

Target Game Directions
Scratch 2.0
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Pre-Planning: List your Objects (Sprites) and their Methods (Scripts) and Properties:

Before doing programming, I usually make a list of what Sprites I want in the program and what they will do. For the Target Game, we have the following Sprites:

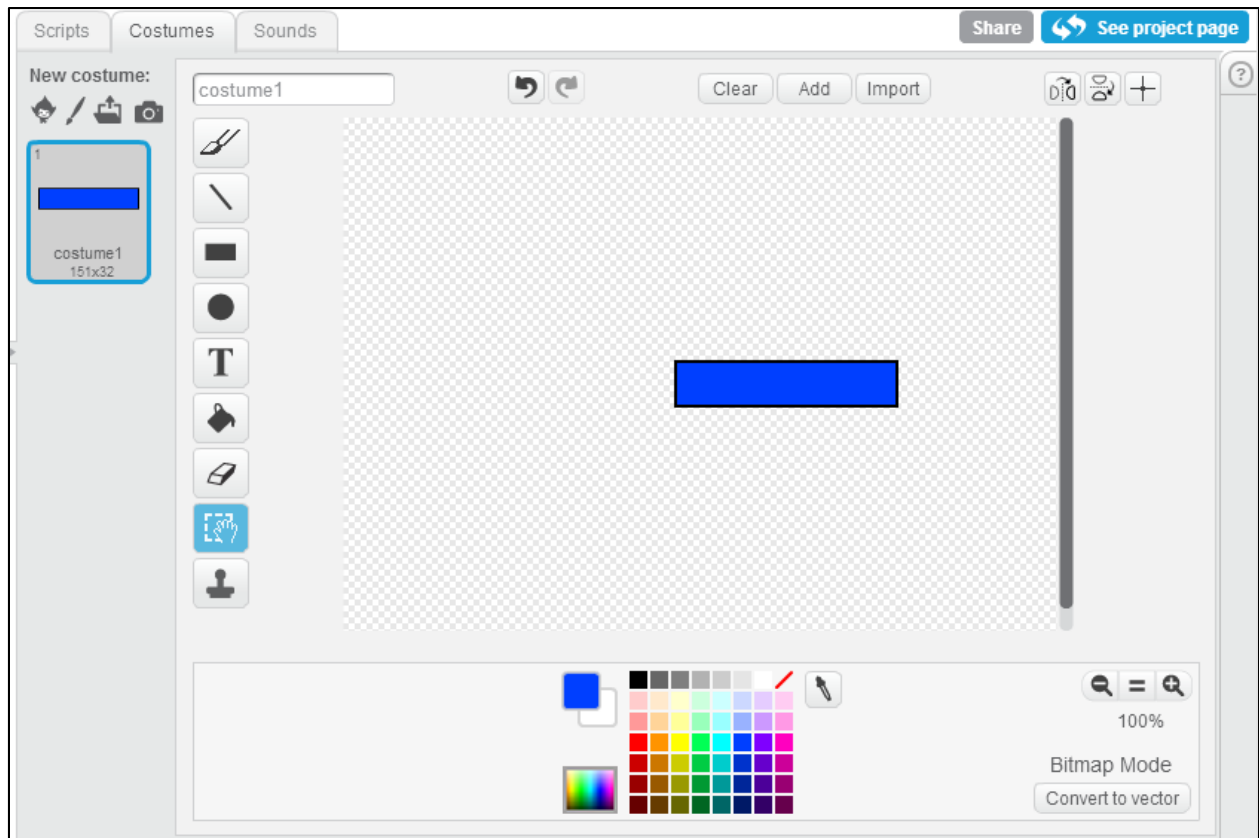
Sprite (Object)	Scripts (Methods)	Properties
Cannon	-Turns right and left on user input from arrow keys -Records current direction as a variable	-One costume
Ball	-Stays hidden until Space Key pressed -Starts traveling from Cannon -Moves 300 steps on Space Bar user input -Leaves a Trail as it moves -Bounces off the edge of the boundary -Takes direction from the Cannon	-One costume
Targets	-Move randomly about the playing area -Change costumes to "flap wings" -Hide and make sound when touching the Ball -Show after 3 seconds of hiding.	-Two Costumes -One Sound

Step 1: Drawing Your Sprite (The Cannon) and making it point.

A Sprite is a character or object in your game. Sprites can move and be active or be props that stay still. We will draw a Sprite that will act as the "cannon."

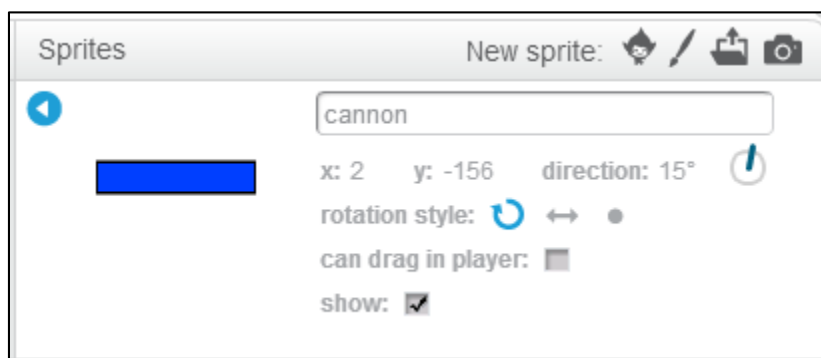
1. Go to <http://scratch.mit.edu/projects/editor/> and log in with your Scratch Account.
2. Delete the Cat. Name the Project "Lastname Target" in the naming field.
3. Click the "Paint New Sprite" icon.

4. Draw the cannon. To simplify things later, draw the cannon pointing to the right.



5. Name the Sprite cannon.


(Always name your Sprites - this is like doing comments in text based programming - it will help you and people who read your programs figure out the flow of the program.)

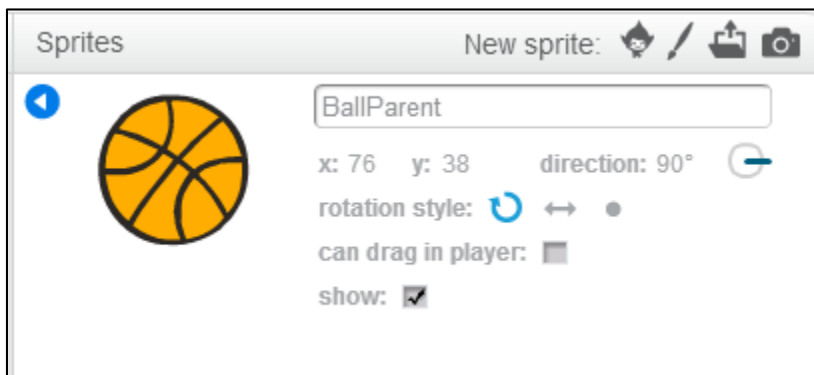


6. We want the "Canon" to turn left and right as the user presses the arrow keys.
 - a. Drag an Event category "When Space key Pressed" into the Scripts pane.
 - b. Add a "turn 15 degrees" clockwise to this Script.
 - c. Change "Space" to "right arrow"
 - d. Do the same for the left arrow.

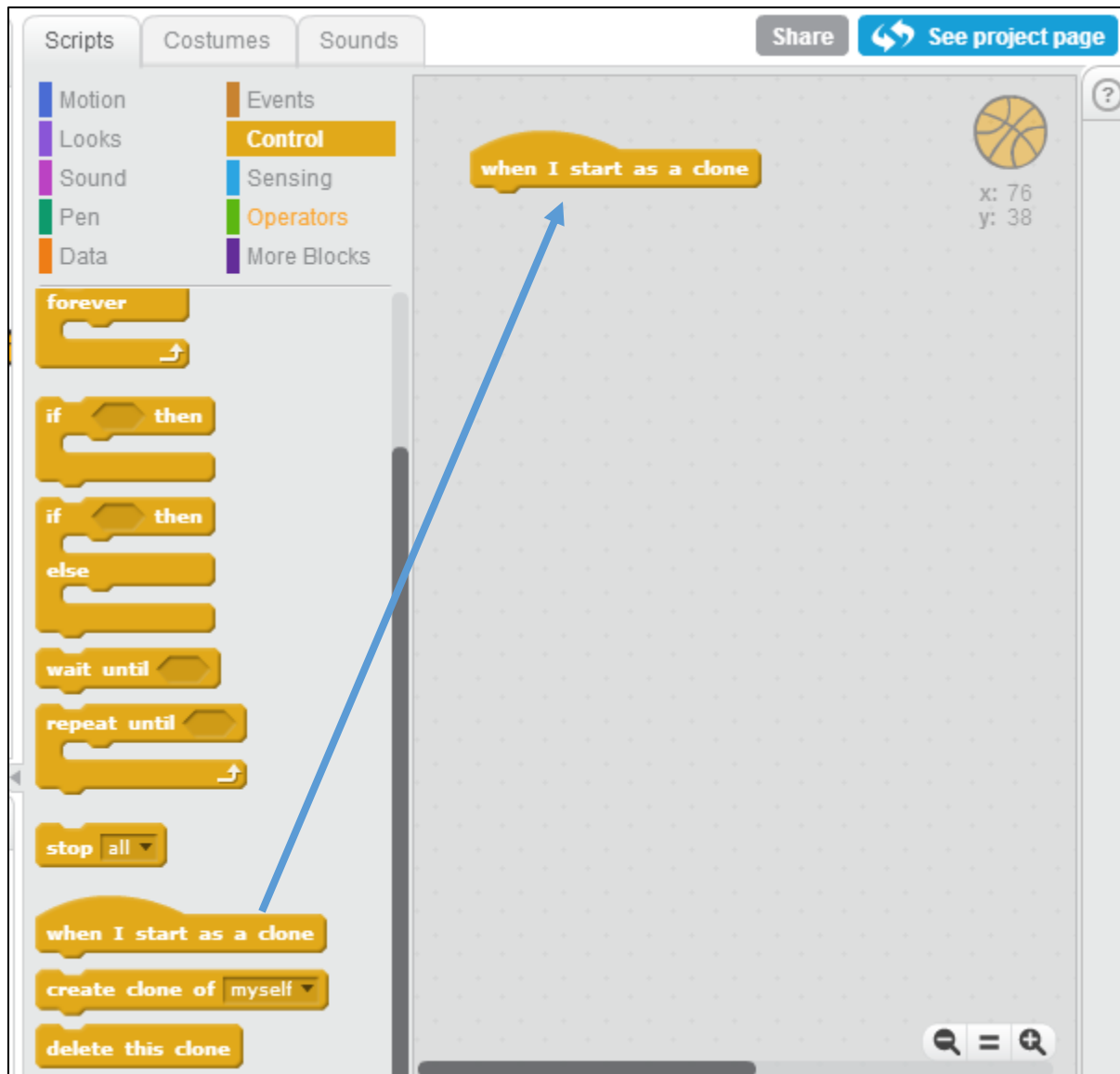


Step 2: Creating the "Ball" and having it Clone, Move, Stamp, and Aim.

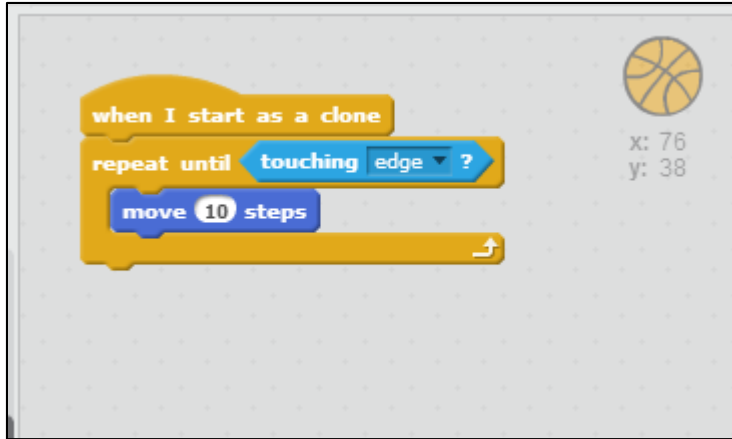
1. Click the "Select Sprite From Library" icon () and choose a Sprite. I choose a ball from "Things."
2. Name your Sprite. (I called it "BallParent")



3. Make sure you are focused on the Ball's scripts. This 'BallParent' will be the template through which we create copies of the ball as they are shot out of the canon. First, drag a 'when I start as a clone' block from the Control category into the programming area.



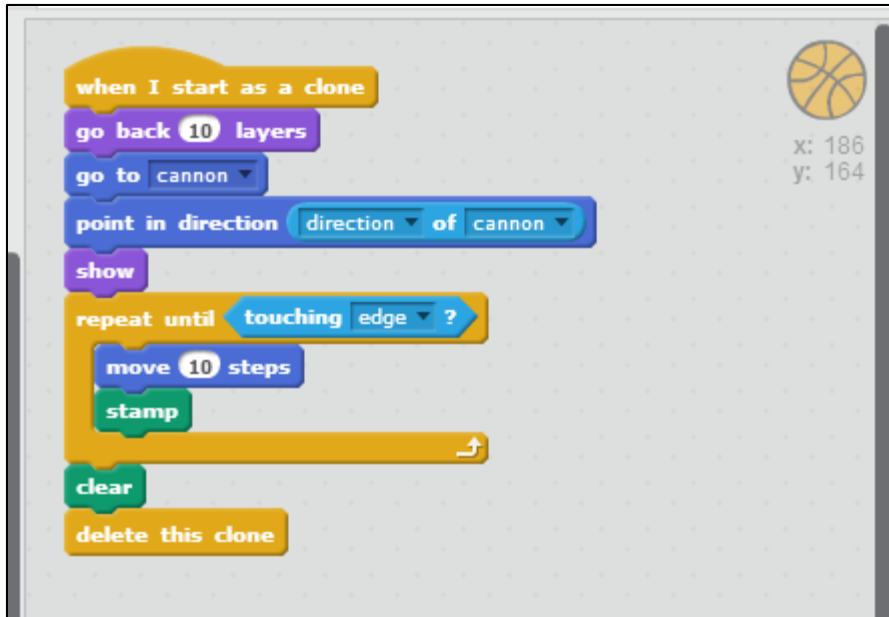
4. We want the clone of the ball to move until it touches the edge of the screen. We will use the "Repeat Until". Drag a "Repeat Until" into the Balls Scripts pane. Put a "touching edge" inside the hexagon socket. Place a 'Move 10 Steps' inside the 'Repeat Until'.



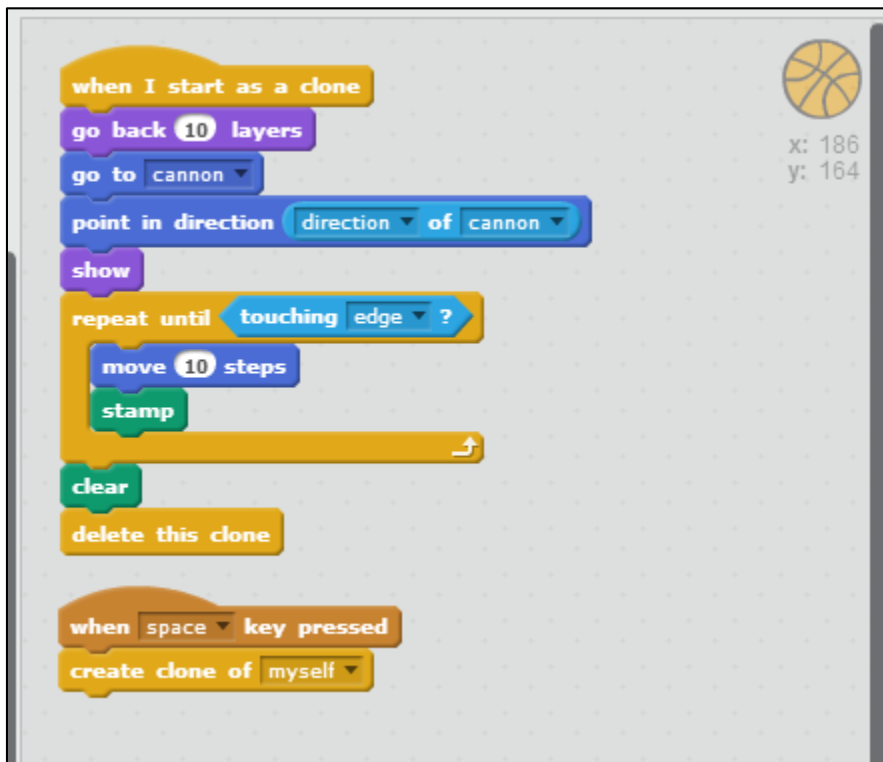
4. If we double click on the Script, the ball will move. Now we want the ball to "stamp" (leave a trail) and bounce off the edge:
- Drag "stamp" into the "repeat until" stack.



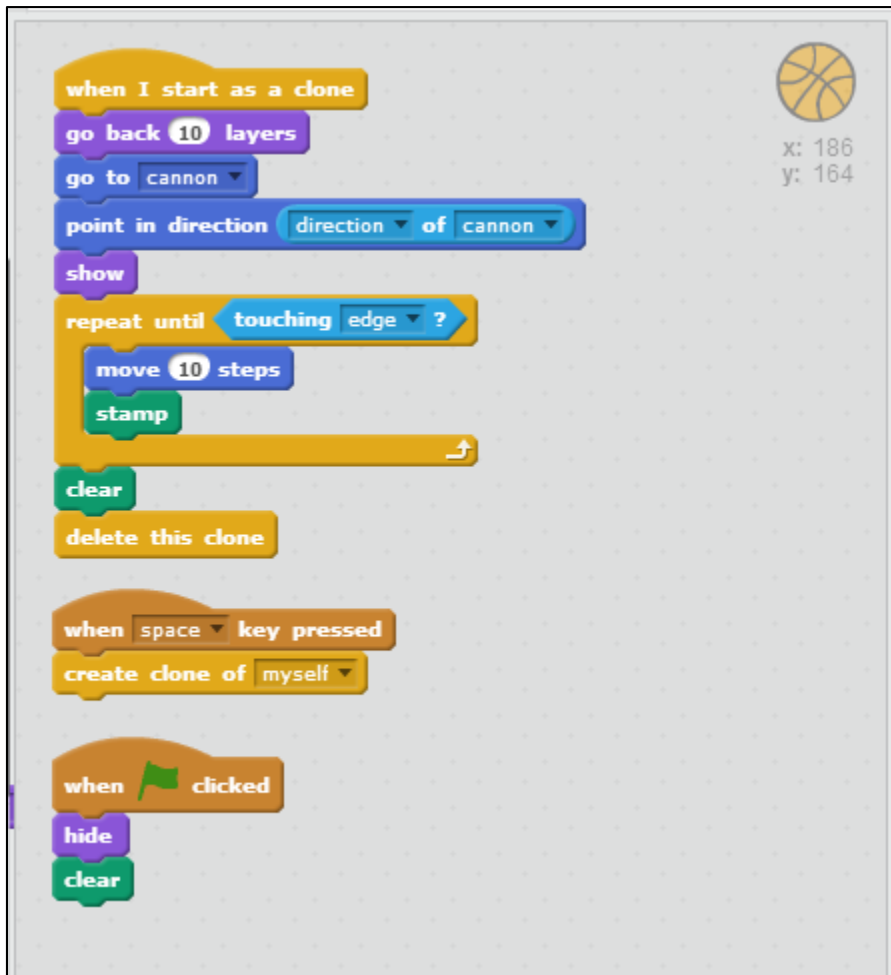
5. Now we want the clone of the ball to 'delete' itself after the script is done:
- Drag a "clear" onto the bottom of "hide."
 - Place a "show" on top of the 'repeat until'
 - Drag a 'delete this clone' after the clear.
 - Drag a 'go to canon' block above the 'show'
 - Drag a 'point in direction' and 'direction of canon' and place them after the 'go to canon'



6. We want the BallParent to start this script when the space key is pressed:
 - a. Drag a "when space key pressed" into the scripts pane.
 - b. Add a create clone of myself



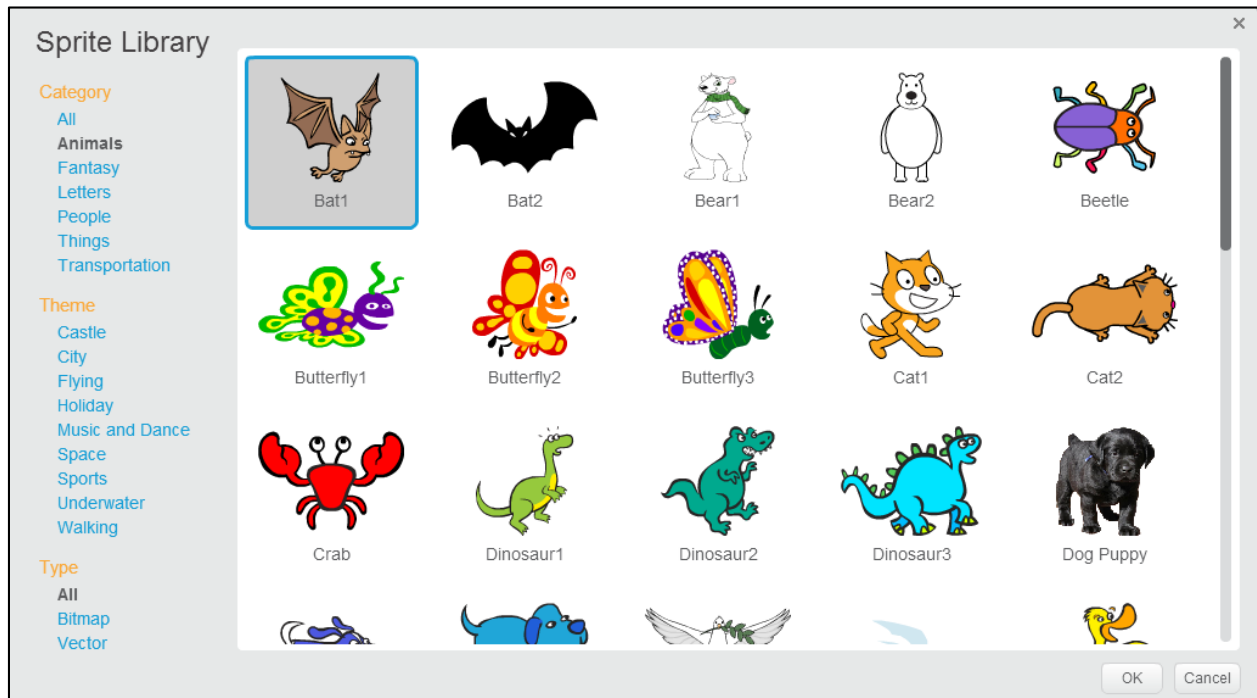
7. Finally, Drag a 'when green flag clicked' and a hide block, and a clear block into the Scripts area.



Step 3: Creating the Targets. Automatic Movement and Conditional Statements.

We have created the Cannon and the Ball. Now it is time to make the targets. We will create one Target that moves, and hides when hit by the ball. Then we will copy the Target several times.

1. Click the "Select Sprite from File" icon and select a Sprite that has multiple costumes. (We will use this later to simulate movement.) I have selected the Bat1



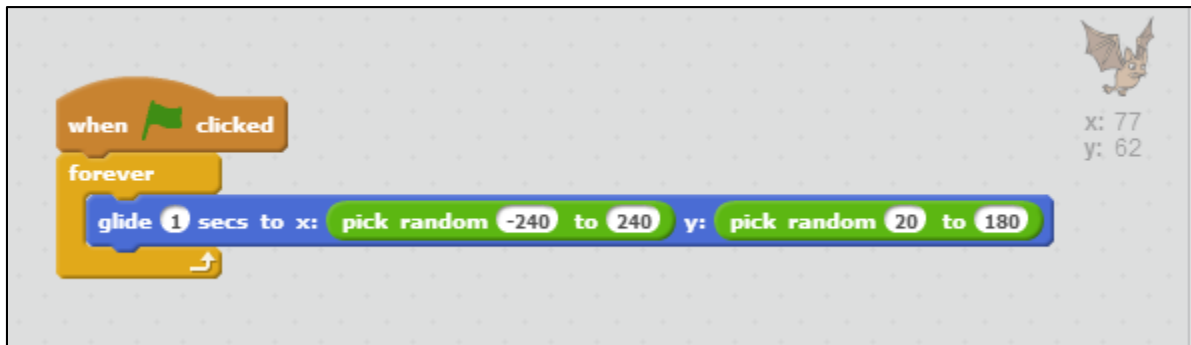
2. Name the Sprite (I chose "Bat1")
 - a. Drag a "When Green Flag Clicked" into the scripts pane.
 - b. Drag and connect a "Forever" to the "When Green Flag Clicked"
 - c. Drag a "glide 1 secs to x: y: "



3. Now set the random numbers:
 - a. Click on the Green "Operators" category and drag two "pick random" green ovals to the scripts pane.
 - b. Put "-240" in one "pick random" value and "240" in the other.
 - c. In the second "pick random," put the values 20 and 180



4. Drag the "pick random -240 to 240" to the x value of the "glide" block. Drag the "pick random 20 to 180" to the y value of the "glide" block.



5. Click the Green Flag. Your Target should now move about the screen.

6. To simulate wings flapping. Use the following Scripts:



Final steps: Make the Target Hide, Show, Play a Sound, and Change Score.

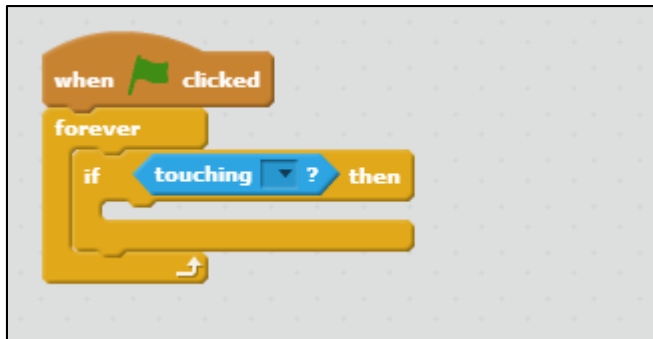
7. Drag a "When Green Flag Clicked" into the Bat1 Scripts pane.



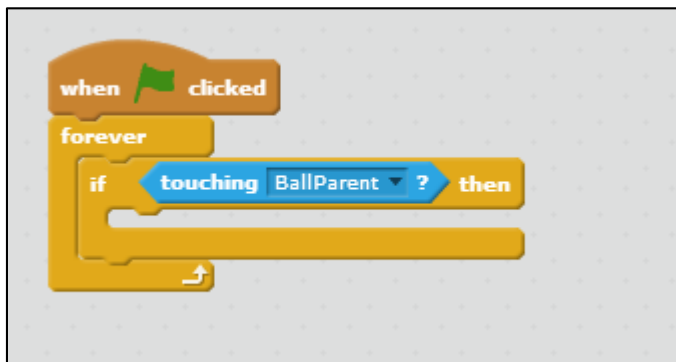
8. Drag a "Forever" and an "if then" into the Scripts pane. (Conditional Statement.)



9. Click the "Sensing" category. Drag a "Touching" hexagon into the "Forever If" Script.



10. Change the "Touching" to "BallParent."

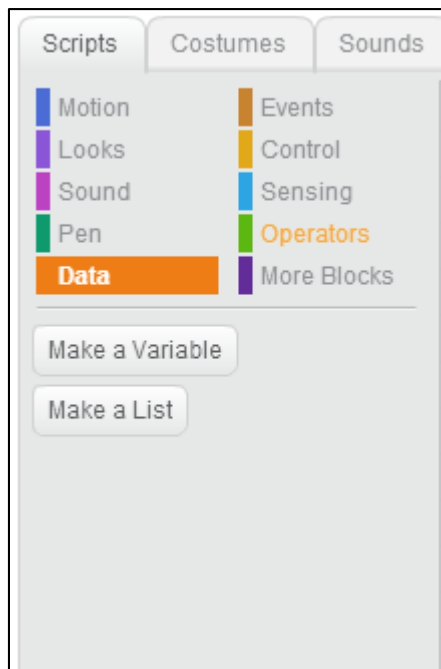


11. Put the following inside the "Forever If."

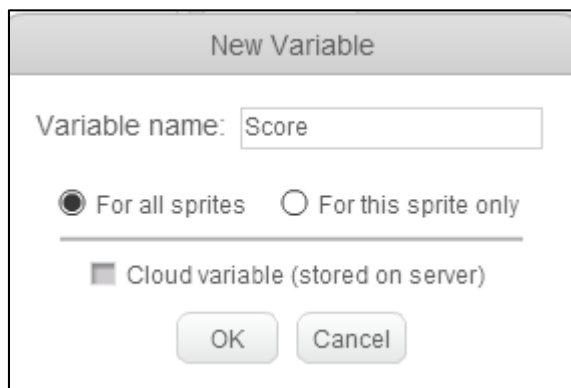
- a. Hide
- b. Wait 3 Seconds
- c. Show
- d. Place a show beneath the Green Flag Clicked.



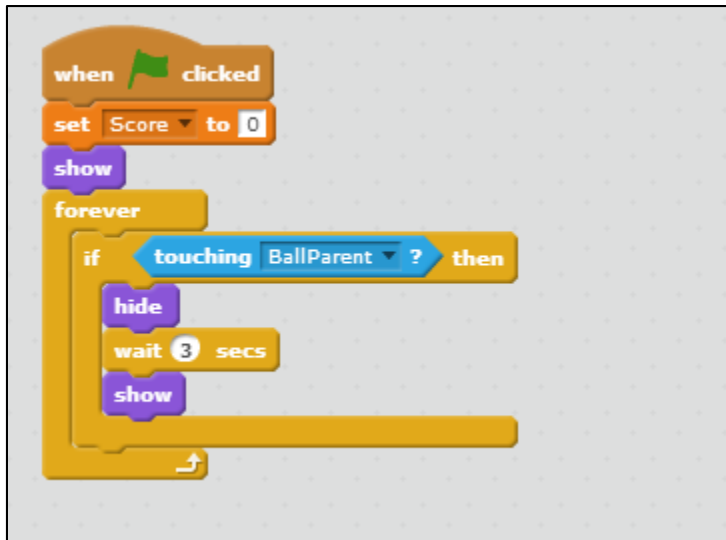
12. Click on "Data"



13. Make a variable called "Score"



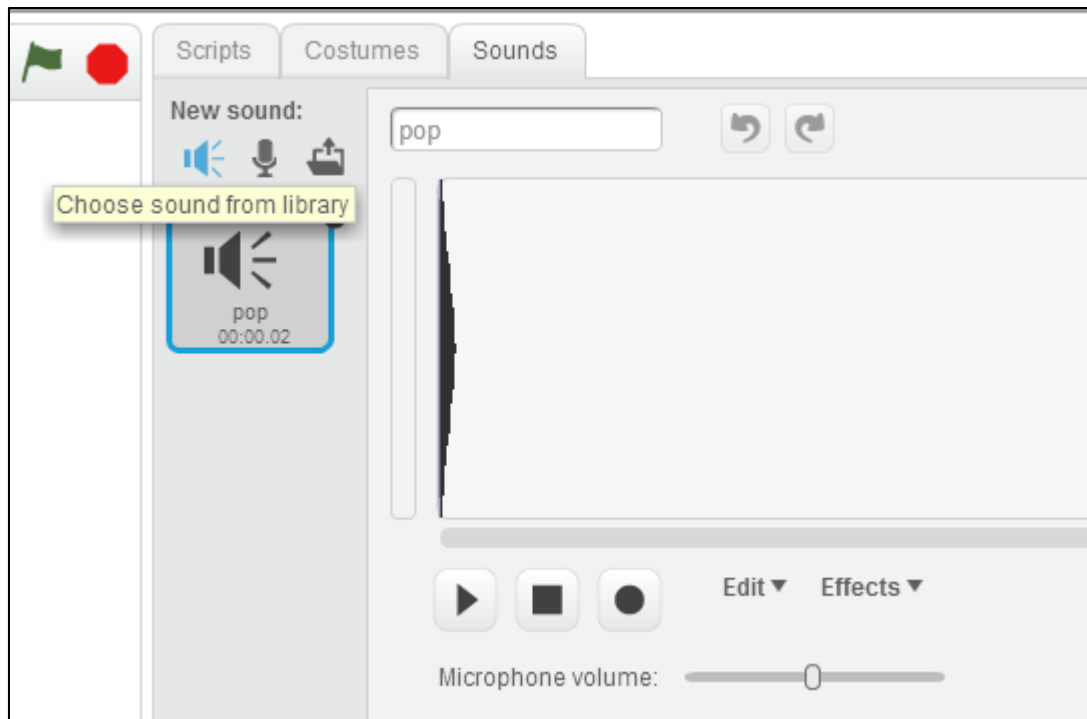
14. Put "Set Score to 0" under the "When Green Flag Clicked" on the Bat1 Sprite



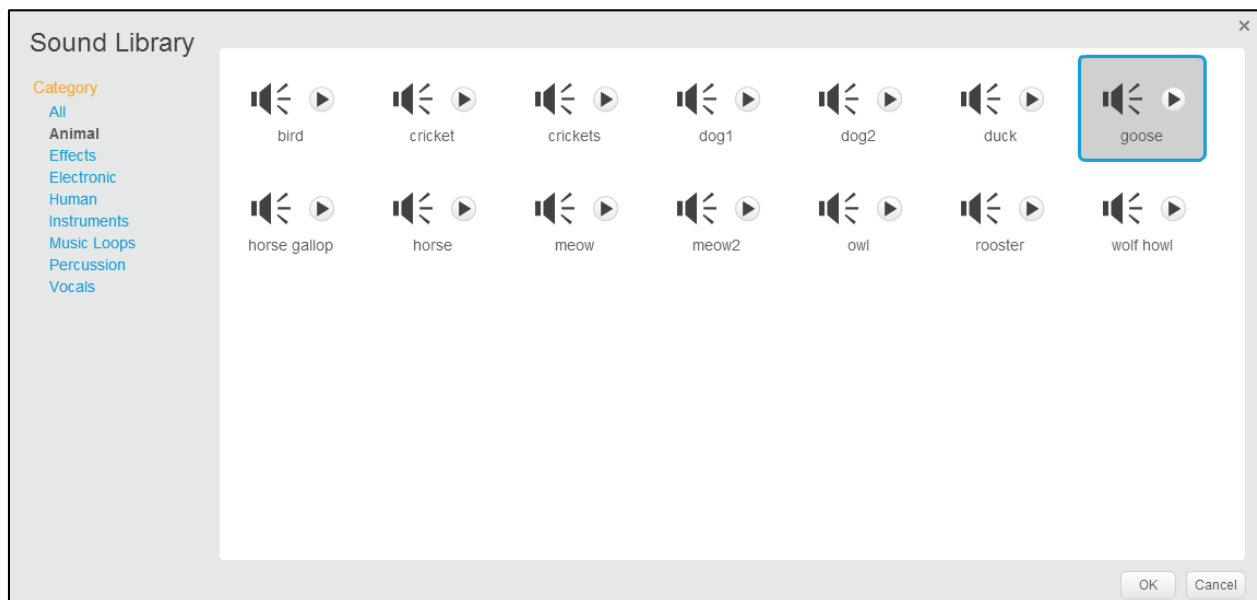
15. Put a "Change Score by 1" inside the "if statement."



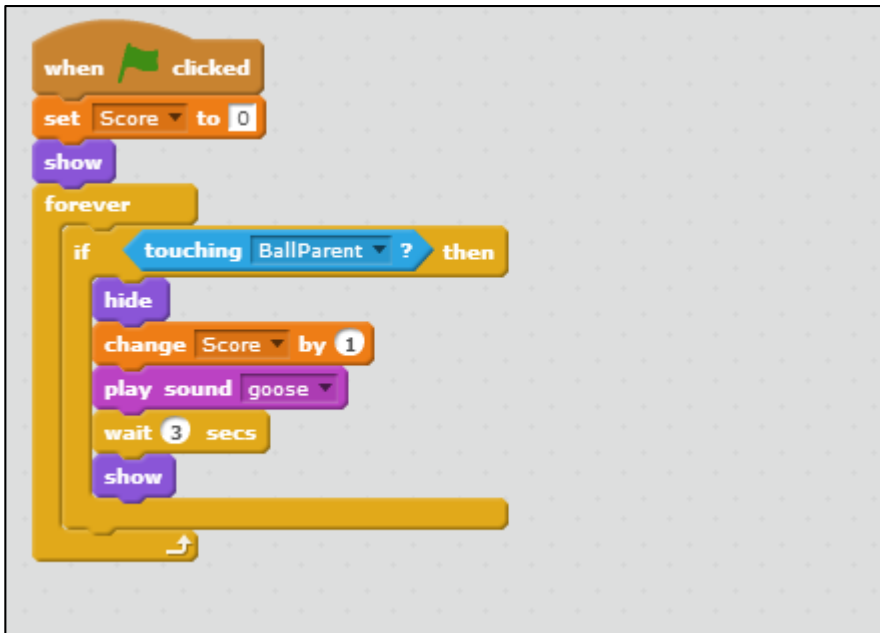
16. Click on the "Sounds" tab



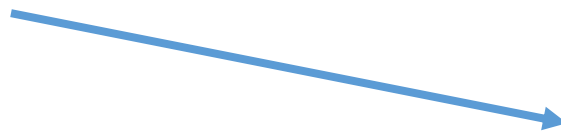
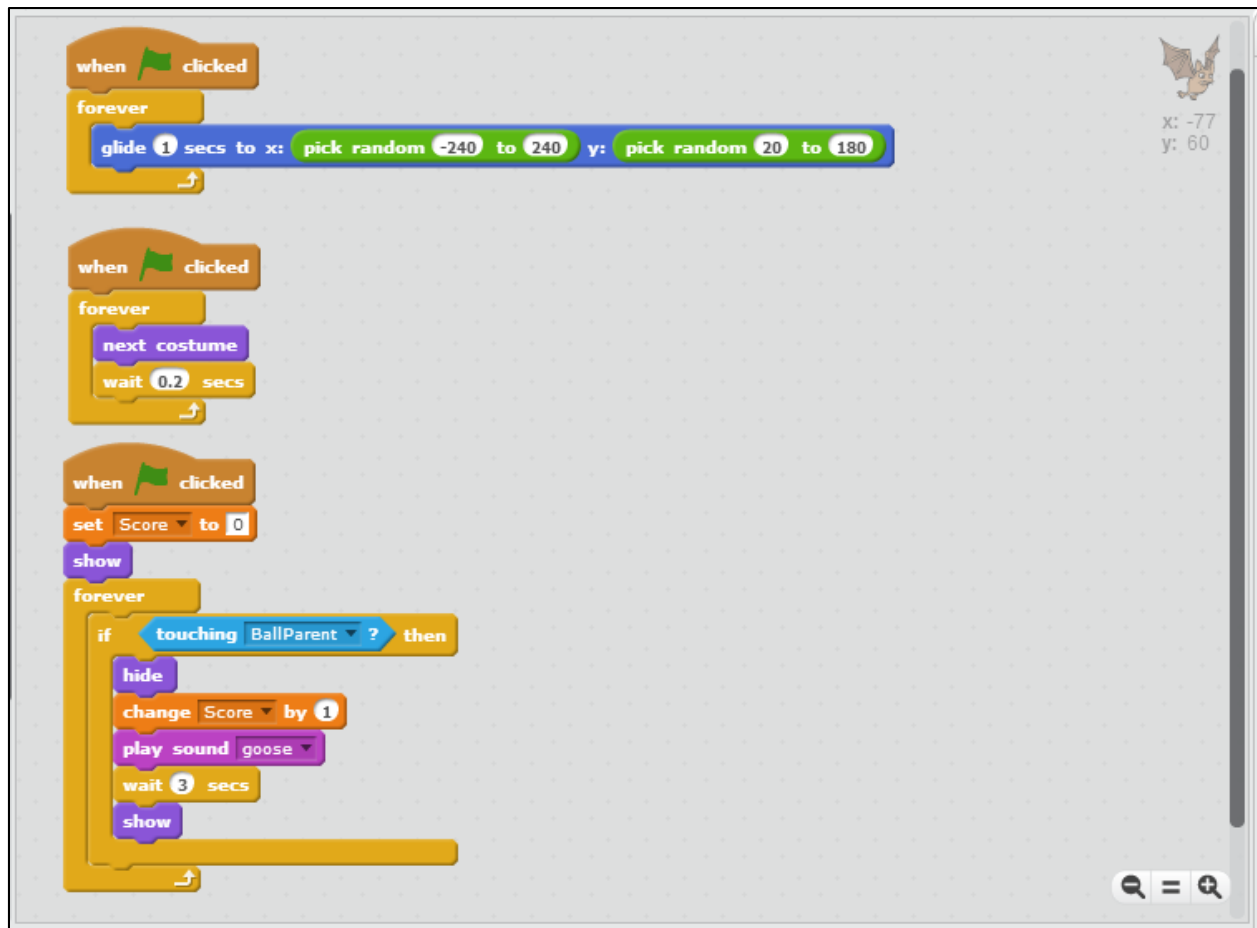
17. Import a new sound



18. Drag the "Play sound" block into the "Forever If."



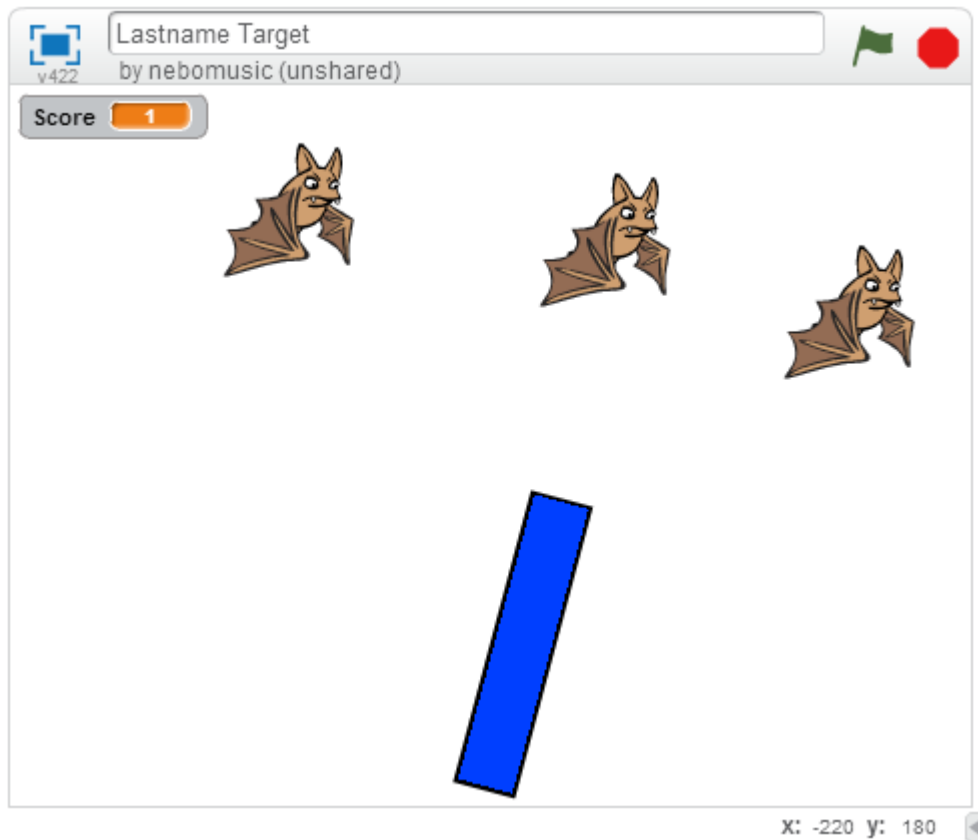
19. Complete Target Script should look like this:



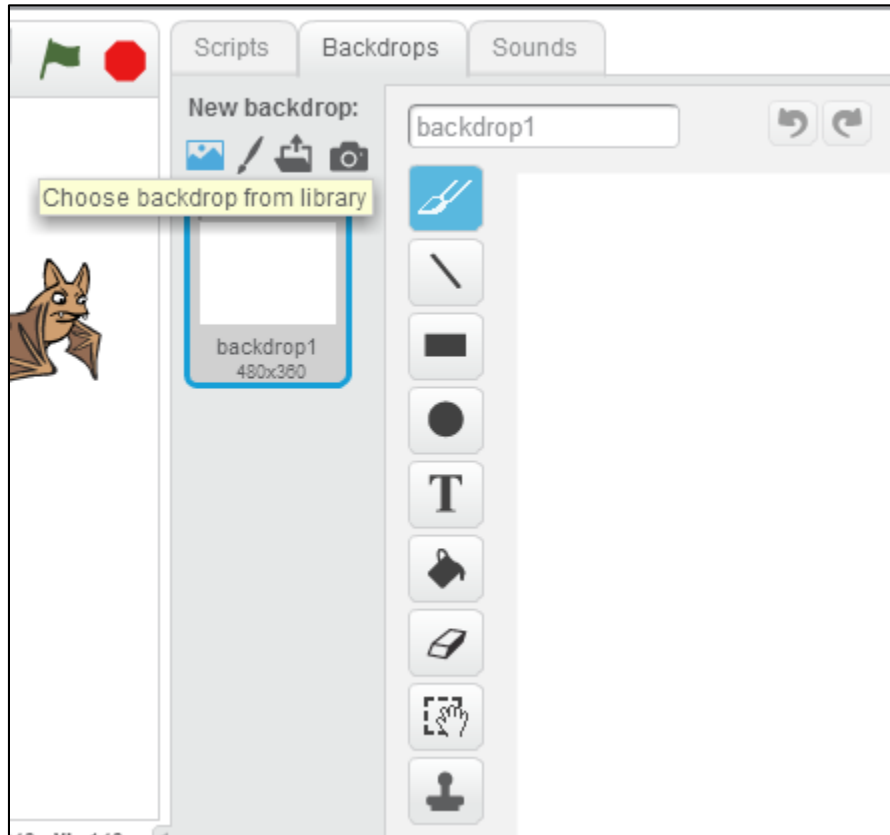
20. Click the "Stamp" tool and copy the Target several times.

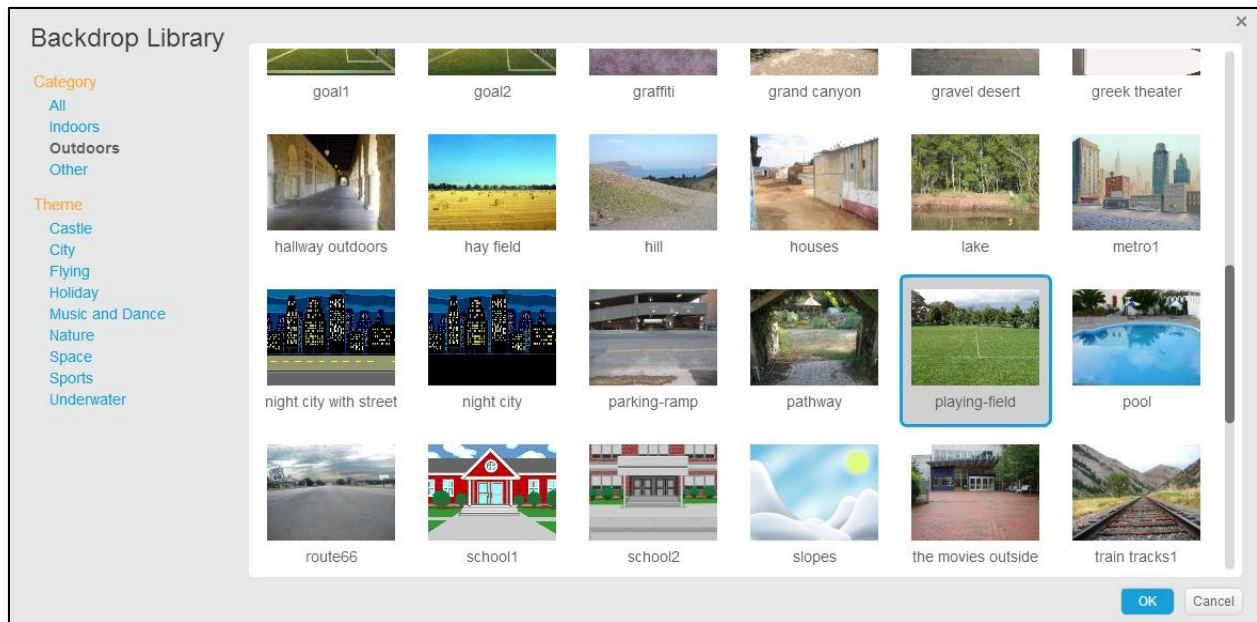


21. Game should look something like this.



22. To change the "Stage." (Like importing costumes)
- Click the "Stage" icon
 - Click the "Backgrounds" tab
 - Click "Import."
 - Select the desired background.





23. Click the Green Flag and try your game!

