

## Intro to Programming

### Scratch #14h – Pong

Objective: Use the techniques you've learned in Scratch to finish a 3-level pong game. Then, add a start screen to Pong and make a harder version of the game.

1. Login to the Scratch website. You should already have a project called *scratch\_14\_example* that we completed in class.
  - a. Open the *scratch\_14\_example* project.
  - b. Do *File->Save as a copy*. The name of the project will change to *scratch\_14\_example copy*.
  - c. Rename the project to *first\_last\_scratch\_14*
  - d. Do *File->Save now*
2. Get ready.
  - a. Add a second **Ball** sprite. This sprite will only be used on level 2
  - b. Create a variable called **Score** for **all** sprites. This variable should appear on the Stage when the green flag is clicked.
  - c. The winner and loser screens we did in class were lame. Make better versions of these screens.
3. You have these requirements for the project:
  - a. **Sounds:**
    - i. Make a sound when a ball hits the paddle or a brick. You can use the same sound for the paddle and the brick or different sounds for each one of them. *Boing* is always a good sound.
    - ii. If the player wins, play a cheering sound (until done).
    - iii. If the player loses, play a sad sound (until done).
    - iv. Play music while the game is playing.
  - b. **Level 1:**
    - i. Timer is set for 30 seconds.
    - ii. One ball appears on the screen.
    - iii. Speed increases every 3 seconds.
    - iv. Score increases when the ball hits the paddle.
    - v. Both **Time Left** and **Score** appear on the screen. Both variables are in large readout mode with labels on the Stage.
  - c. **Level 2:**
    - i. Timer is set for 40 seconds.
    - ii. Two balls appear on the screen. They must have different colors and the colors must be different from the ball on Level 1.
    - iii. Speed increases every 5 seconds.
    - iv. Score increases when either ball hits the paddle.

- v. Both *Time Left* and *Score* appear on the screen. Both variables are in large readout mode with labels on the Stage.
- d. **Level 3:**
- i. Both the *Time Left* variable and the *Score* variable hide. Neither variable should appear on the screen. There is no timer in Level 3. Game plays until all bricks are gone.
  - ii. One ball appears on the screen. It must have a different color from any of the balls on Levels 1 and 2.
  - iii. 21 bricks appear on the screen with 3 rows and 7 columns. Each row has a different color brick.
  - iv. Speed increases every 6 seconds.
  - v. Score increases when the ball hits the paddle and when a brick is hit.
  - vi. Level ends when all 21 bricks have been hit.
- e. **Game Over:**
- i. The game is over if the player either loses or wins.
  - ii. The *Score* variable appears on the screen when the game is over. It should have a label reading *Final Score*.
  - iii. The *Time Left* variable does not appear on the screen when the game is over.
  - iv. The player loses the game if any ball hits the **Death Line** in Level 1, 2, or 3
  - v. The player wins the game if all 3 levels are completed successfully.
4. **All** sprites need to receive winner and loser broadcasts. When the game is over, all scripts should stop.
5. Now, add a Start Screen:
- a. Create a backdrop that has directions for playing the game. There are 3 levels. Levels 1 and 2 are timed. In level 3 you must break all the bricks. Moving the mouse left and right will move the paddle.
  - b. Add sprites for *Easy* and *Hard*. You've done this before.
  - c. Add variables EASY, HARD, and Difficulty Level. You know how to do this.
  - d. The game starts when the user clicks *Easy* or *Hard*.
  - e. The *Score* and *Time Left* variables are hidden on the Start Screen.
6. The *Score* and *Time Left* variables show up when the game starts.
7. Make a harder version of the game.
- a. Add a costume to the paddle. In this new costume, the paddle is shorter than the paddle created in class. A shorter paddle makes it harder to hit the ball.
  - b. If the user selected the EASY game, use the longer paddle. If the user selected the HARD game, use the shorter paddle. This should be set up on level 1 and doesn't need to change for the remainder of the game.
  - c. For the harder version of the game, add 2 additional costumes to the *Brick*, and add 2 additional rows to Level 3 so you'll see 5 rows and 35 bricks. You only need to change the value of the first repeat.

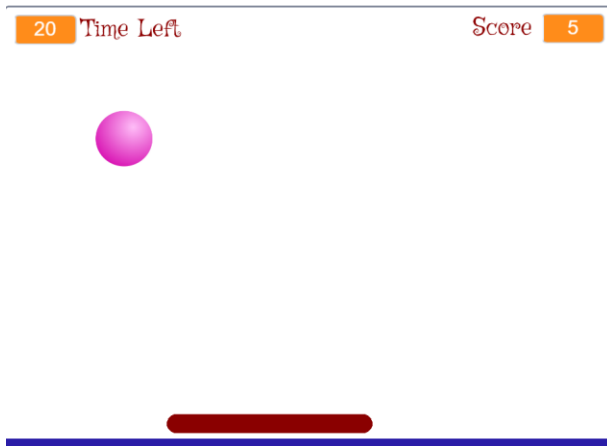
8. Always do *File->Save now* before you log out of the Scratch website.
9. Now do *File->Save to your computer*.
10. Turn in your *first\_last\_scratch\_14.sb3* file to *missblomeyer.com* in the usual way.

### Sample Start Screen

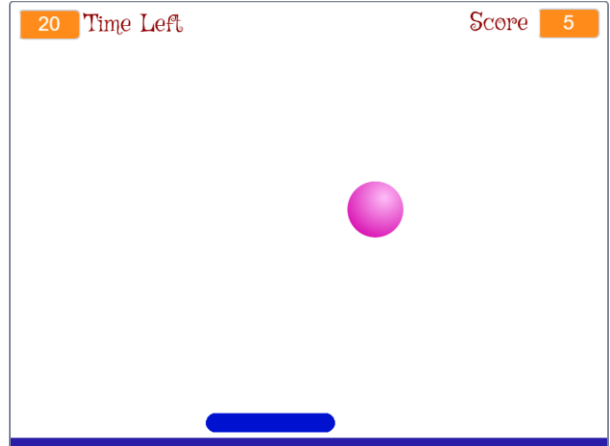


### Sample Level 1 Screens

Easy Version

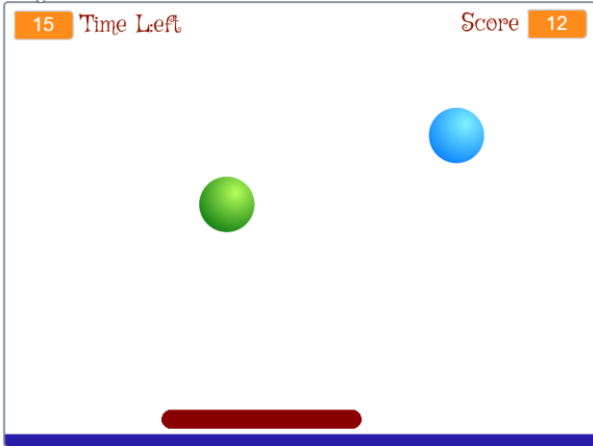


Hard Version

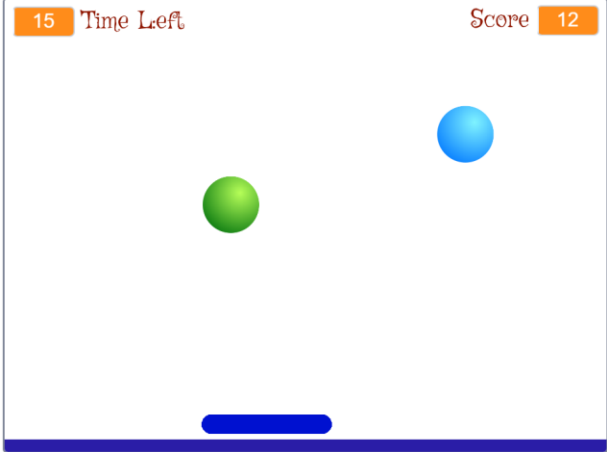


### Sample Level 2 Screens

Easy Version

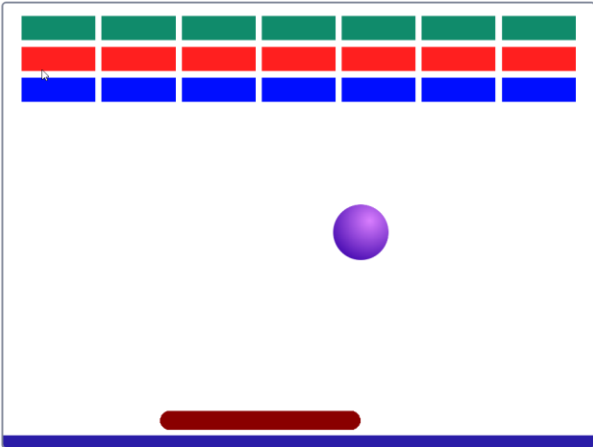


Hard Version

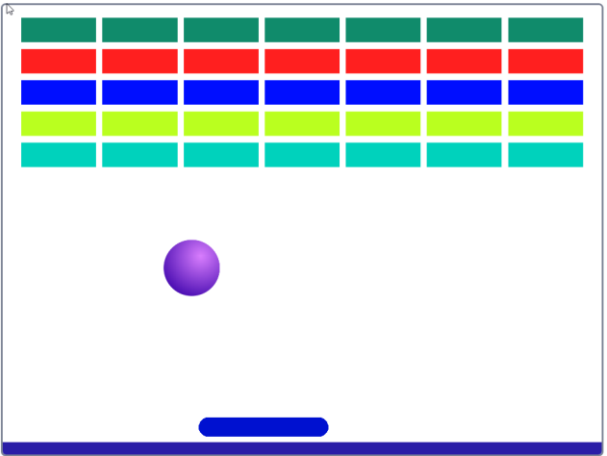


### Sample Level 3 Screens

Easy Version



Hard Version



### Sample Winner & Loser Screens

