

1

A Breakout Game Created in Scratch

<http://cs.oregonstate.edu/~mjb/scratch>




Oregon State University
Mike Bailey
mjb@cs.oregonstate.edu

breakout_game.pptx mjb - February 12, 2019

2

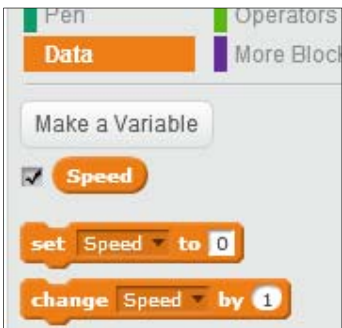
Events



Oregon State University Computer Graphics mjb - February 12, 2019

3


Data



Oregon State University Computer Graphics mjb - February 12, 2019

4


Control



Oregon State University Computer Graphics mjb - February 12, 2019

5

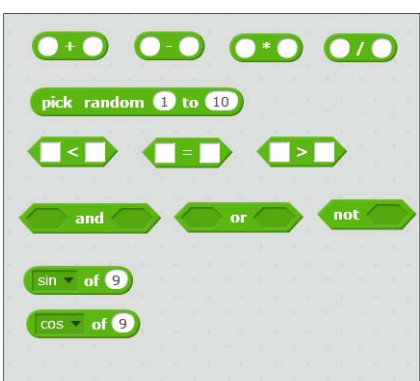
Sensing



Oregon State University Computer Graphics mjb - February 12, 2019

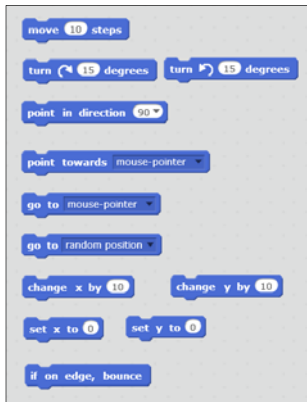
6

Operators



Oregon State University Computer Graphics mjb - February 12, 2019

Motion



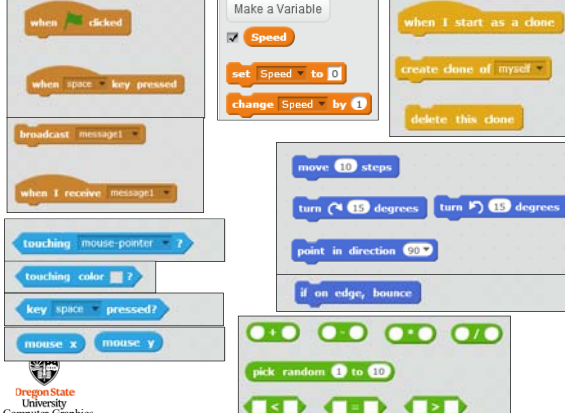
```

when green flag clicked
  move 10 steps
  turn 15 degrees
  turn 15 degrees
  point in direction 90
  point towards mouse-pointer
  go to mouse-pointer
  go to random position
  change x by 10
  change y by 10
  set x to 0
  set y to 0
  if on edge, bounce
  
```

Oregon State University Computer Graphics

mjb - February 12, 2019

Three Actors



```

when green flag clicked
  when space key pressed
  broadcast message
  when I receive message
    touching mouse-pointer?
    touching color?
    key space pressed?
    mouse x
    mouse y
  
```

Oregon State University Computer Graphics

mjb - February 12, 2019

Scratch Handles the Directions you are Going Like a Compass Does

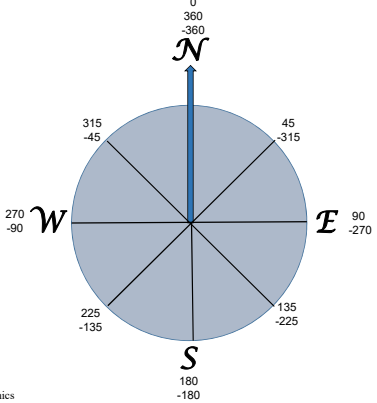



Diagram illustrating directions and angles on a compass:

- 0, 360, -360: North (N)
- 45, -45, 315, -315: Northeast (NE)
- 90, -90, 270, -270: East (E)
- 135, -135, 225, -225: Southeast (SE)
- 180, -180: South (S)
- 225, -225, 315, -315: Southwest (SW)
- 270, -270, 315, -315: West (W)

Oregon State University Computer Graphics

mjb - February 12, 2019

Three Actors




Displaying Data Variables

Three Actors

Oregon State University Computer Graphics

mjb - February 12, 2019

Paddle: change the ball speed, number of balls, and number of bricks



```

when green flag clicked
  set PaddleY to 140
  set Speed to 3
  set BallsLeft to 5
  set BricksLeft to 50
  broadcast StartGame
  forever loop
    go to x: mouse x y: PaddleY
  
```


When the program starts, set some good values into the variables, get everyone else going, then have the Paddle continuously follow the mouse pointer

The 'q' key can end the game

Oregon State University Computer Graphics

mjb - February 12, 2019

Bricks: change where the bricks are located (you can also change their size)



```

when I receive CreateBricks
  repeat BricksLeft
    create clone of myself
  
```

Test to see if you've won

Position each brick in a random location. Then, wait for the Ball to hit the brick. When it does, decrease the brick count, bounce the Ball (which will result in a pop sound), and delete this brick.

Oregon State University Computer Graphics

mjb - February 12, 2019

Ball: change where the ball launches from and what happens when you win

13

The script for slide 13 includes the following blocks:

- when clicked** (Start the ball):
 - set rotation to 0
 - go to x: pick random -200 to 200 y: pick random 0 to 50
 - set direction to pick random -45 to 45
- when clicked** (Handle the ball getting by the paddle):
 - wait until y position < PaddleY
 - play sound crash location
 - set BallStatus to BounceBack
 - go to x: pick random -200 to 200 y: pick random 0 to 50
 - set direction to pick random -45 to 45
- when clicked** (Move the ball):
 - move Speed steps
- when I receive BounceBack** (Bounce the Ball off the brick):
 - point in direction 180 direction
 - turn 90 pick random 0 to 20 degrees
 - play sound pop
- when I receive StartGame** (Handle winning):
 - say You Win! for 2 sec
 - play sound whoop
 - wait 2 sec

University of Oregon State Computer Graphics
mjb - February 12, 2019

Ball: change how fast or slow the ball can move and what happens when you lose

14

The script for slide 14 includes the following blocks:

- when I receive StartGame** (Bounce the Ball off the paddle):
 - wait until touching Paddle
 - point in direction 180 direction
 - turn 90 pick random 0 to 20 degrees
 - play sound pop
- when I receive StartGame** (Handle losing):
 - wait until BallStatus = BounceBack
 - say You Lost! for 2 sec
 - play sound laugh-mad2
 - wait 2 sec
- when clicked** (Make the Ball move faster):
 - wait until key 1 pressed?
 - set Speed to Speed + 1
- when clicked** (Make the Ball move slower):
 - wait until key 2 pressed?
 - set Speed to Speed - 1

University of Oregon State Computer Graphics
mjb - February 12, 2019