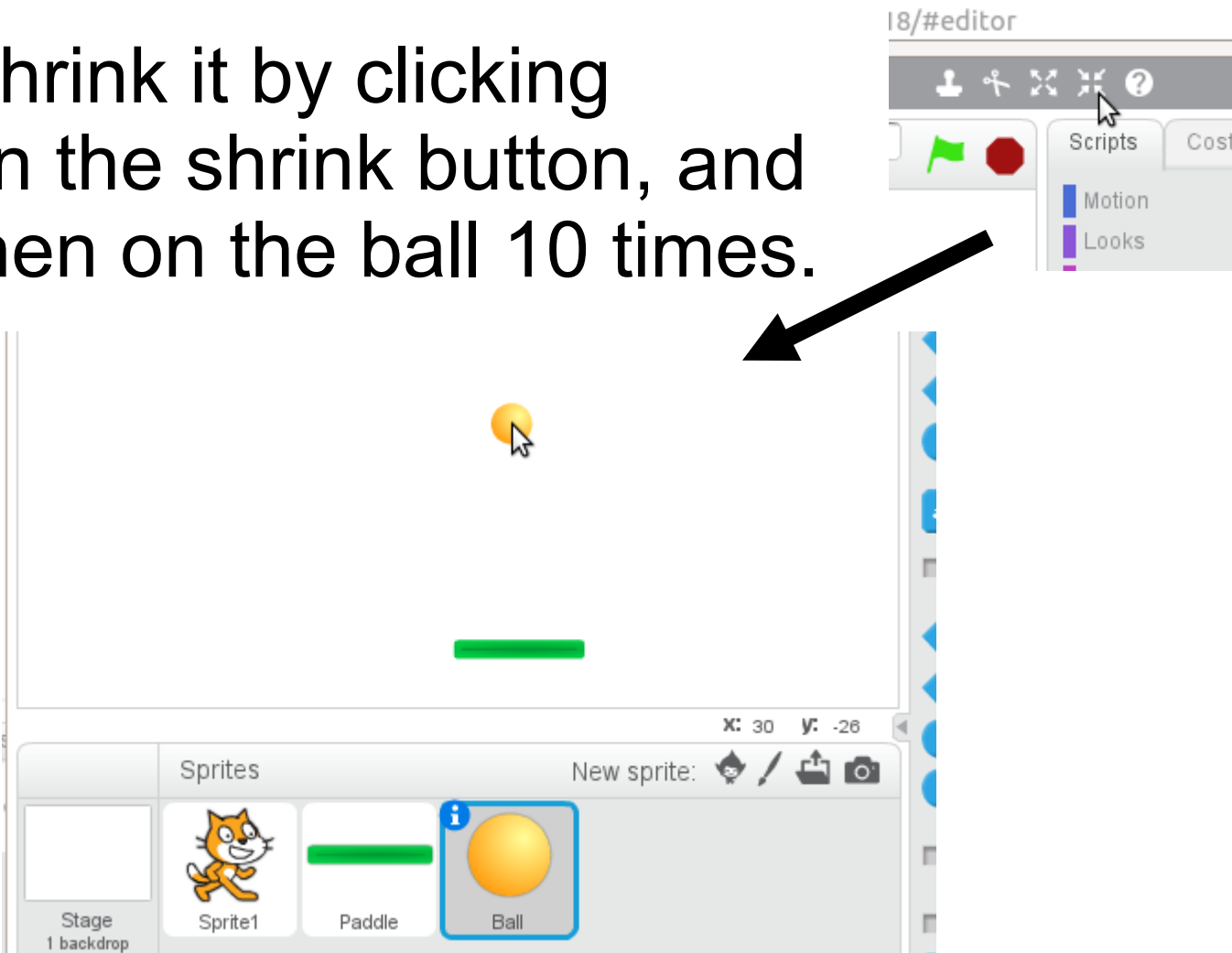
## 2. Make the paddle

- New sprite, choosing from library: 
- Look for green “Paddle”
- Its code is simple, it should just follow the mouse x.



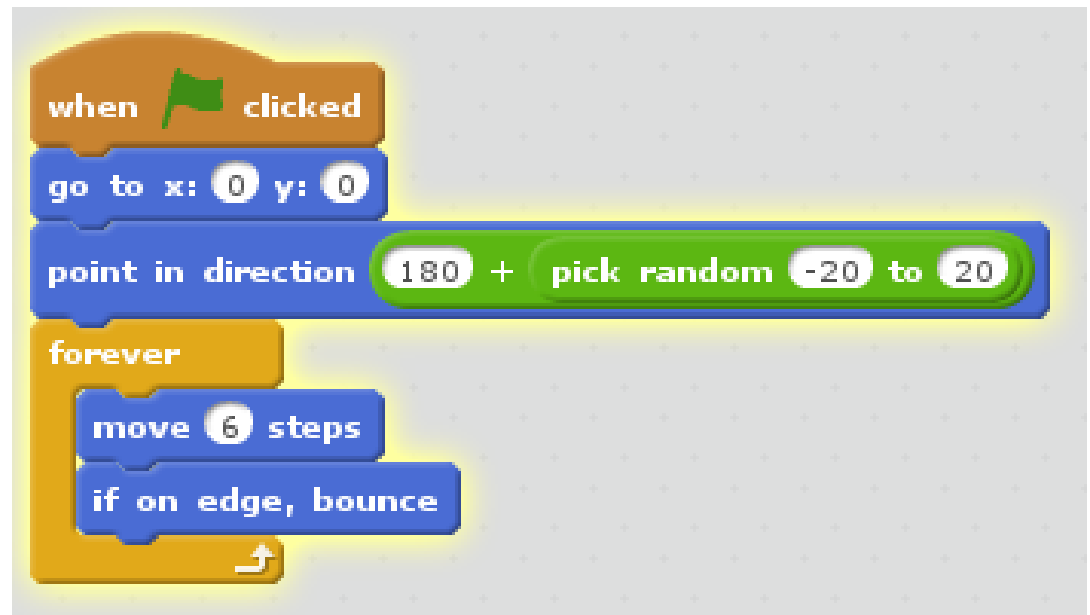
### 3. Make the ball

- New sprite, choosing from library: 
- Look for yellow “Ball”
- Shrink it by clicking on the shrink button, and then on the ball 10 times.



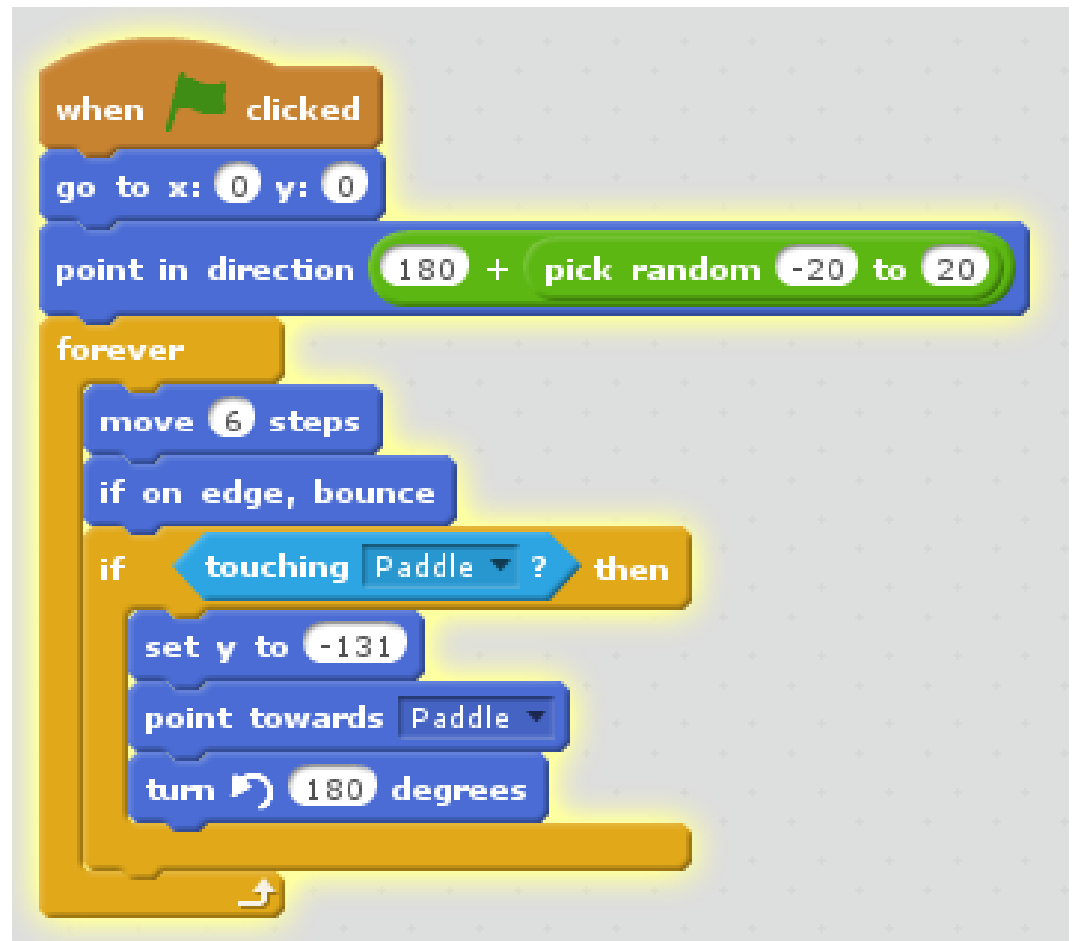
## 4. Make the ball

- When the green flag is pressed, move to 0,0 and point in direction 180 plus a random number.
- In a forever loop, move 6 steps. if on edge, bounce.



## 5. Make the ball

- When touching the paddle, we bounce the ball.
- Add an if-then block, and in the block we turn the ball around.





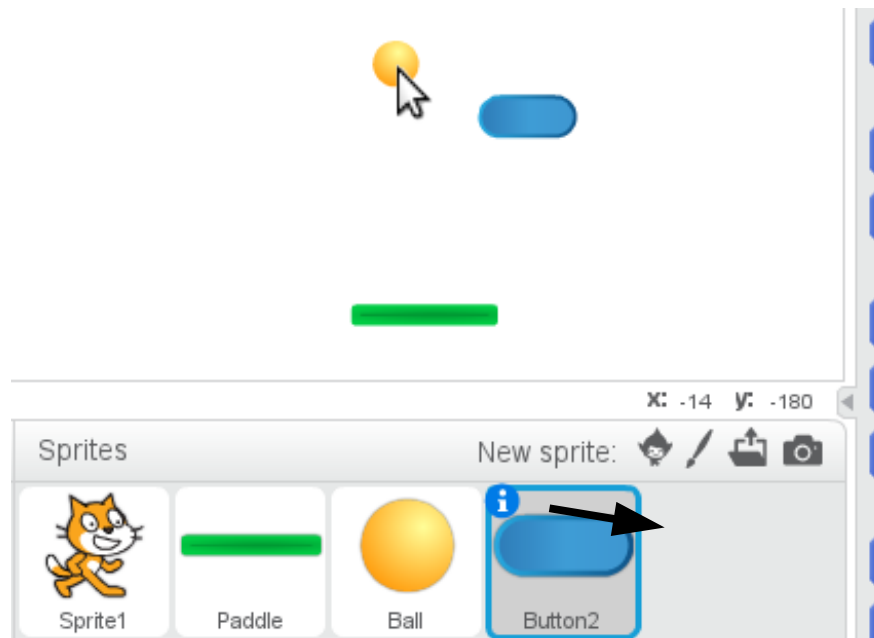
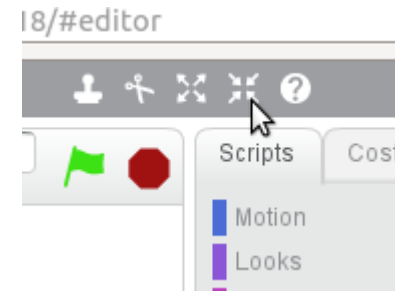
## 6. Make the bricks

- New sprite, choosing from library:

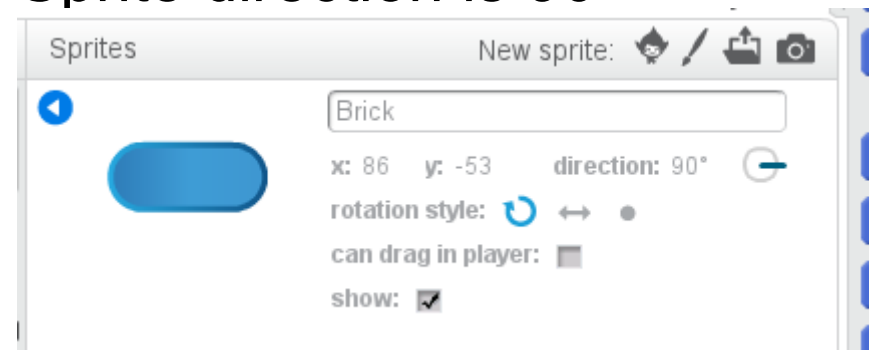


- Look for blue “Button2”

- Shrink it by clicking on the shrink button, and then on the brick 12 times

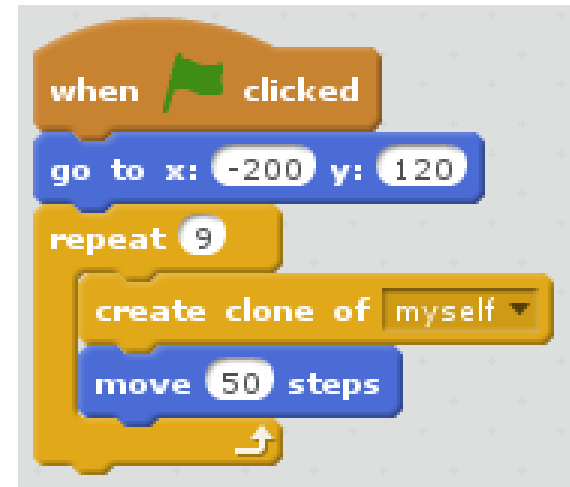


Rename the sprite from Button2 to Brick, by clicking on the “i” (for info) on the Sprite. Make sure the Sprite direction is 90°



# 7. Make the bricks

- Start by adding one brick at x:-200 y:120, when green flag is pressed.
- Here's the new part: create a clone of myself to make many bricks.
- We repeat this nine times to make the row of bricks.



## 8. Make the bricks

- Start by adding one brick at x:-200 y:120, when green flag is pressed.
- Here's the new part: create a clone of myself to make many bricks.
- We repeat this nine times to make the row of bricks.
- And make three rows...



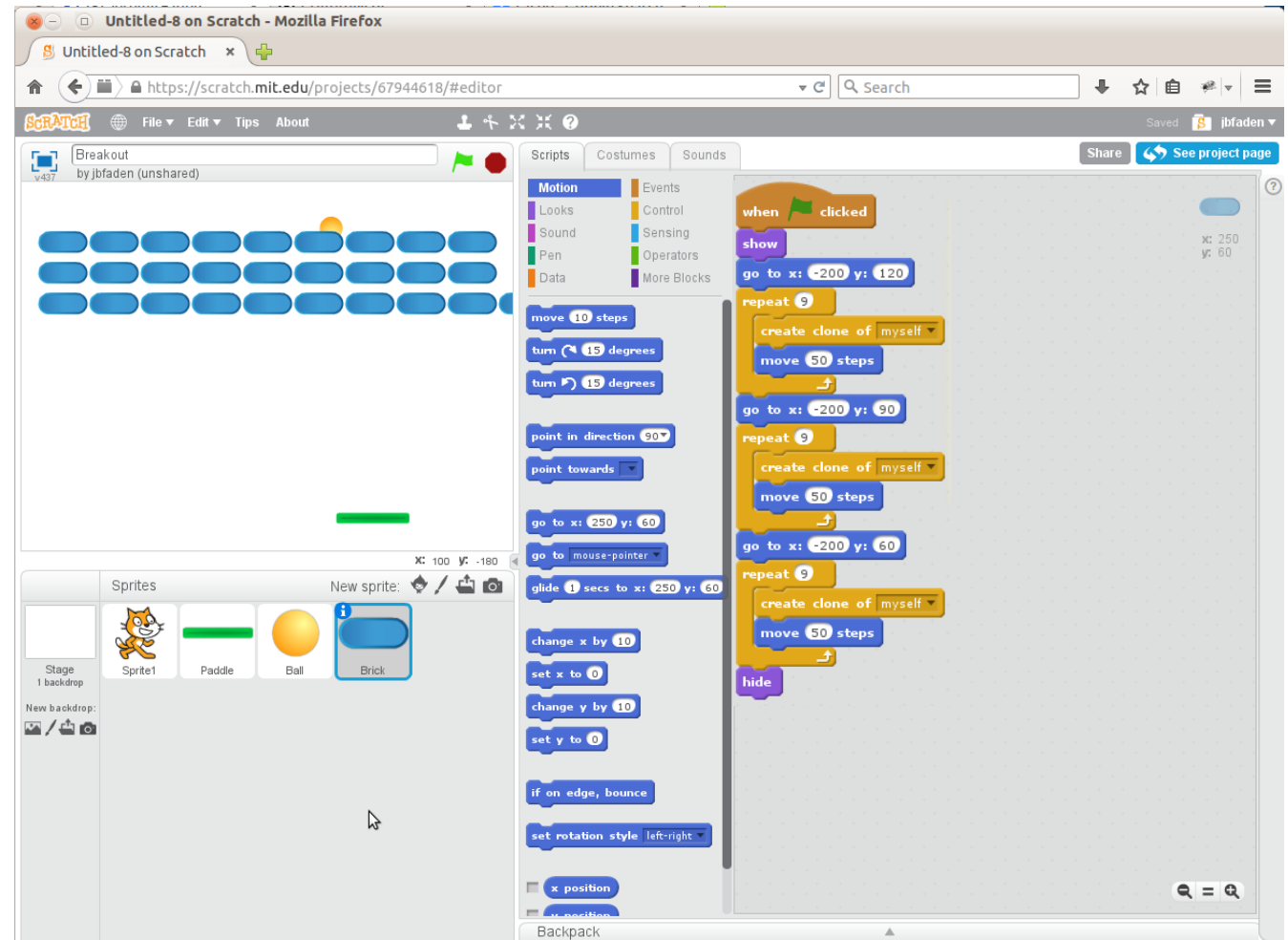
## 9. Make the bricks

- Start by adding one brick at x:-200 y:120, when green flag is pressed.
- Here's the new part: create a clone of myself to make many bricks.
- We repeat this nine times to make the row of bricks.
- And make three rows...
- And hide it when we're done. Show it so we



# 10. Make the bricks

- Here's what it looks like when we press the green flag:
- (Your screen might look just a little different.)



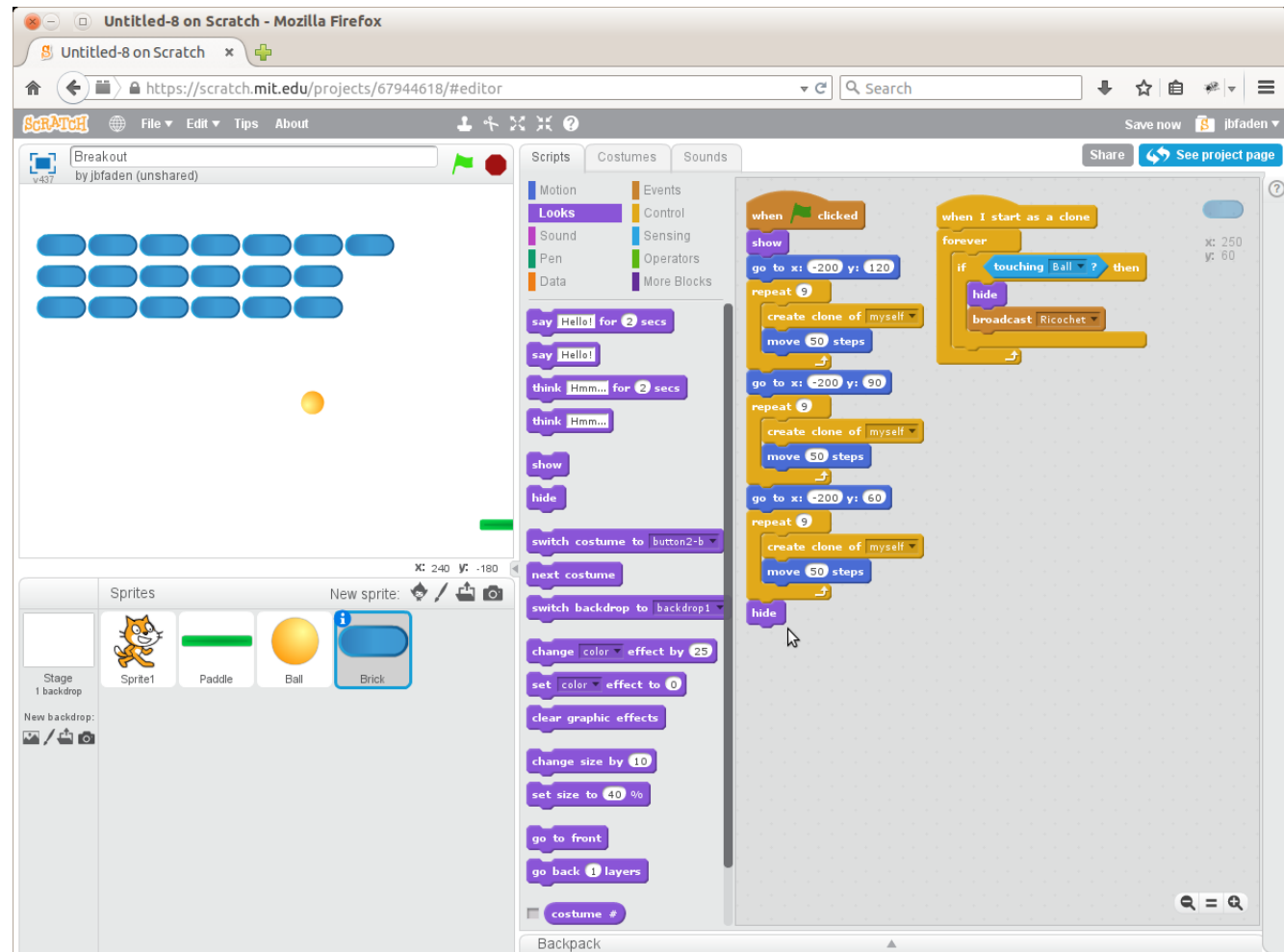
# 11. Make the bricks

- Now we need to make the bricks disappear when they are hit.
- Look for “When I start as a clone” in the control scripts.
- We also do another new thing: we broadcast the message “Ricochet” which will be received by the ball to make it turn around. You'll have to click on the little triangle and add a new message.



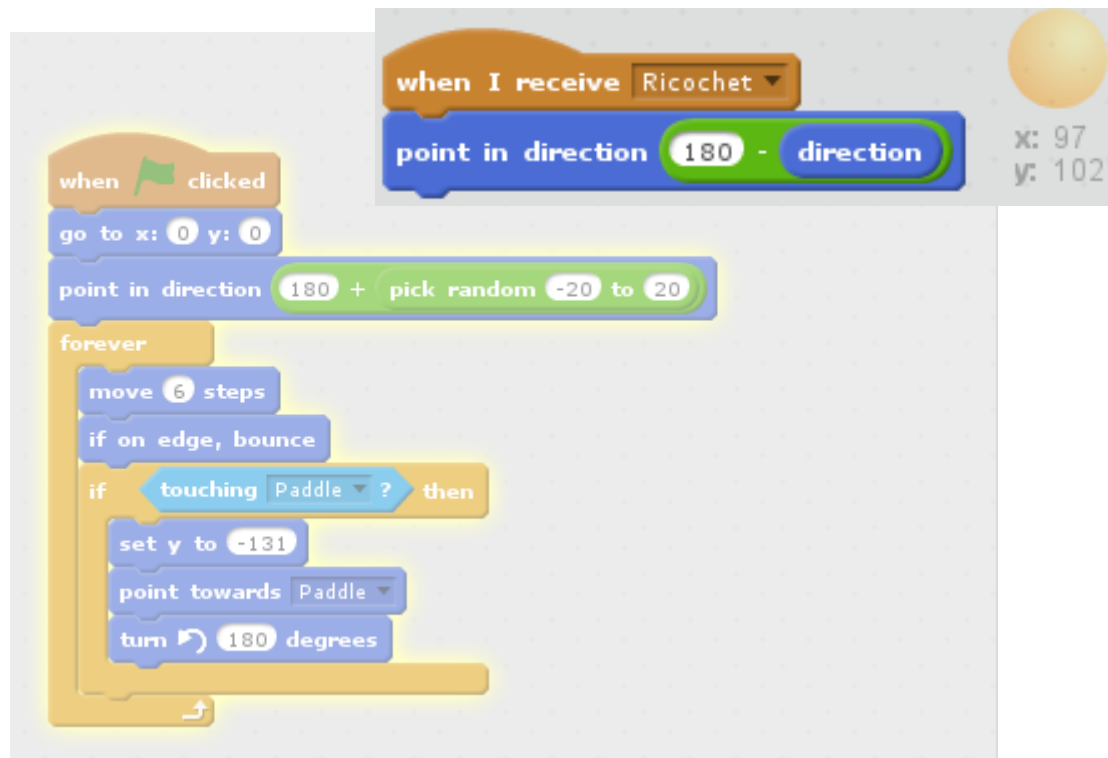
# 12. Make the bricks

- So here's how the brick code should look now:



# 13. Making the ball Ricochet

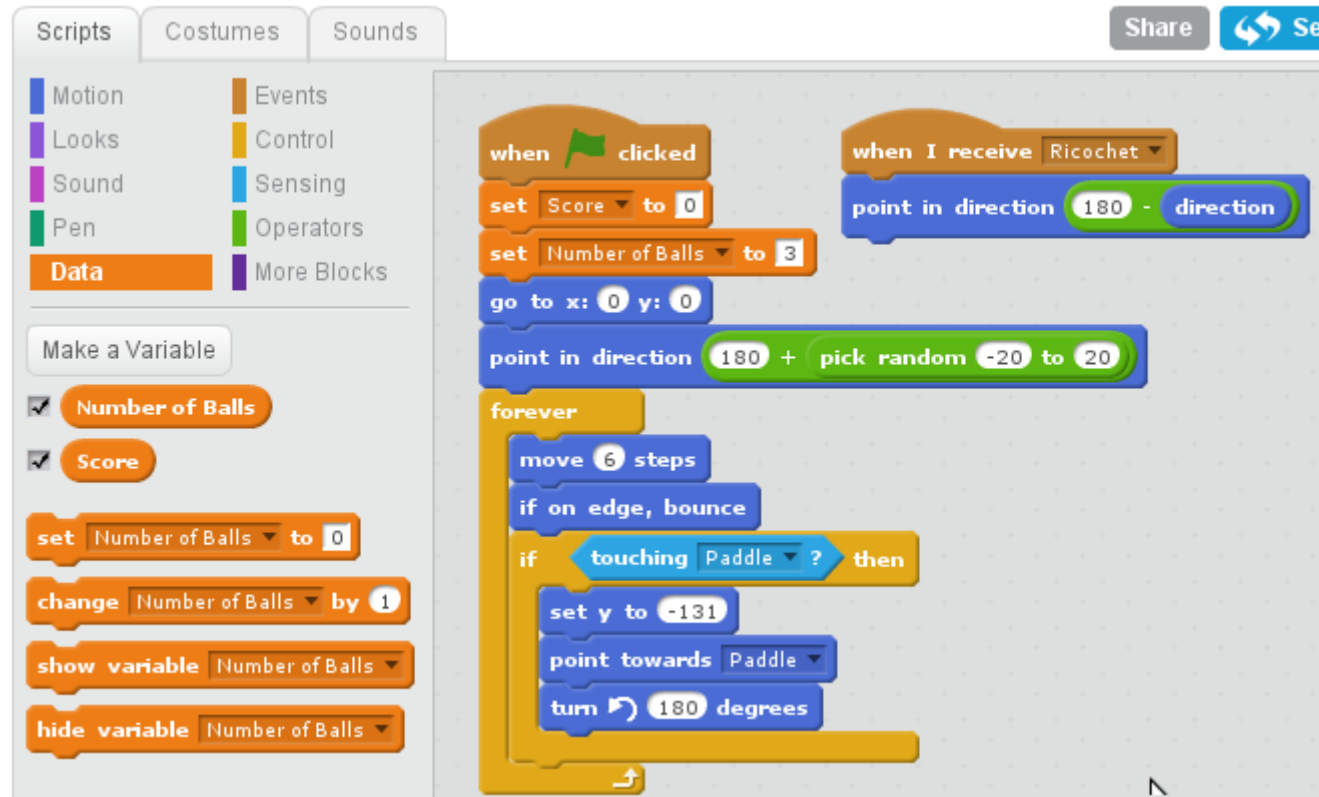
- Go back to the Ball sprite, and add “when I receive Ricochet”, “point in direction...”





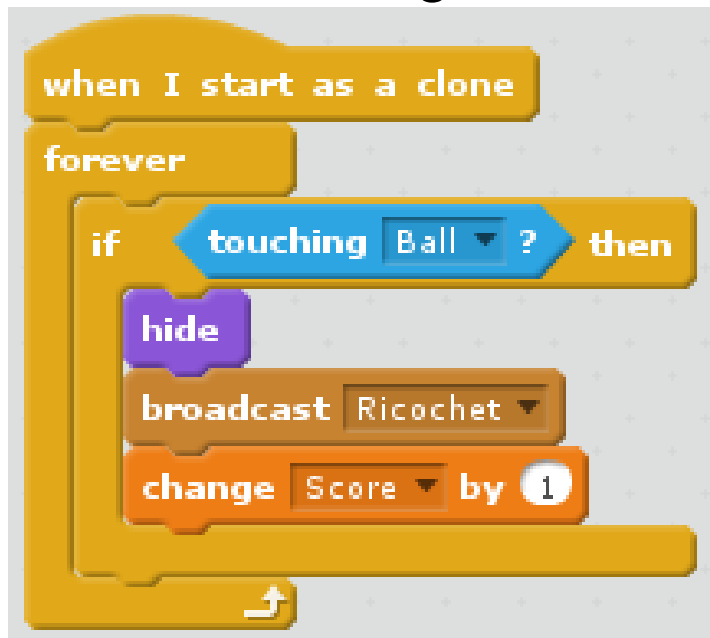
# 14. Let's keep score and the number of balls.

- Make a Variable, name is Score, for all sprites
- Make a Variable, name is Number of Balls, for all sprites.
- When the flag is clicked and we initialize, we need to set the score and the number of balls.



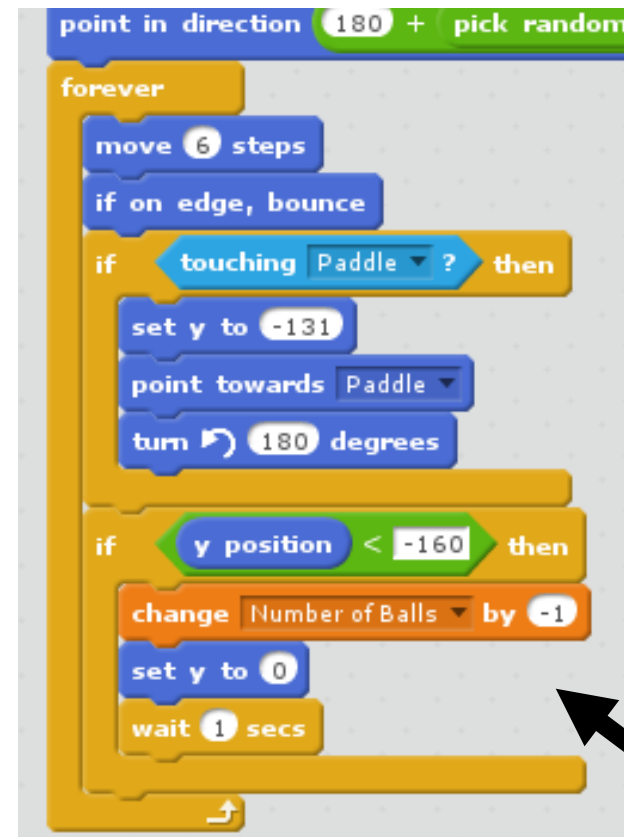
# 15. Let's keep score and the number of balls.

- Increment (add one to) the Score when a brick is touching a Ball.



(in the Brick sprite)

- Decrement (remove one from) the Number of Balls when the ball gets below the paddle.



(Add to Ball sprite)

# 16. Let's keep score and the number of balls.

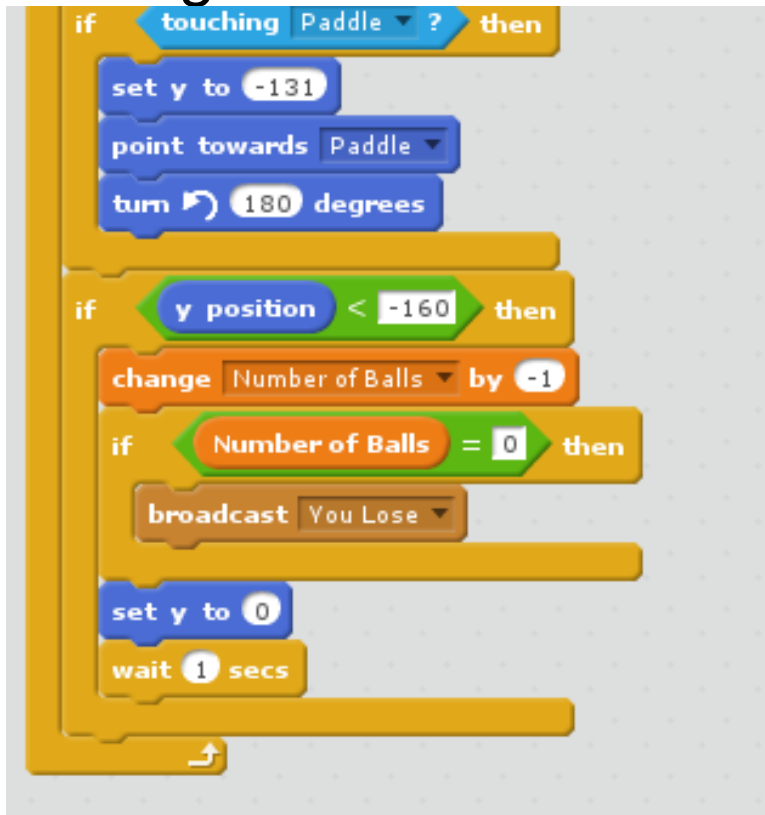
- Check to see if they won. We'll broadcast a “You Won” message.



(in the Brick sprite)

# 17. Let's keep score and the number of balls.

- Check to see if they lost. We'll broadcast a “You Lose” message in this case.



(in the Ball sprite)

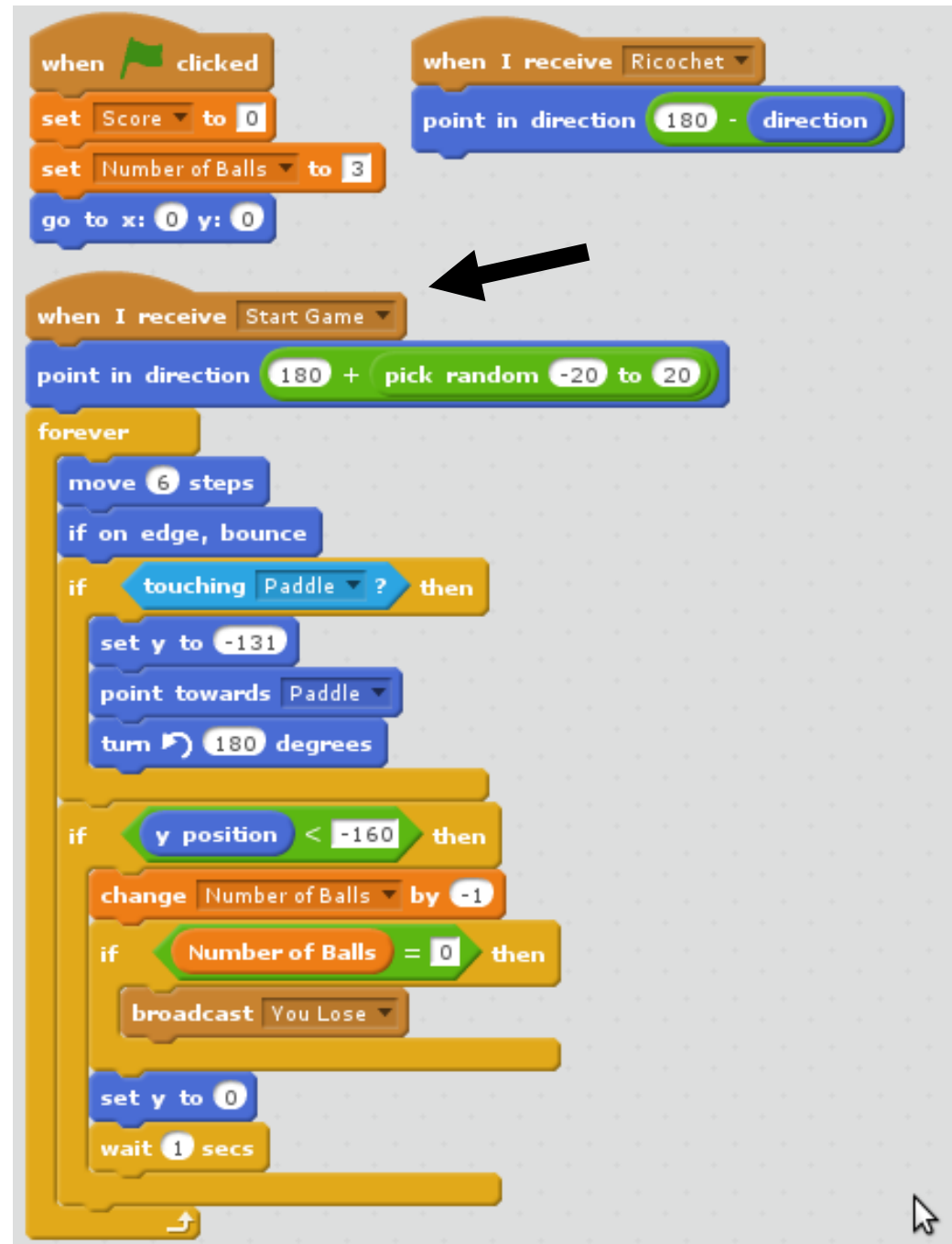
## 18. Finally, the Narrator tells what's going on

- We'll have the Scratch cat give the instructions.
- Go back to the Scratch cat (Sprite1), and add this script to it.



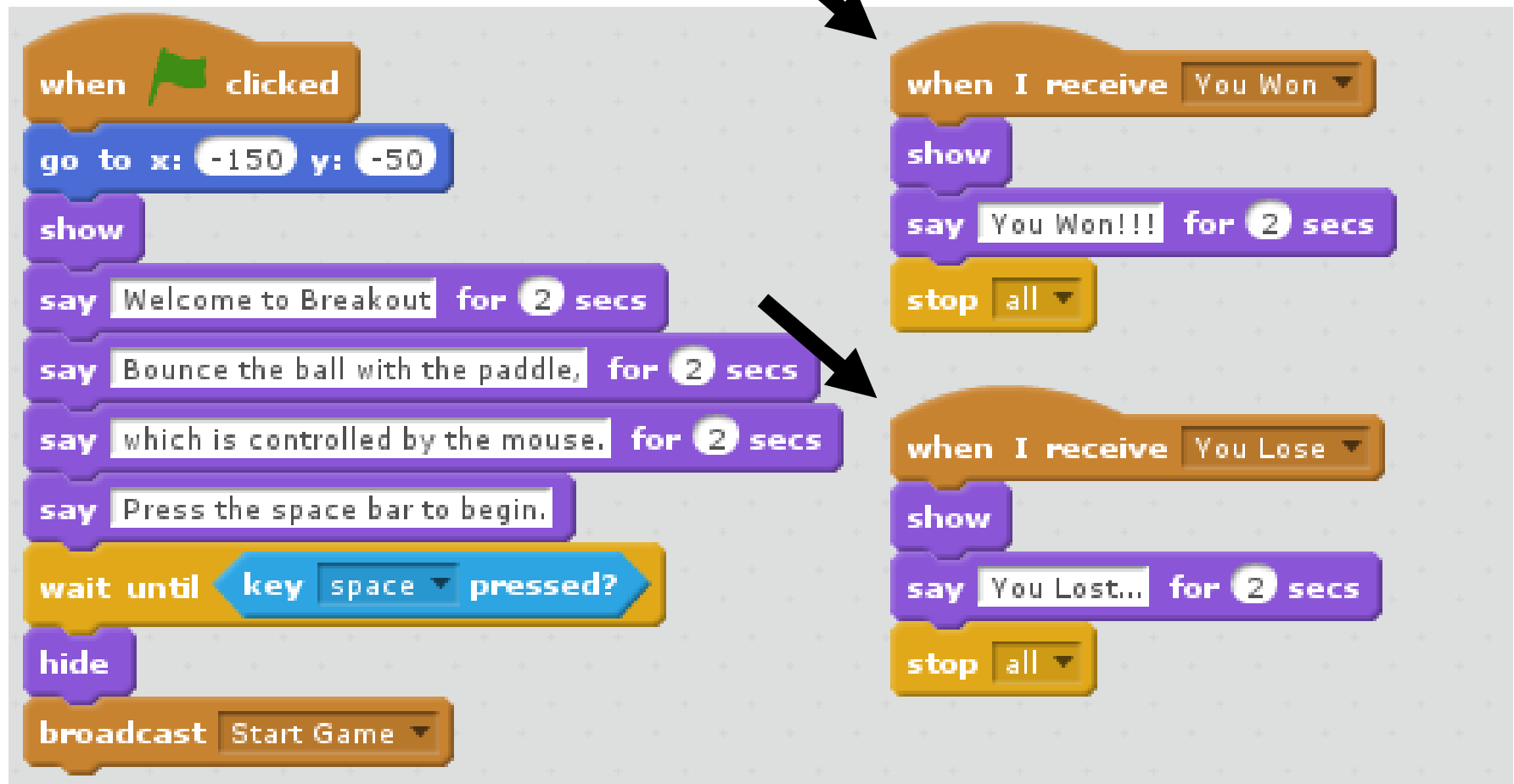
# 19. Finally, the Narrator tells what's going on

- Change the Ball to wait for the broadcast message.



## 20. Finally, the Narrator tells what's going on

- Add “when I receive” scripts for the “You Win” and “You Lose” messages.



# All done!

- So now you've seen how we add multiple sprites and have them interact to play a game.
  - Clone lets us have lots of the same sort of sprite
  - Broadcast lets us send messages from one part of the game to another.
- This is your project now, and it's yours to make your own. You could:
  - Add sound effects
  - Change speed and experiment with controls
  - Make your own narrator and You Win messages

