

ACKNOWLEDGEMENT

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Finally, sincere gratitude is extended to all the colleagues as well as seniors who have provided encouragement and helped with valuable suggestions and comments throughout the game design and development.

In spite of our best possible efforts that have been made to minimize the mistakes to make the code more efficient, this project might not be completely error free as it is made in the learning process.

Abstract

The game Bubble Trouble is developed in object oriented programming language C++ with SFML graphics library. It simply possesses the facility of playing for single player as well as the multiplayer in friendly or competitive mode. Through the use of event driven objects existing already in the SFML library and taking inputs through keyboard the game is made more user friendly and easier to operate. In the menu section different selection buttons are used to make the games more controllable & interactive.

Table of contents

1. Acknowledgement	1
2. Abstract	2
3. Objectives Of The Project	4
4. Introduction	5
5. Application	6
6. Literature Survey	6
7. Existing System	7
8. Methodology	7
9. Implementation	8
10.Problem faced:	9
11.Solutions to the problems	9
12.Limitation & Future enhancements	9
13. Conclusion and recommendation	10
14.REFERENCE	11

Objectives of the project

The project is mainly based on following objectives to be achieved

- To get familiarized with Object Oriented Programming approach using C++ Programming Language.
- To gain GUI skills in programming using SFML toolkit.
- To develop the user friendly interface and entertain the user.
- To learn to work in a group as team.
- To make a base for the development of the larger and complex programs working in a team in the future.
- **GOAL OF PROGRAM** - To build a bubble trouble multiplayer game traditionally played with single player on pc.

INTRTODUCTION

The present version of the game is not a complete new concept but as our early approach towards other larger programs development it might be considered as a base for future development. As this version of game is widely popular and are widely played on computers etc. , we are here trying to build the game that can be played in single mode and multiplayer mode via wifi mode too. This game is just for entertainment which can also be played for competition between friends and enhance its attraction.

Bubble Trouble is a classic arcade game from original bubble trouble creator. This version of game is written from object oriented programming approach in C++ using the open source Simple And Fast Multimedia Library (SFML) graphics.

Bubble Trouble was first published as an online game in 2002 which has been one of the most popular game at that time. This modified version of game can be played in solo and clear all the bubbles by destroying them with the archer or can be played with a friend in two player mode (via built-in WiFi connectivity) either to compete or help each other to destroy the bubbles as fast as possible to make the score keep increasing unless the player's life is zero. Balls continues bouncing with projectile motion within the bounded area. The movement of player is controlled in the horizontal directions only i.e. the player can move only on the ground level using the left & right navigation keys of keyboard, from where he needs to hit the bubbles with the arrow thrown from the user, controlled by the space key. As you destroy one large sized bubble it is destroyed to a bubble of half the size of previous one and after threshold size it is faded away and the bubbles continues to come unless the player makes any mistakes and the player dies...if so the game is over and the score is recorded to maintain the highscore.

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Application

The application of this kind of project work is very huge. A significant part of the software industry is occupied by computer games in the world, and its share is not going to decrease. More and more people are having access to game playing devices day by day. They like to play games for entertainment when they are free from their work. Hence there is always an enough demand for good computer games.

From the students point view, the knowledge gained in software design techniques, computer graphics, sounds and all the multimedia stuffs are definitely going to be useful in their future career. And particularly for a person, the advantage can be increase in quick response as when numbers of bigger bubbles are destroyed to split into more number of smaller bubbles it becomes difficult to shoot the bubbles in time and avoid the collision of the bubble with the player.

Combining the engineering art, we should be able to create not only games but whole new software that may be required.

LITERATURE SURVEY

After the completion of project we showed it to our seniors and friends. They appreciated our work and also suggested us to modify different small aspect of the project such as designing more attractive objects with graphics, adding some sound effects, including more options, etc.

EXISTING SYSTEM

This game not being made from completely a new concept, existing game has only the single palyer mode which has become too old fashioned and thus has become less popular in current time despite of it being successful at the time it was first released.

METHODOLOGY

As our project is completely based on our OOP concept, thus in our project we have constructed a header called game which includes different headers which are responsible for the game background, player's data and his movement updates, bubble's movement, arrow shoots & collision information. Many objects created, are of the classes defined in those header files and thus is uefull in making the code reusable. The concept of classes and their objects has made the program much easier and comparatively less bulky.

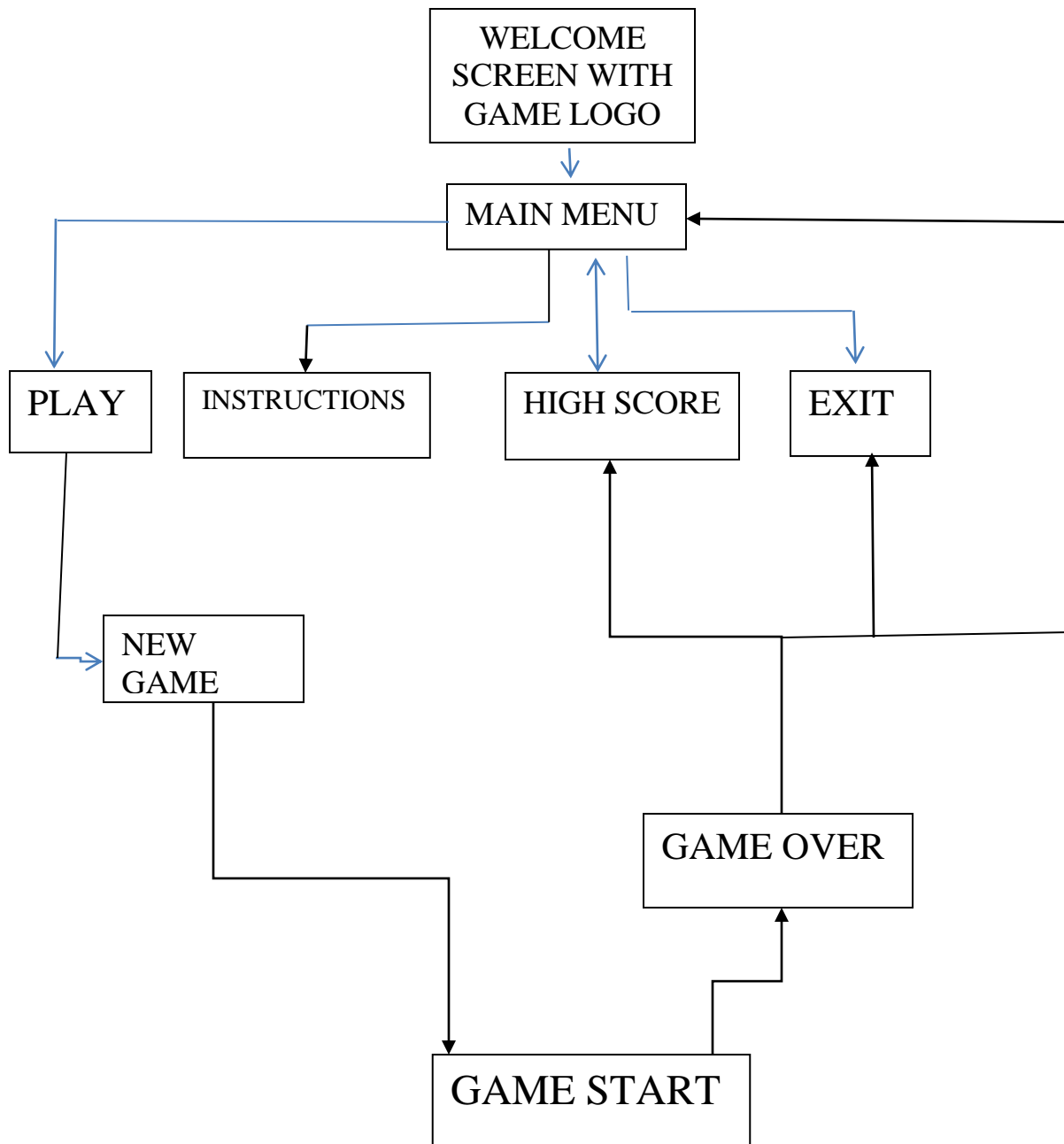
The game contains the following features and methodologies:

Game Menu :

- | | |
|--------------|---|
| Play- | On selecting this, the main game loop starts and we can begin playing games |
| How To Play- | This content of the menu gives the new player the idea of how to control the player with keyboard keys and the rules of the game. |
| Credits- | Here the credits of the game developer team is illustrated and some information about us "the game developer team" is available |
| Setting- | This option contains the setting for changing the audio effect as the music for background music & the option of sound for controlling the sound played while the arrow is released & then bubble is destroyed. |
| Exit- | On clicking on this button of the menu the game with its console terminates |

Other options inside these existing options are available too like the game pausing feature is available between the game play using the 'esc' key which asks the user if he wants to terminate the game. The feature like highscore is as well displayed on the screen while playing game.

Block diagram



PROBLEM FACED:

While designing this game we faced various problems that we didn't expect at the beginning.

- Flickering of graphical components.
 - Due to lag in rendering the update to the new window
- Lag in the movement of the when played in two player mode
 - Due to connection issue and slow transfer of game data

SOLUTIONS TO THE PROBLEMS:

- We took help from seniors and the use of internet was very much helpful to understand the functions of the SFML library.
- We managed the natural motion with the pixel difference that is taken by key press instead of time calculation of the key press and the projectile motions and frictions offered by the air is also used in the game for better functionality and attractive look.

LIMITATIONS & FUTURE ENHANCEMENTS

- At present we have only used the file handling to store & retrieve the highscore feature.
- The mode of playing over the network is getting laggy.
- To make game capable to store information of the game into the file and load and continue the last played game.
- To make AI control the player and add the player vs computer mode in the game.
- Number of level and game play mode can be added and modified.

CONCLUSIONS AND RECOMMENDATIONS

Hence within the given deadline we were able to finish our project successfully but without any addition of level which can be improved in future. Although this game has all the features like choosing the game mode, customizing option as settings, highest score by time it is not fully same as seen and played by many of us. The interface of the game can be made more attractive by using advanced graphics and the 3D graphics can be added using different graphics library. More features of OOP can be used to make programming easy. By using code reusability redundant coding can be eliminated and the code can be shortened. The game can be made more users friendly with adding the mouse events.

REFERENCE

Books:

The secrets of Object Oriented Programming in C++

- Daya Sagar Baral
- Diwakar Baral

E-books:

SFML Game Development

- Artur Moreira
- Henric Vogelius Hansson
- Jan Haller

Websites:

- <https://www.sfml-dev.org>
- <http://www.dsbaral.com.np>
- <https://www.gamedev.net>
- <https://www.youtube.com>