

Interim Progress Report

Team std_logic

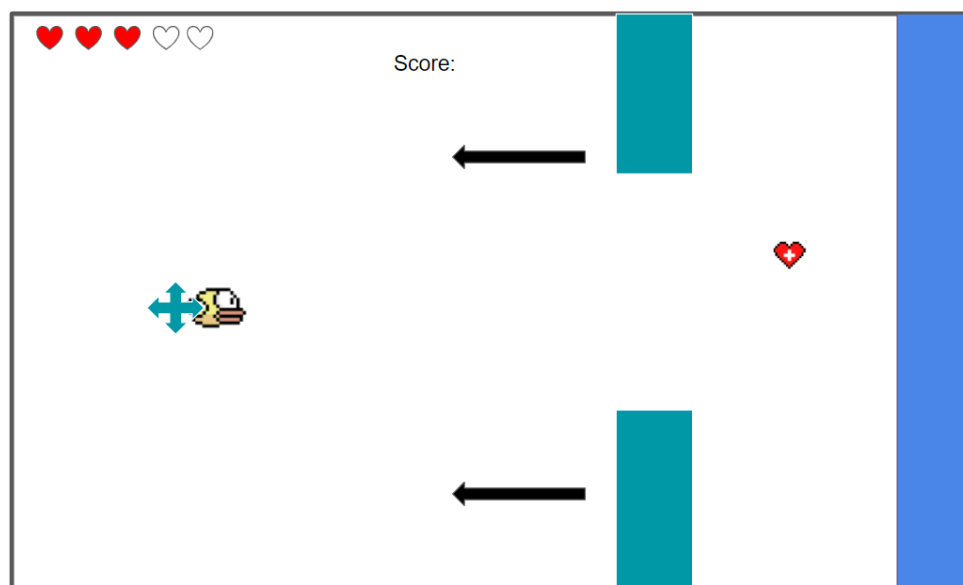
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Design Specifications and Plans

Game Strategy

The game is aimed to mimic the original flappy bird as such the strategy is to avoid the pipes as they move towards the bird by going through the gaps. You are allocated a maximum of five lives but effectively start on three in all modes asides from the training mode where you start with all 5. The only way to increase your hearts to 5 is to collect the heart up powerup. The level difficulty affects the rate at which the pipes move towards the left and this is applicable for the score you currently hold.

An example 1.0 of the intended layout is provided.



Example 1.0

Movement:

Movement of the bird is determined by a mouse that can move on a 2d axis.(up, left and right). On the mouse left/right button click, the bird will move up by a small amount. When held this extends to the top of the screen. Horizontal movement of the bird follows normal mouse directions,move left is left. The screen remains stationary and does not follow the bird, the screen is fixed and the pipes are the ones moving to the left to mimic the moving of a screen.

Display:

Pipes are represented in green and arrows represent the direction objects can move. The background represents the playable area the bird can move to. Above that in the top middle of the screen is a Score text that updates with +1 each pipe you pass through and on the left

is a display of how many lives you have left. The blue area will be transparent in implementation and is the area in which pipes and power ups will be spawned.

Levels:

The game's training mode will have a total of 20 pipes and all difficulty modifiers set on their lowest. Single player mode will consist of three difficulty levels, 0,50,100. The difficulty will be based on the amount of points you have. The spawning rate of pipes will slightly increase, the pipe's distance to pass through will decrease and the speed at which the pipes approach will all increase in stages till its max at 100.

Note the pipe's gap will only decrease to a certain gap that is feasible to pass. The pipe's randomizer will prioritise smaller gaps as the difficulty increases but will still contain lenient ones.

Powerups

Health powerup,scoreup,scoremultiplier.

Health powerup increases max lives by 1 upto 5.

Scoreup increases score by a set amount of 5. eg score is 5,after pickup is now 10.

Scoremultiplier, for a duration each pipe you successfully pass will be multiplied, instead of +1 to score it could be +2 - +5 depending on difficulty.

Screen Transitions/plans

Some title screens we're considering are:

Main menu Screen:

This is a title screen for the game and instructs the user to press a specific push button to choose the game mode. Pressing on another push button will also allow the user to start the game mode that they chose. Instructions on which button to press will be shown on the display.

Game Over/Game Finished Screen:

This screen shows up when the player has lost all their lives or has completed the training mode. A summary of the score that the player got will be shown. Pressing a push button will allow the player to return back to the main menu screen. Instructions on which button to press will be shown on the display.

Background of the game:

We're considering putting a pixelated image of mountains in the background while the player is playing the game.

Plans:

- Make a component to prioritise certain background colours over others, ball goes in front of the background and pipes go in front of the background.

Block Diagram

Link to higher quality [Lucidchart block diagram](#).

