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# Box em ‘up

A Synopsis Submitted

in Partial Fulfillment of the Requirements

for the Course of

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In

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**Bachelors in Technology**

with specialization in

**Artificial Intelligence & Machine Learning**

*Under the guidance of*

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# Synopsis

# Introduction

Our project aims to develop a real time game using C graphics API OpenGL library glut.

OpenGL (Open Graphics Library) is a cross platform API (Application Programming interface) mainly aimed for rendering 2D and 3d vector graphics. OpenGL can also be specified as system specification which is different for many computers. This specification can be accessed using glut library which aims at animation and graphics using C language.

In this work, rather than using animations and 3D vectors, we focus on using 2D shapes like polygons, lines, points of different shapes and sizes. OpenGL also provides input through mouse functions, which are essential for development of this project.

We aim to develop a real time, multi user, multi optional game which has 2 interfaces, namely Interface 1 and Interface 2 using basic polygons, lines and points in nested-loops, mouse functions within loops, nested if-else, 1D arrays and 2D arrays as Data Structures for storing grouped data, variables and Booleans for conditional purposes.

Interface 1 is asking user to choose the size of the game and choosing number of players and then pressing start button to start the game. As soon as user clicks on the “Start” button on Interface 1, new Interface show up with the size of the grid chosen by user on the First Interface.

Interface 2 has a grid with points joined using faded lines. User clicks on the faded lines to highlight the line, and if a line chosen by user completes the square, user is awarded one point and user chooses again. If a user clicks on already selected edge, its an invalid move and user chooses again. This goes on until all the edges of the grid are chosen, and once there are no edge left, a winner is declared with highest number of points.

# Motivation

Developing a game is something that we as programmers imagine ourselves doing many times as Computer Science Engineers and as we play more and more games from our childhood, there is always a self in us that imagine to develop one of them someday. Developing a game that we have played many times as children on paper is what has kept us motivated through-out the work.

As programmers, we always cave developing something using what we learn, creating something from scratch using knowledge we have gained these years. This feeling of using our knowledge practically keeps us motivated.

# Literature Review

OpenGL was made to draw everything imaginable on our screens in 2-D as well as 3-D. It helps in creating interfaces, shapes, graphs and animation using very simple to mediocrely complex lines of code.

This game is using very basic OpenGL codes to function on interactive graphical user interfaces. Basic use of matrices and simple computer logic helps the computer to know if a square is completed and it awards a point to the user who completed the said square. Basic mouse clicks functions let the computer know which option was chosen.

For this game, the book OPENGL GAME PROGRAMMING was used and is cited below.

According to the Series Editor, Andre LaMothe, it’s the first book to be totally focused on OpenGL, games and Windows. In this world of Game Development, this game is the first of its kind.

The first of Gaming Books helped in digitalizing one of the most popular game of our childhood.

# Objectives

Main objective is to develop working interfaces on which multiple users can play a game.

1. **Designing and Creating an interface for a user.**

Creating a usable interface for the user using OpenGL. Creating the widow and designing using 2D shapes, colours and texts to provide a healthy environment for the user.

1. **Taking input as many times as a user clicks on the interface.**

The game is based on user clicking to select the edges throughout the game, providing an environment where user can click any number of times is essential part of the game.

1. **Processing each input to know which option user chose.**

Each click by the user is important for the game to function, backend of the game process each input by user, processing input in order to know what has been selected by the user.

1. **Displaying changes on the interface after processing of the input.**

Displaying output for each valid input by the user is crucial for the game to move forward. User will know that his response has been accepted, processed and displayed correctly.

# Methodology

This work will be divided into two steps, Interface 1 and Interface 2.

Firstly, we complete developing Interface 1 and then we develop Interface 2.

Interface 1 will be the selection interface for the user with start button where user selects the option and Interface 2 will vary depending upon the option selected in Interface 1. Mouse function, which takes input from user will be called every time the user clicks on the screen, which in turn calls the display function every time it is called.

Once the size and number of players are selected, clicking on start function will

open Interface 2.

Interface 1 shows the output to the users (name of game, options etc.), takes input, process input, and showing output according to what has been selected by the user.

Interface 2 is the actual game area, in this step, all those things done in Interface 1 are repeated the difference what is being displayed on the screen, processing, storing data, and output.

Interface 1 and Interface 2 has same steps but doing different things technically.

Combining these steps for each interface will make up rest of our code. Both steps will live in display function and finally the game will be playable.

# Flow Chart

# Plan of work

# Gannt Chart

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Task Name | **28th Aug** | **5th Sep** | **12th Sep** | **19th Sep** | **26th Sep** | **15nd Oct** |
| **Planning** |  |  |  |  |  |  |
| **Research** |  |  |  |  |  |  |
| **Design** |  |  |  |  |  |  |
| **Implementation** |  |  |  |  |  |  |

# References

1. Mayank Bhardwaj, January 10, 2017. [Online]

Available on - “<https://www.quora.com/How-is-the-C-Graphics-Library-different-from-OpenGL>”Top of Form

1. Kevin Hawkins, Dave Astle, “OpenGL Game Programming”, 2001. [Online]

Available on – https://www.google.co.in/books/edition/OpenGL\_Game\_Programming/XkzkoZi8oQwC?hl=en&gbpv=0

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