# Lesson 6 - Beetle Battle
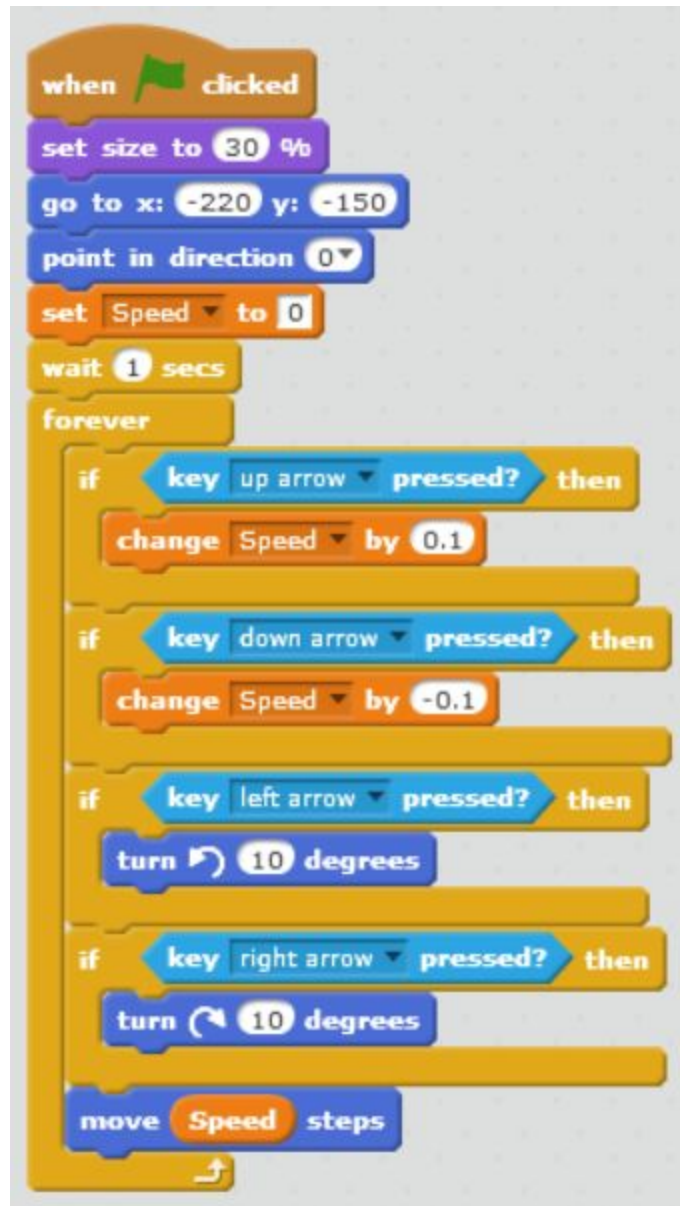
1. Create a player one beetle:
   a. Start a new Scratch program.
   b. Add a background:
      i. Click **Choose a backdrop from library** and select Stripes (look under Other).
   c. Create the player 1 beetle sprite:
      i. Click **Choose sprite from library**.
      ii. Find and select the Beetle sprite (look under Animals).
   d. Change the beetle's color:
      i. Go into the sprite's **Costume** tab.
      ii. Click the **Color a shape** button (looks like a paint can).
      iii. Select Red from the paint pallet at the bottom of the canvas.
      iv. Click once on each beetle back section to paint the beetle red (it doesn't have to be all red, just the two back sections is enough).
      v. It should look something like this:
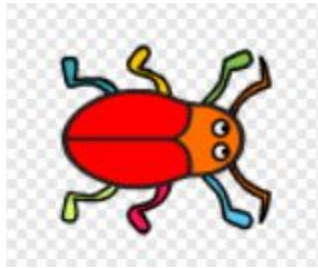


   e. Create a new variable called Speed:
      i. Select the **Data** category under scripts.
      ii. Click **Make a Variable**.
      iii. Name the variable "Speed" and make sure it is set **For this sprite only**.
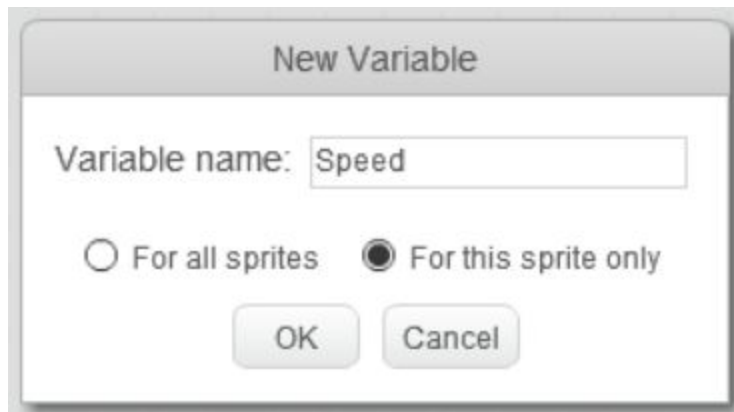


      iv. After the variable is created, deselect the checkbox next to it in the **Data** scripts area so it won't show on the stage.
   f. Add the following code to make the beetle move:

```
when [flag] clicked
set size to (30) %
go to x: (-220) y: (-150)
point in direction (0▾)
set [Speed▾] to (0)
wait (1) secs
forever
    if < key [up arrow▾] pressed? > then
        change [Speed▾] by (0.1)
    if < key [down arrow▾] pressed? > then
        change [Speed▾] by (-0.1)
    if < key [left arrow▾] pressed? > then
        turn ↺ (10) degrees
    if < key [right arrow▾] pressed? > then
        turn ↻ (10) degrees
    move (Speed) steps
```

i.  Description:
   1. When the start flag is clicked resize the beetle to 30% of original size, go to the starting position, point up, set speed to 0, and wait for the rest of the game to load.
   2. Then repeat forever:
      a. If the up arrow is pressed, increase the speed.
      b. If the down arrow is pressed, decrease the speed.
      c. If the left arrow is pressed, rotate left.
      d. If the right arrow is pressed, rotate right.
      e. Move the number of spaces equal to the speed in the direction the beetle is facing.

g. Now add the following code to allow the beetle to wrap around the screen:

2
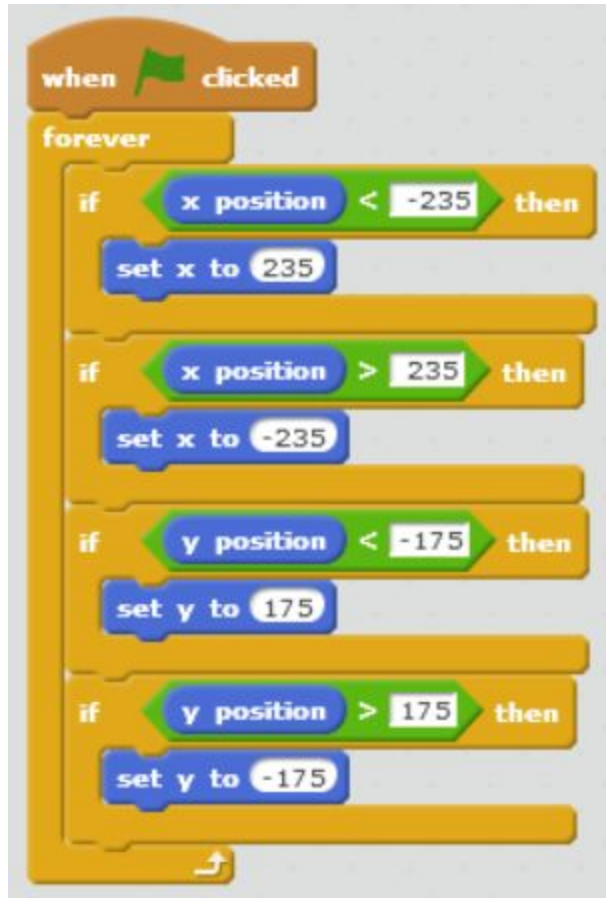
    i.   Description:
- 1. When the green start flag is pressed, repeat forever:
  - a. If the beetle travels off the left edge of the screen, the beetle reappears at the right edge of the screen.
  - b. If the beetle travels off the right edge of the screen, then it will reappear at the left edge of the screen.
  - c. If the beetle travels off the bottom edge of the screen, the beetle reappears at the top edge of the screen.
  - d. If the beetle travels off the bottom edge of the screen, then it will reappear at the top edge of the screen.
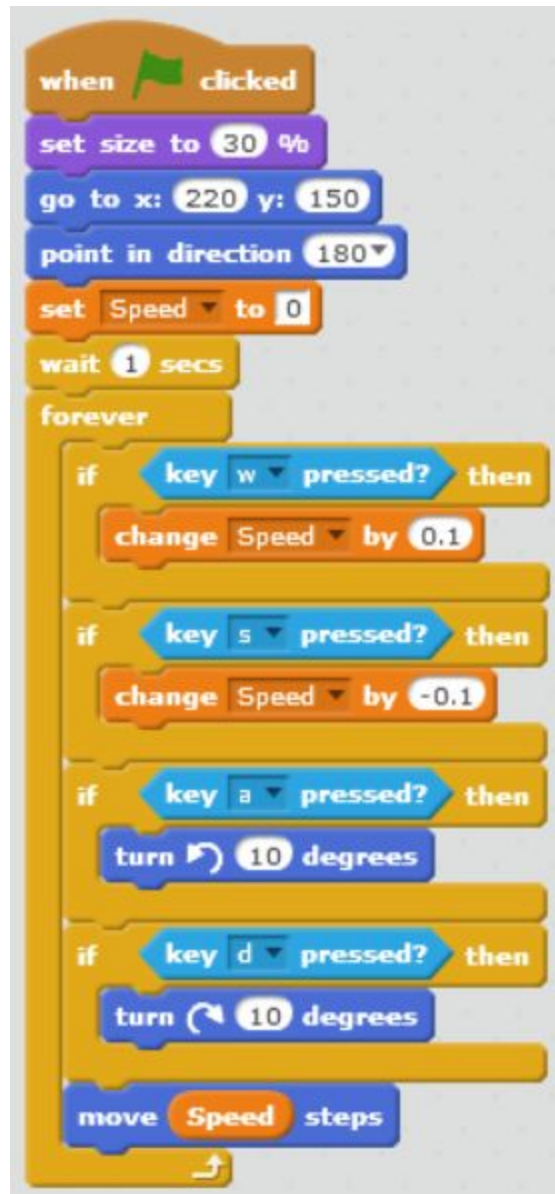- h. SAVE and RUN.
2. Create a beetle for a second player:
   - a. Duplicate the beetle sprite by right clicking (the beetle in the sprite space) > duplicate or by clicking the **duplicate** button (looks like a stamp) located at the top of the screen, then clicking beetle in the sprite space.
   - b. Repeat the paint steps above, but with yellow paint to recolor the second beetle yellow.
   - c. Change the new beetle's code so a second player can control it on the same keyboard:
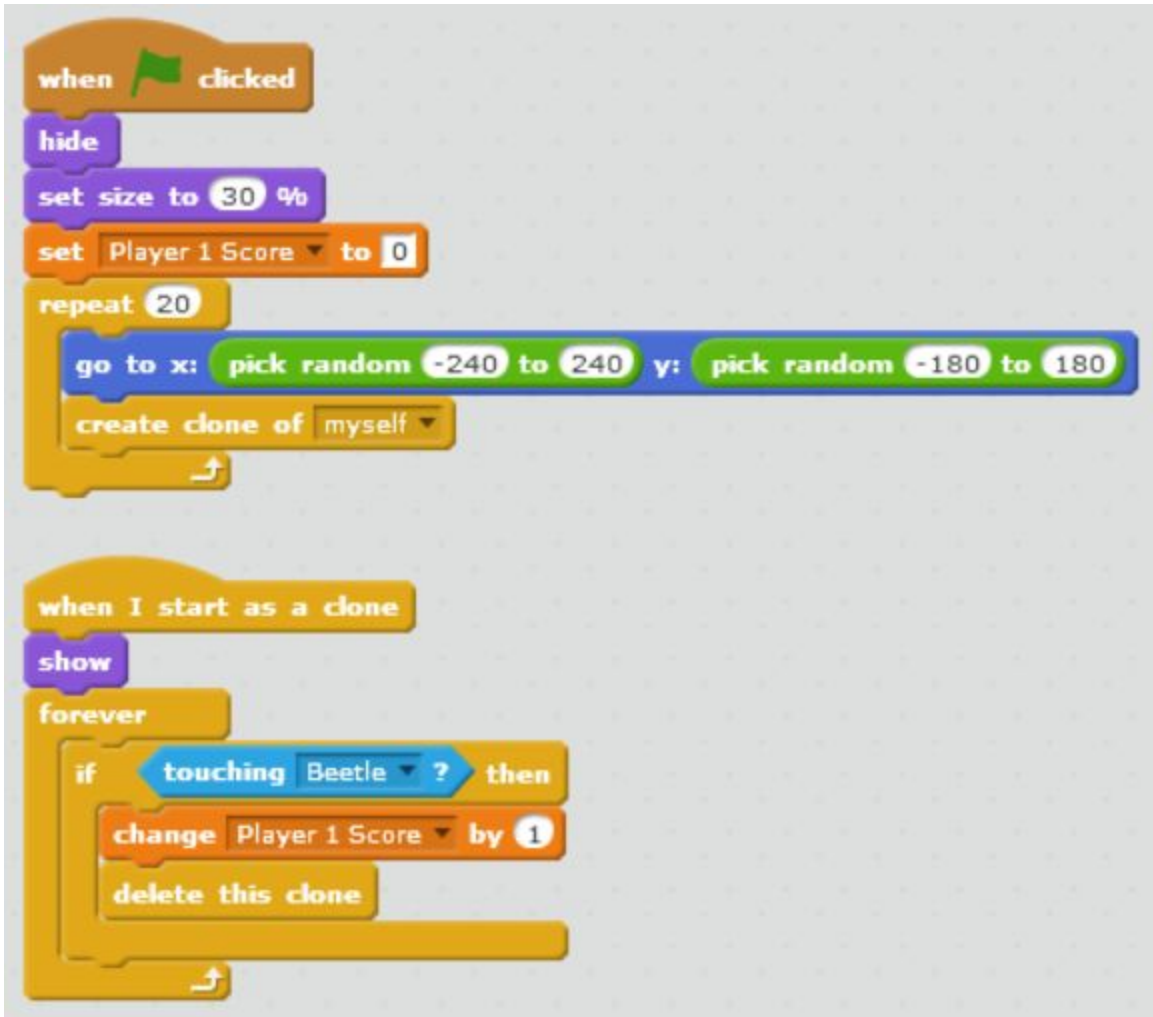     - i. Make the starting position in the opposite corner (**go to x: 220 y: 150**).

      ii.     Point in the opposite direction (**point in direction 180**).
      iii.    Change from **up** to **w**.
      iv.    Change from **down** to **s**.
      v.     Change from **left** to **a**.
      vi.    Change from **right** to **d**.
      vii.   The code should look something like this:



      viii.  Leave the beetle screen wrapping code unchanged.
    d.  SAVE and RUN.
3.  Create targets for the red beetle:
    a.  Create the apple target:
      i.     Click **Choose sprite from library**.
      ii.    Find and select the Apple sprite (look under Things).

b. Create a new variable called Player 1 Score:
    i.   Select the **Data** category under scripts.
    ii.  Click **Make a Variable**.
    iii. Name the variable "Player 1 Score" and make set it **For all sprites**.
    iv.  After the variable is created, deselect the checkbox next to it in the **Data** scripts area so it won't show on the stage.
c. Add the following code to position the apple targets:



```
when [flag] clicked
hide
set size to (30) %
set [Player 1 Score] to [0]
repeat (20)
    go to x: (pick random (-240) to (240)) y: (pick random (-180) to (180))
    create clone of [myself]

when I start as a clone
show
forever
    if < touching [Beetle] ? > then
        change [Player 1 Score] by (1)
        delete this clone
```

    i.   Description:
            1. When the green start flag is clicked, hide the apple, shrink the size, reset the score to 0, and create 20 copies of the apple in random locations around the stage.
            2. When a clone is created, show the clone and repeat forever:
                    a. If the red beetle touches the apple, increase the score and delete the apple.
d. Now add the following code to check if all the apples have been eaten by the red beetle:

        i.     You'll have to create a new message called "P1 Win" to broadcast by using the dropdown menu in the **broadcast** code snippet.
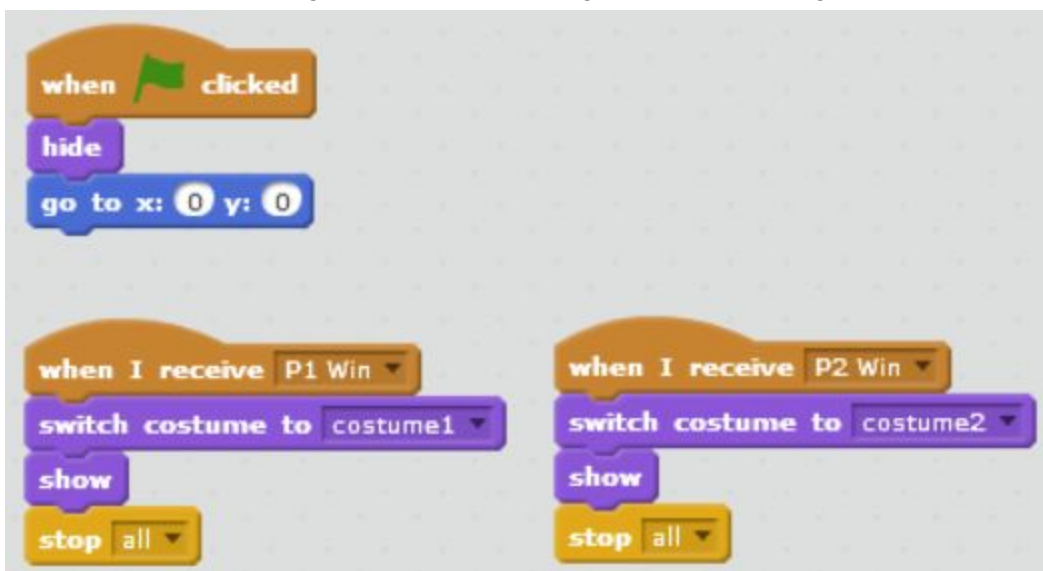


        ii.    Description:
            1.   When the green flag is clicked, check forever:
                a.   If player 1's score = 20 then they got all the apples, so broadcast that they won.

    e.   SAVE and RUN.

4. Create banana targets for beetle 2:
    a.   Add the bananas target sprite:
        i.     Click **Choose sprite from library**.
        ii.    Find and select the Bananas sprite (look under Things).
    b.   Copy over the code from the Apple sprite:
        i.     Go into the Apple code tab.
        ii.    Duplicate one of the code blocks by right clicking the top script of the block > **Duplicate** then drag the duplicated block over and click on the Bananas sprite in the sprite space (you can alternately use the **duplicate** button that looks like a rubber stamp to do this).
        iii.   Now repeat the previous step to duplicate the other two code blocks into the bananas sprite.
    c.   Edit the bananas code to apply to the yellow beetle:
        i.     Create a new variable called Player 2 Score:
            1.   Select the **Data** category under scripts.
            2.   Click **Make a Variable**.
            3.   Name the variable "Player 2 Score" and make set it **For all sprites**.
            4.   After the variable is created, deselect the checkbox next to it in the **Data** scripts area so it won't show on the stage.
        ii.    In the block that creates a clone of the bananas, change the script that sets Player 2 Score to 0 to **set Player 1 Score to 0**.
        iii.   In the block where the bananas start as a clone:
            1.   Change the 'if touching Beetle then' to **if touching Beetle2 then**.

2. Change the 'change Player 1 Score by' script to **change Player 2 score to 1**.

  iv. For the code block that checks if all bananas have been eaten:
    1. Switch the 'Player 1 Score' to **if Player 2 Score = 20 then** script.
    2. Change the 'P1 Win' to **Broadcast P2 Win**.

 d. SAVE and RUN.

5. Create a game over message:
  a. Draw the win messages:
    i. Click the **Paint new sprite** button.
    ii. Select the **Convert to vector** button in the lower right corner.
    iii. Select the **Text** drawing tool (the T button) on the right side of the canvas.
    iv. Select the Red color (optionally also select a different font) and click in the canvas.
    v. Type "PLAYER 1 WINS!"**.**
    vi. Center the text in the paint canvas by dragging to the center or by selecting the **Select costume center** button (top right corner; looks like a +) then clicking in the center of the text.
    vii. Now duplicate costume1 by right clicking the costume1 icon > duplicate or by using the **duplicate** button (the rubber stamp).
    viii. Finally, edit costume2:
      1. Double click the text and change it to say "PLAYER 2 WINS!".
      2. Use the **Color a shape** button (paint can) to recolor the text to something close to yellow (don't use yellow, because you won't be able to see it.

  b. Add the following code to control the game over messages:



    i. Description:
      1. When the game is started, hide the message and center it.

          2. If the P1 Win message is the first to be broadcast, display costume1 (the Player 1 Wins message) and stop the game.

          3. If the P2 Win message is the first to be broadcast, display costume2 (the Player 2 Wins message) and stop the game.

6. SAVE and PLAY!!! We're done!

    a. Other ideas:

        i. Add obstacles that the beetles can't move through.

        ii. Add collision conditions for if the beetles touch each other (like the one with the lower speed gets knocked off course).

        iii. Add sounds.

        iv. Add a start screen with instructions for the game.