

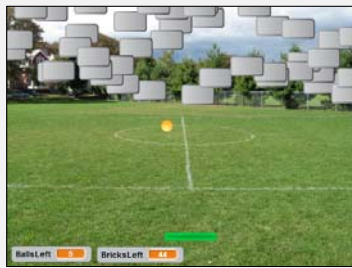
1

A Breakout Game Created in Scratch

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



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



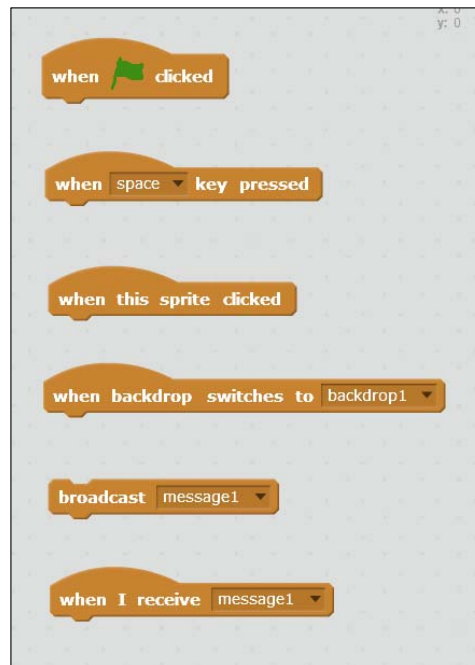
Oregon State
University
Computer Graphics

breakout_game.pptx

mjb - February 12, 2019

Events

2

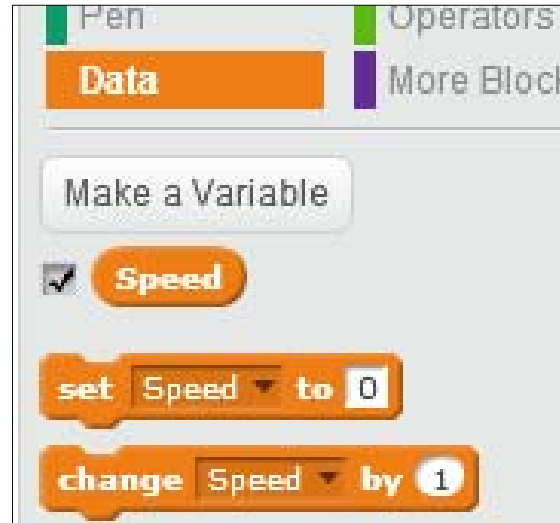


Oregon State
University
Computer Graphics

mjb - February 12, 2019

Data

3



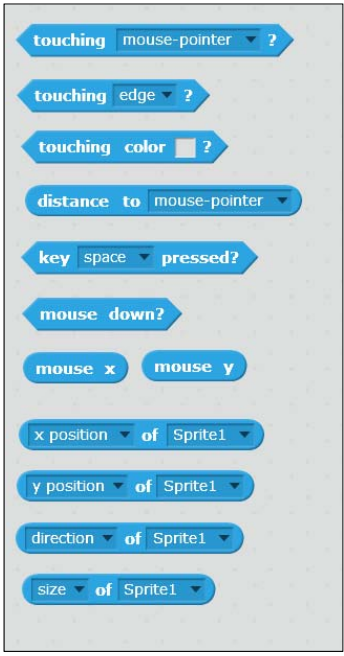
Control

4




5

Sensing



The Sensing block palette contains the following blocks:

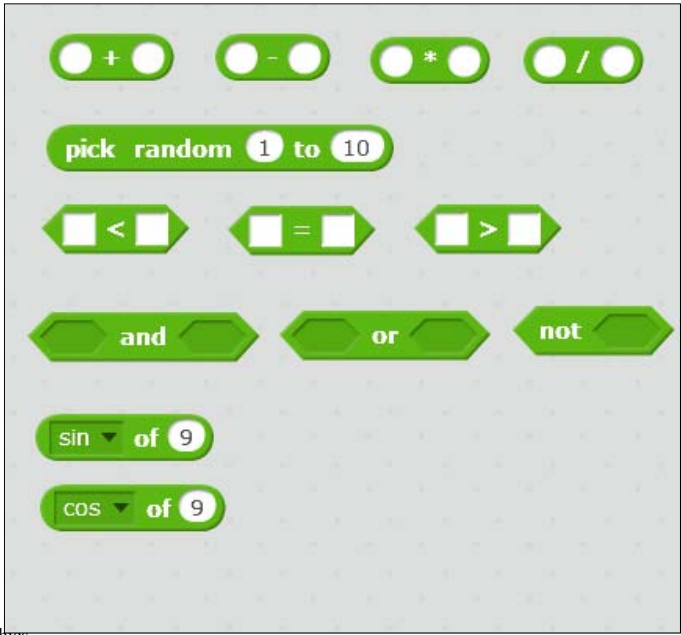
- touching mouse-pointer ?
- touching edge ?
- touching color ?
- distance to mouse-pointer
- key space pressed?
- mouse down?
- mouse x mouse y
- x position of Sprite1
- y position of Sprite1
- direction of Sprite1
- size of Sprite1

 Oregon State University
Computer Graphics

mjb - February 12, 2019


6

Operators



The Operators block palette contains the following blocks:

- + - * /
- pick random 1 to 10
- < = >
- and or not
- sin of 9
- cos of 9

 Oregon State University
Computer Graphics

mjb - February 12, 2019

Motion 7

The Motion block palette contains the following blocks:

- move 10 steps
- turn 15 degrees (left and right)
- 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

The image shows three block palettes from the Scratch interface:

- Events Palette:**
 - when green flag clicked
 - when space key pressed
 - broadcast message1
 - when I receive message1
- Variables Palette:**
 - Make a Variable
 - ☒ Speed
 - set Speed to 0
 - change Speed by 1
- Operators Palette:**
 - when I start as a done
 - create done of myself
 - delete this done

Below these palettes, a custom block is shown with the following code:

```

move 10 steps
turn 15 degrees (left and right)
point in direction 90
if on edge, bounce
  
```

At the bottom, the Operators palette also shows:

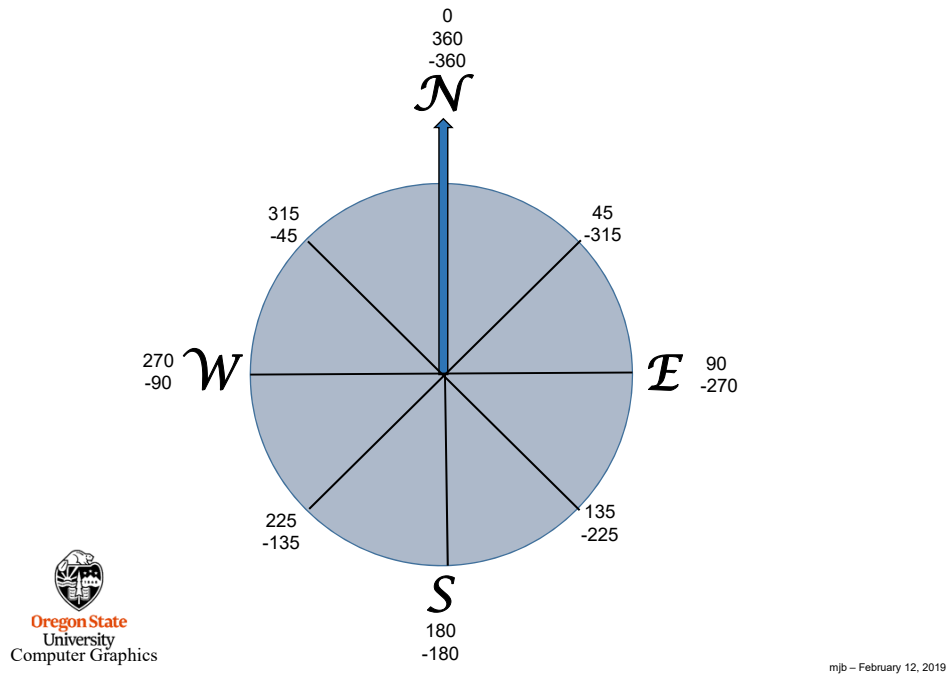
- Arithmetic: +, -, *, /
- pick random 1 to 10
- Comparison: <, =, >

Oregon State University Computer Graphics

jlb - February 12, 2019

Scratch Handles the Directions you are Going Like a Compass Does

9



Three Actors

10



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

11

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

```

when clicked
  set PaddleY to -140
  set Speed to 8
  set BallsLeft to 5
  set BricksLeft to 50
  broadcast CreateBricks
  broadcast StartGame
  forever loop
    go to x: mouse x y: PaddleY

when clicked
  wait until key q pressed?
  stop all
  
```

Computer Graphics

mjb - February 12, 2019

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

12

Create the bricks to start with

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.

```

when I receive CreateBricks
  show
  repeat BricksLeft
    create clone of Button3
  hide

when clicked
  wait until BricksLeft = 0
  broadcast YouWin

when I receive a game
  go to x: pick random -240 to 240 y: pick random 50 to 180

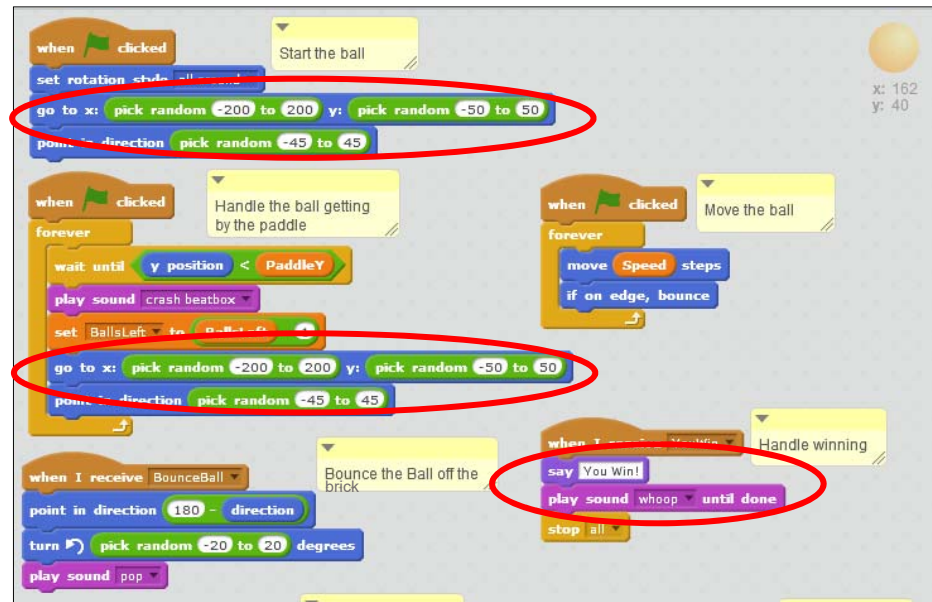
forever loop
  wait until touching Ball
  set BricksLeft to BricksLeft - 1
  broadcast BounceBall
  delete this clone
  
```

Oregon State University
Computer Graphics

mjb - February 12, 2019

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

13



University
Computer Graphics

mjb - February 12, 2019

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

14



Oregon State
University
Computer Graphics

mjb - February 12, 2019