**TRIBHUVAN UNIVERSITY**

**INSTITUTE OF ENGINEERING**

**PULCHOWK CAMPUS**



**A PROJECT REPORT ON**

**“DX BALL”**

**Submitted by:** **Submitted to:**

Pranjal Dhakal (070-bex-427) Electronics and Computer

Prateek Raj Joshi (070-bex-429) Department

Satish Pant (070-bex-437)

**Acknowledgement:**

We would like to express our deepest gratitude to the department of Electronics and Computer for providing us with the opportunity to develop a project employing concept of Object Oriented Programming.

This project is of great value to us as it focuses on enriching our skills on C++ and programming concept required for game development. It not only aided us in our course matters but also on understanding the foundations of game development.

We here with express our sincere thankfulness to our teacher Dr. Basant Joshi for providing us with this project.

Team members:

Pranjal Dhakal

Prateek Raj Joshi

Satish Pant.

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**Introduction**

This project is based on the object oriented programming concept that employs the concept of object and classes. This project covers all the major aspect of this approach of programming. The sole jest of our project revolves around the idea of implementing object oriented approach for our graphic based application.

The title of our project is DX-Ball. The game is basically you bounce a ball off a paddle at the bottom hitting different color blocks on the top of the screen. The player will have 10 lives within which he has to hit as many bricks as he can. The difficulty of the game will go on increasing as we go on higher levels.

We are going to incorporate graphics libraries for our game to make the game more interesting. We will be using SDL(Simple Direct Media Layer) library for our project. This library includes many attributes and components for managing graphical entities like images, frame rates, animations, etc. The library is well built for handling events for example- keyboard press or mouse events.

Reasons for including SDL as graphics library:

1. Ease of use – this library is comparatively simpler yet powerful for 2D graphics games. It is easier to understand and there are many simpler functions for more effective manipulation of graphical components.
2. Popularity-SDL library is fairly popular library used by beginners and hobbyist along to develop simple 2D graphical applications. There is also availability of many tutorials and videos that helps in application development.
3. Machine independent- the applications developed using SDL library are executable in every computer having necessary files to run it. Also the applications are compatible in different operating system including windows, linux and mac os if they have necessary files.

**Objectives**

The major objectives for this project are:

1. To learn about the object oriented approach for application development.
2. To learn about SDL graphics library and implement it in developing a graphics based application.
3. To make a complete graphics based game incorporating file handling aswell.

**Existing system**

DX-Ball is a freeware computer game for the PC first released in 1996 by Michael P. Welch. The game, an updated version of an earlier series of Amiga games known as Megaball, is patterned after classic ball-and-paddle arcade games such as Breakout and Arkanoid. It became a massive cult classic in the Windows freeware gaming community during the late 1990s. A level editor was made available as well.

DX-Ball has been followed up by two direct sequels: *DX-Ball 2* by Longbow Digital Arts in 1998, and *Super DX-Ball* by Michael P. Welch himself in 2004. While *DX-Ball 2* was later succeeded by *Rival Ball* in 2001, the latter merely relates as a spiritual successor to the original *DX-Ball*, being developed on the branch of Longbow Digital Arts. Unlike *DX-Ball*, these games are not freeware.

Our aim is to develop a little toned down version of this game. The concept and gameplay will be similar but will new approach and different graphics library.

**Proposed system**

The major components of our game are:

1. The game starts as soon as compile the program. Menu was not used in the starting of the program but is displayed as soon as the player looses all its life or on the press of Esc key.
2. **Main game**: This part of the application will consist of the main game play that will constitute of scores that will increase with each time hitting the red brick.
3. **High scores:** This section of the program will be present in the game menu that will store the highest scores obtained by player and will display the scores when invoked. File handling concept will be used in this section.

**System block diagram:**

Gameplay

Game play

High score display

Sound:

On/off

Menu

1.Continue

2. Your Score

2. High score

4. Exit

**Methodology**:

The progress of this application development greatly relies on tutorial from internet and text books on SDL. We used tutorial from YouTube channel “the Cplusplus guy” to make different aspect of our game.

The project was divided among team members each taking equal part in the development of game. The game’s code was written by three of us and then was later integrated to make a complete game. There was ample discussion and communication between team members during development of game.

**Project Schedule**

This project took about three weeks for completion. At first, we designed the layout of the game and discussed about the elements that we want to add in this game. Then we worked on the actual coding of the program. Since the concept of object oriented programming was new to us, it took some time for getting used to this programming style.

**Project scope:**

The project has provided us with ample of knowledge on following topics:

1. Enhancing knowledge on object oriented programming and deepening skills on C++ to use it for different purposes like game development.
2. Enhancing skills on use of graphics library SDL to use it to develop simple 2D games.
3. Teaching team coordination skills for simpler projects.