

Arcade Games - Part Three

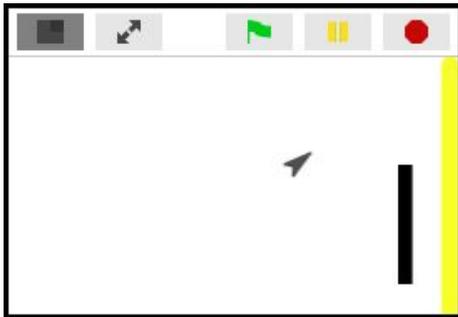
A method for maintaining the score is another important enhancement. A variable named *Score* could be added to track the score. The score could be increased by 1 point each time the player successfully block the turtle with the paddle by adding the code:

Change Score by 1

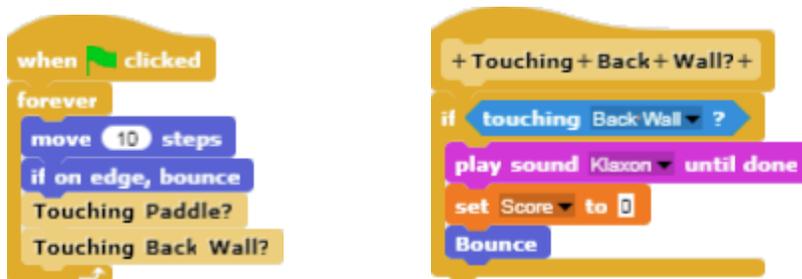
This variable would need to be initialized by setting its value to 0 at the beginning of the game.



A third sprite, labeled "Back Wall" could be added to detect when the paddle does not block the turtle.



A *Touching Back Wall?* procedure could detect when the turtle touches the back wall.



When the turtle escapes the paddle and touches the back wall, the *Touching Back Wall?* procedure could reset the score to zero (or end the game with a *Game Over* display).

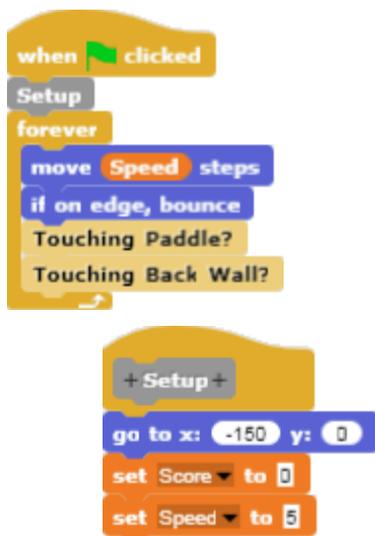
Speed

The number of steps that the turtle moves during each iteration of the *Forever* loop determines how fast it moves across the screen. Creation of a variable named *Speed* will make it possible to adjust the speed of the turtle during game play.



For example, in one variation of the recreated Pong game, the speed is increased each time the player successfully deflects the turtle five times in a row. Eventually the turtle may move so fast that the player cannot block it in time. The score at that point becomes the player's high score.

At this point it may be useful to create a *Setup* procedure to establish the turtle's initial starting location, speed, and score.



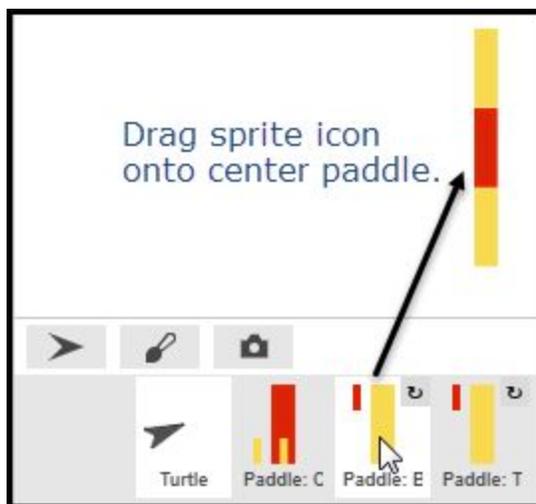
Paddle Surface

Until this point, the assumption has been that no energy is lost in the collision between the turtle and the paddle surface. In actuality, some energy is always absorbed in a collision of this kind. A softer, spongy surface will absorb more energy than a softer surface.

To reward players for accuracy, a composite paddle can be constructed with harder surfaces on the edges and a softer, more absorbant surface in the center. In the illustration, the harder surfaces on the edges are depicted in yellow while the softer, absorbant surface is depicted in red.

To construct a composite paddle, create two more paddle segment sprites. One sprite will become the top paddle segment and the other sprite will become the bottom paddle segment. Make sure that there are no scripts in the script areas of these two additional sprites. Then line up the top and bottom paddle segments so that they are aligned with the center paddle segment.

Once the paddle segments are aligned, drag the top paddle segment icon (below the stage) onto the center paddle segment on the stage. Repeat the process for the bottom paddle segment. Once this is done, all three segments will move together as a single unit.



In this illustration, the top paddle sprite has been named *Paddle: Top* and the bottom paddle sprite has been named *Paddle: Bottom*. When the turtle strikes the top or bottom paddle segments, the program plays a sound and turtle rebounds, but the score is not increased.



If the turtle collides with the center paddle segment, the player is rewarded for accuracy. The score is increased by one and the speed is decreased, making the game easier to play.

```
if touching Paddle: Center ?
  play sound Paddle Sound
  change Score by 1
  change Speed by -1
  Bounce
```

The updated *Touching Paddle?* procedure:

1. Checks to see if the center paddle segment has been touched, and increases the score and decreases the speed before rebounding if this occurs.
2. Checks to see if the top paddle segment has been touched, but does not increase the score or change the speed before rebounding if this occurs.
3. Checks to see if the bottom paddle segment has been touched, but does not increase the score or change the speed before rebounding if this occurs.

```
+ Touching + Paddle?+
if touching Paddle: Center ?
  play sound Paddle Sound
  change Score by 1
  change Speed by -1
  Bounce
if touching Paddle: Top ?
  play sound Pong Blip
  Bounce
if touching Paddle: Bottom ?
  play sound Pong Blip
  Bounce
```

There are other variants that could be implemented. For example, assuming that the outer segments are constructed from brittle material, a counter could be used to count the number of times each segment on the edge of the paddle collides with the turtle. After an edge segment collides with the turtle a specified number of times, it could break off, leaving the player with a smaller paddle.