README - Pong Game

Team: Falcons
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This game is a remix of the popular game “Pong.” It features play against a cpu or a multiplayer version that you can play with your friends. There is also a variation where there are 4 paddles on the screen that can be controlled. When playing against the CPU, there are 4 difficulty levels from easy to difficult (with a ‘random’ difficulty) and you are trying to get the highest score possible against it. Score is calculated from how many times you are successfully able to get the ball past the paddle without the paddle hitting it.

Target User Profile: Anyone who wants to play games and have fun!

Features:

- CPU
    - Play against a cpu! The cpu has an algorithm that determines where the paddle should move in order to contact the ball.
- Two Player
    - Play against a friend! Use either the arrow keys or ‘W’ and ‘S’ keys to control two different paddles.
- Four Paddle
    - Play with four paddles! There are 2 additional paddles on the top and bottom borders that can be controlled to increase the difficulty of the game.

Instructions:

1. Download and import our file into an editor
2. Run the program
3. Select whether you would like to play against a CPU, friend, or a 4 paddle game
4. Use the arrow keys to control the position of the paddle (if playing with a friend or 4 paddle game, have the friend use the ‘W’ ‘A’ ‘S’ ‘D’ keys to move the other paddles)
5. Play and enjoy!

Class List:

PongTest

- Setup window and executes Drawer

Drawer

- Runs the game for different modes, takes user input, paints scoreboard and game

Paddle

- Can move up and down
- Checks collisions with ball

Side Paddle

- Extends Paddle by adding paddles on the top and bottom of the screen with their properties

Ball

- Bounces across the screen and determines when a point is scored

Team Responsibility:
Owen: Created algorithms for collisions, game mechanics, and cpu algorithm
Hayden: Created start screen, gui, input detection, 2-player game, 4 paddle modifier, and other graphics

Known Bugs/Workarounds: As the paddle collides with the ball at a 90 degree angle, the ball will rapidly bounce in the paddle. This is just a visual bug and will not affect the game significantly.

Key Learnings: Game is reliant on coordinate systems and simple vectors that change direction when bounced. Originally when coding the CPU, we didn't know how to practically code the CPU paddle so that it estimates the position of the ball, so we ended up coding a CPU algorithm that moves the paddle according to the ball position.

Credit List:
AnimationDemo - Setup of graphics and implementation of KeyListener to code
GoogleBooksAPI - ActionEvents for buttons
Snackbar - JButtons and actionevents
Timer - Constantly updating the JFrame