THE UNIVERSITY *of*
NEW MEXICO

Lab 3:
Improved Paddle Ball

Assignment Requirements:

On the class website, there are two sample Paddle Ball Games:

https://www.cs.unm.edu/~joel/cs105/src/PaddleBall-Simple.html

https://www.cs.unm.edu/~joel/cs105/src/PaddleBall-LimitedPaddleSpeed

Your task in this assignment is to make a number of improvements to these basic Paddle Ball games.

Grading Rubric [20 points total]:

Note: To earn any of the points below, your game must work with all the functionality as in the given Paddle Ball game.

[Turn In: 1 point]: Attach one file in Blackboard with the file name: CS105_Lab3_*yourFirstName.yourLastName*.html.

[Board Size: 2 points]: Like all Khan Academy examples, the canvas is 400x400. You need to increase this to 1000 x 600 pixels. Note: In 2018, the most common laptop resolution is 1366 x 768. Creating a 1000 x 600 pixel canvas leaves plenty of space for the browser's boarders. Full HD is 1920 x 1080. This is the resolution of higher end laptops. NOTE: When running games in a browser (or watching movies) it is often nice to make the browser window full screen. In Chrome, full-screen mode can be toggled by pressing F11. Chrome, and most other browsers, do not let pages auto load in full screen mode. Can you think of why this functionality is blocked by most browsers?

[Paddle Speed: 1 point]: In the first program, the paddle moves with the speed of the mouse, always staying centered on the mouse. In the second, the paddle moves in the direction of the mouse with a maximum speed of 1 pixel per frame (equals 60 pixels per second). This is too slow. In your game, increase the paddle speed to what you think is fun, but not as fast as the speed of the mouse. That is, if the player moves the mouse very fast, the paddle should lag behind.

[Score: 2 points]: On the canvas, below the paddle, display the total ball hits and the total game time in seconds with labels (hits and seconds).

[Paddle Bounds: 4 points]: In the given game, the paddle can move past the edge of the canvas. You must limit this so that regardless of the controls (mouse or keyboard) the paddle never moves off the edge of the canvas.

[Ball Speed: 5 points]: In the given game, the ball always moves at the same speed. In your game, make it so that the ball always starts the game moving slowly. After the player has scored a few hits, speed the ball up a small amount (you decide how fast). For a high number of hits, the ball should move fast enough to be a challenge to a very good video game player (but not so fast that a good player just cannot play at the fastest level). The game must have at least 5 different ball speed levels.

[Paddle Size: 5 points]: When a game starts, the paddle must be about 2x the size of the given paddle. As the player scores more hits, the paddle must get smaller. As with the ball speed, there must be at least 5 different paddle sizes. You choose how small the paddle gets and at what scores it gets smaller. The goal is that, together with the increasing ball speed, that the game is very easy in the beginning and hard, but not silly hard for very high scores.

Extra Credit [up to 20 points total]:

Change controls to keyboard.

Make the game two player by having the ball move horizontally with a left paddle controlled with "w" and "s" keys while the right paddle is controlled by the up and down arrow keys,

Allow the paddle to move in 2D.

Add sound effects

Cause the lateral speed of the paddle on a hit to effect the lateral speed of the ball.