اسم المشروع :

Flappy bird

كود الفريق :

GEN_160

الاسماء :

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Special thanks for TA: Esraa Hamdi, For supervising and rating our project.

FLAPPY BIRD PROJECT

Team leader

Game physics and pause function
and assets editing and second level
by: Mohamed Samy

Menus GUI & menu assets
by: Youssef Abdul-Hamid

Pipes and background, parallax scrolling
and score calculation.
by: Nada Mohamed

Collision detection and game over screen
by: Yara Zidan

Music and Sound effect
by: Mai Adel

We did our best to make our project as much cross platform as possible, so we did not use any System specific code such as: system("pause") or WinMain which makes the game theoretically compliable to Linux Systems using GCC compiler instead of MSVC

Assets :

File contains sprites, music ,sound effects and all assets used in the game.

Source.cpp

Contains the driver code (main()) of the game and GUI.

* `int counterForText:`

`for moving between menu options.`

Engine.h :

* A file contains main headers for running the project. link functions definitions with headers.
* #Pragma once: a macro that increases the compilation speed by compiling the file once even if it is called many times
* Called in Source.cpp to run the game functions

Engine.cpp:

* int updateBrd(int& x): responsible for bird animation.

* bool playGame():main game function.

* bool playGameHard():game function for hard level.

* bool isFisrtpress:

a Boolean that is used to pause the game when escape is pressed or at the beginning of the game.

//physics variables:

- Gravity: added continuously to velocity to simulate acceleration due to gravity.
- Velocity: initial velocity of the bird at the beginning of the game.
- velocity1:a reference for initial velocity in case it got changed during gameplay
- velocityMax: max limit for velocity of the bird when its velocity on y-axis reaches it due to gravity.
- Clock Vclk: a constant time that is compared to "Time Vvalue" to control rate of acceleration with time.
- Time Vvalue: measuring time the bird travelling by a certain velocity & if it exceeds "Clock Vclk" it will be rested.

- Time basicDelay: makes input lag to prevent repetitive game pausing and resuming.

Time of the game & if exceeded “constanttime” it will be reseted.

- bool jumping : for detecting if the bird jumped or not.

//rotation controls

- initialRot: initial value for rotation.
- maxRot: max value of rotation bird cannot exceed.
- accRot: rate of change of rotation.
- Clock Rclk: clock of rotation.
- Time Rvalue: time the bird moving with a certain rotation & if it exceeds “Clock Rclk” it will be rested.

//////////////OTHERS//////////////

* Collision::CreateTextureAndBitmask :

It detects pixelperfect colloision for a sprite.

* Unreal pipe (for score):

- Transparent texture used calculate score.
- It is located in the middle of real pipes.

* int counterForText :
- for moving between menu options.

//////////////SCORE//////////////

* int hs :

for saving heighst score.

//////GAMEOVER//////

* bool drawing :

For detecting collision with pipes or ground so game endend.

Collosion.h

A library that contains some necessary functions to make pixel perfect collosions.

Collosion.cpp

* bool CreateTextureAndBitmask:

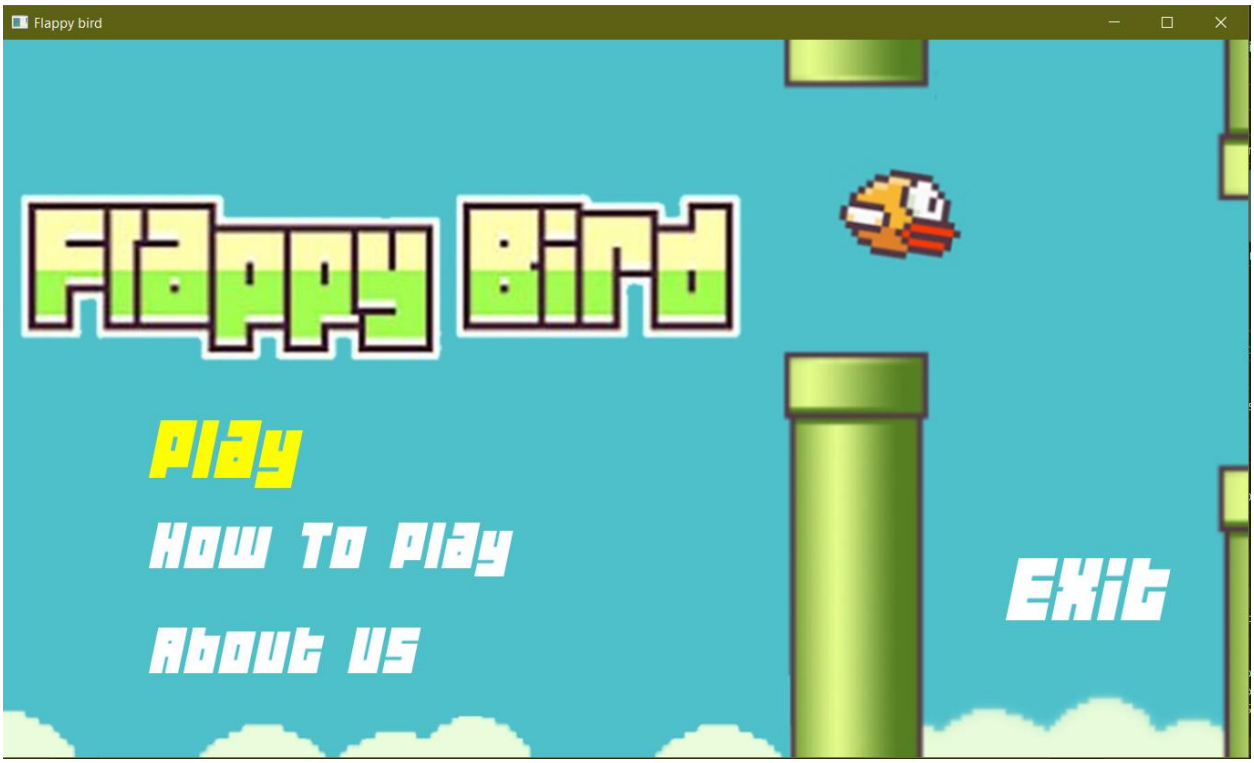
- Replaces Texture::loadFromFile
- This is much faster than creating the bitmask for a texture on the first run of "PixelPerfectTest"

* bool PixelPerfectTest:

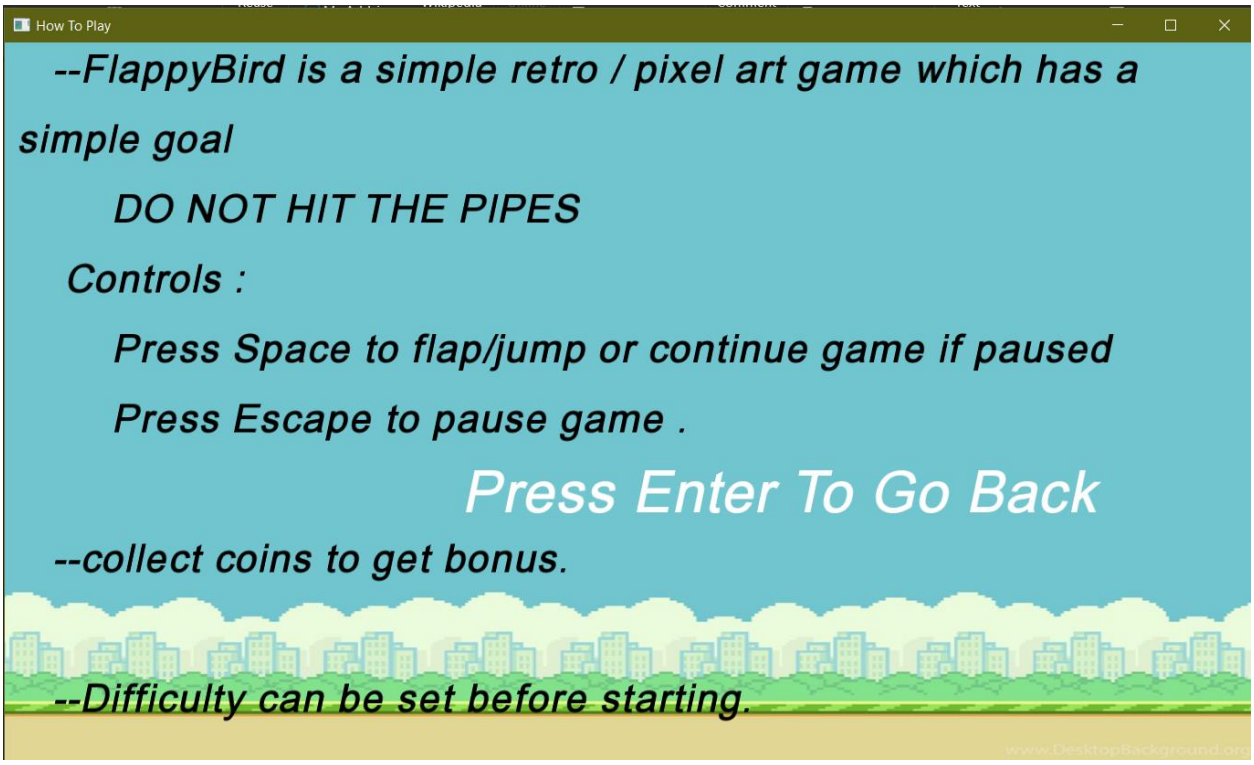
- Test for collision using circle collision detection.
- Radius is averaged from the dimensions of the sprite so roughly circular objects will be much more accurate.

Main game features:

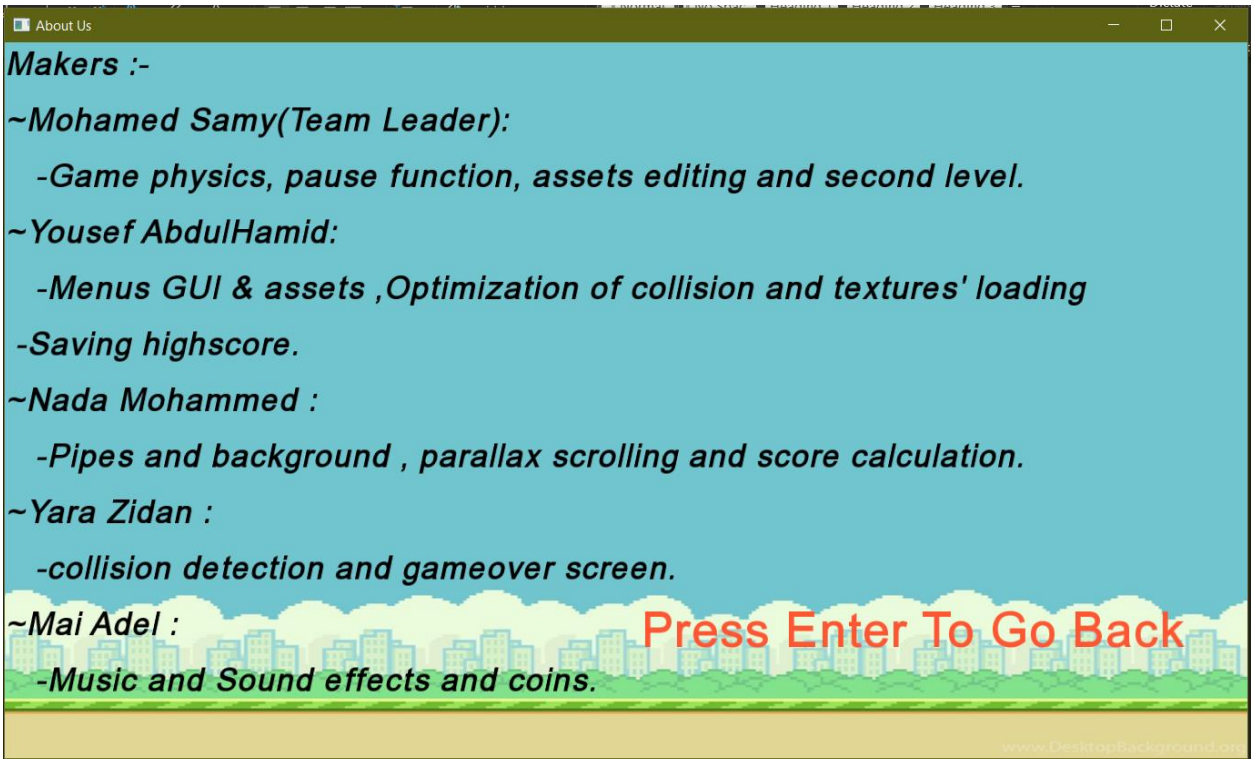
Advanced game GUI



Simple game tutorial

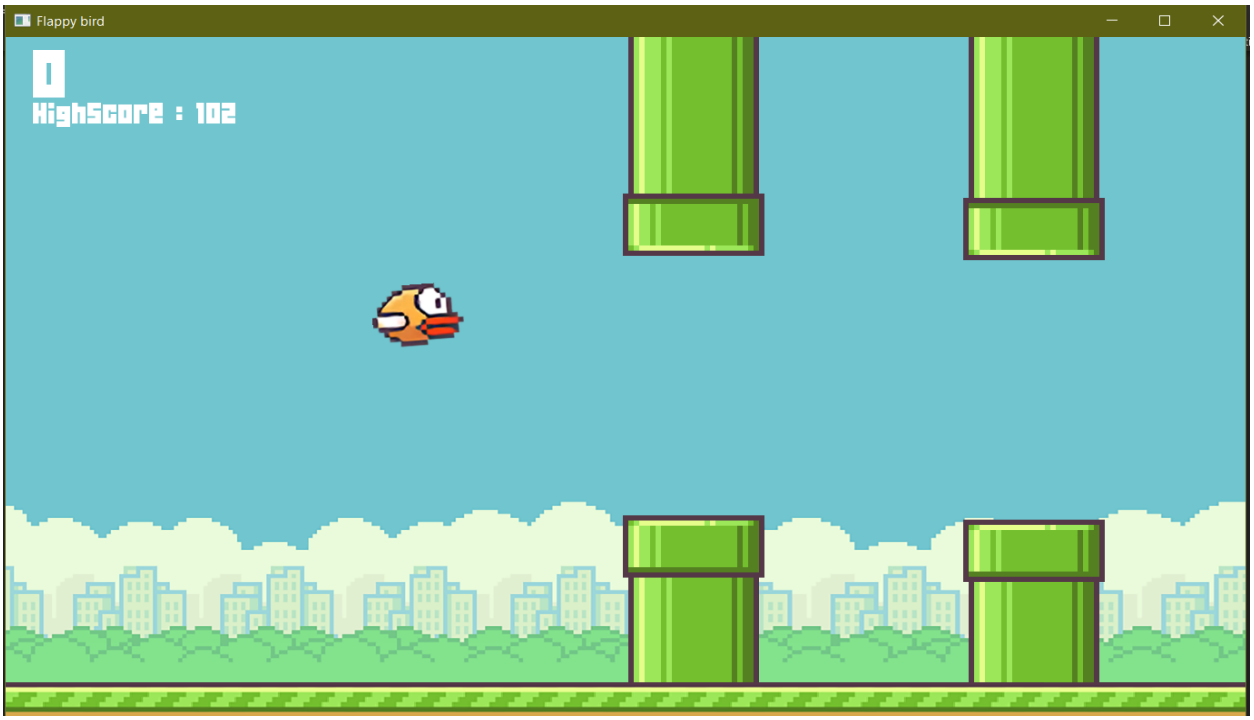


Some information about game creators

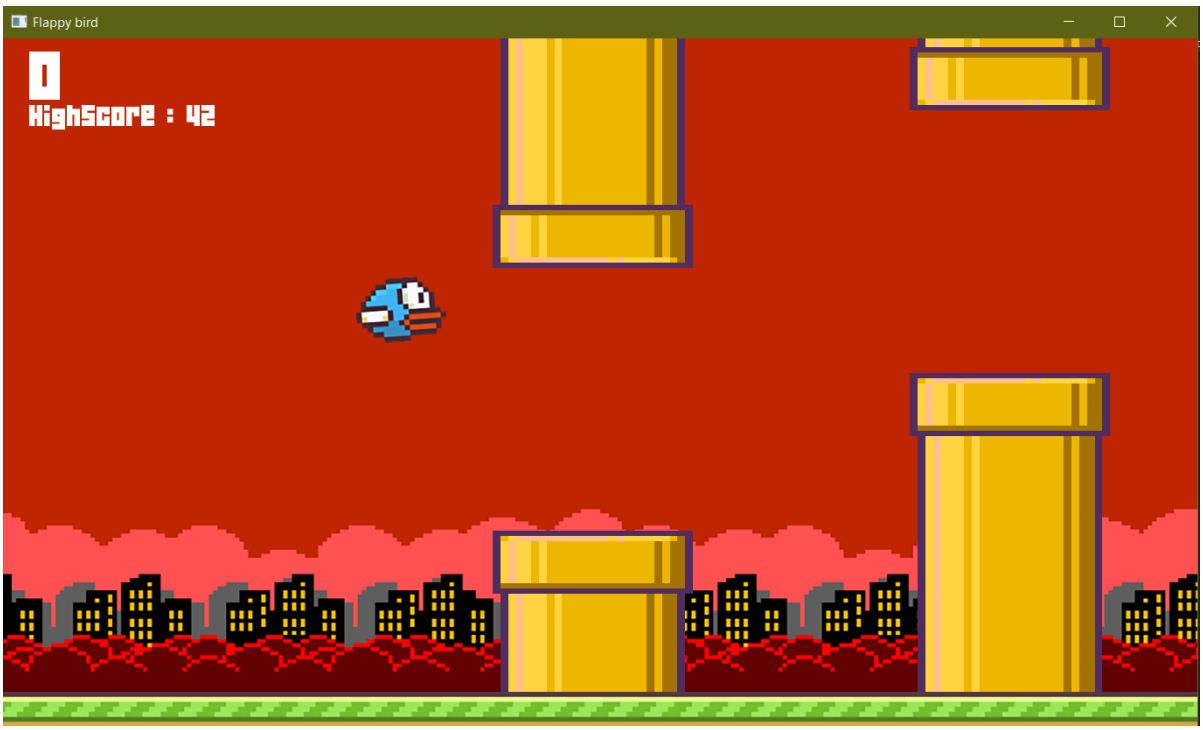


Ability to choose between two levels with different difficulties

Level 1:



Level 2:



Game over menu with ability to play again:

View current score and save Highest score to view it:

Ability to pause during gameplay:

*All levels have music and sound effects.

*All menus have sound effects.