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Module: C++ programming

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Assignment: Frogger

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# Task

For the assignment, the task was to make our own version of the classic arcade game, Frogger.

It has to be made in visual studio using c ++ with the SFML library.

# Main loop

The first thing that I did was to set up the main window and setting the frame rate. Next was the main game loop which is simply a while loop with the condition that the window is open. I put some green rectangles at the top (Finish) bottom (Start) and middle (Safe zone). An event handler with a close window so we can end the game whenever the cross is clicked. This will also contain all the code for the keypresses.

# Classes

## Frog

Next was to create the frog class and give it a shape and functions to move and draw. I checked that they worked in the console before swapping the outputs to actually moving the frog.

Traffic

After the frog was able to be moved and drawn, I started work on the cars and lorries. These are both a class of their own as well which utilised similar code to the frog except the movement is called automatically per frame rather than by input. I had to put a timer in for the traffic to move correctly as before it would only move whenever the frog was moved or the mouse was ran across the screen, which was initially a bit of a hurdle.

# colliders

The next step was to get the colliders working, I originally wanted to do this in its own class which created several lorries and cars and sorted the collision as there are a lot of lines of duplicate code in the main.cpp file, however it was proving to be a bit difficult to get to work and I opted to put it in the main.cpp to keep the game working.

I went back to the frog car and lorry class and set a start position so that once the frog hit a collider or the traffic went off screen it could be reset. The frog would reset back to the bottom each time and the lorries and cars would reset back to the same Y position that they were initially set.

# Sprites and Textures

Once the colliders were all done and the game would end after the frog reached the end or hit a vehicle too many times I knocked up some really simple sprites and textures. The traffic simply reversed the texture if it was going the other way by setting the scale to “scale \*(-1,1). The frog had 2 sprites initially which alternated as it was moved to simulate walking.

# Polish

I put a text object in the top left displaying how many lives are left. Then as a bit of an afterthought as each life was lost I set the frog sprite to use a different pair of sprites, each pair with 1 less leg then before.

To stop the frog from infinitely moving off the screen, I put a check before each movement to confirm the frog won’t be going out of bounds in its next move, and if it does then the move command will simply be ignored.

# Testing

|  |  |  |  |
| --- | --- | --- | --- |
| **Test** | **Expected result** | **Passed Y/N** | **If so, Date fixed** |
| Frog moves all 4 directions correctly | Yes | Yes | N/A |
| Lives being lost after hitting a car | After hitting a vehicle a “life” is lost, the frog loses a leg and then after all 4 have been lost the game closes | No | 03/04/2017 |
| All cars and lorries have a collider that works | Yes | Yes | N/A |
| What happens when the vehicles cycle across the screen for a while? | The vehicles shouldn’t overlap and will stay nicely spaced apart | No | 27/03/2017 |
| When frog reaches the edge of the screen and move that direction is press some more | Once the frog reaches the edge, it won’t be able to move any further | Yes | N/A |
| Does the frog reset when it hits a vehicle? | Yes | Yes | N/A |
| What happens when you mash the keyboard? | nothing | Yes | N/A |
| Does the game close on success or failure? | The window to close | Yes | N/A |

# Conclusion

Overall I think the project went fairly well, I would rather have used more classes than I did, for instance I could have put the level layout (number of cars lorries) in its own class and then it would have been quite easy to call any of them and have multiple levels. That would have stopped the main.cpp having so many lines of duplicate code creating each car and lorry and the collider. but due to the fear of breaking the entire game, I left it as it is.

A few things I would probably add if I had to expand the game would be:

* A blood splatter with a pause after each collide with a vehicle

This would probably be done by creating a blood splat object at the same position the frog was at when they collided.

* A score counter in the top

This would be an integer that would display and count down as the game ran, perhaps with some collectables that would bump the score back up each time one is collected

* A game over and win screen rather than the game just closing

This would call up another window with the score and a prompt to quit or restart

I feel I have learnt a fair bit during this assignment, I struggled with sprites and classes at the beginning but I feel like in future they shouldn’t be too much of a problem.