DAYANANDA SAGAR UNIVERSITY

SCHOOL OF ENGINEERING, BANGALORE - 560068

MINI PROJECT REPORT

ON

"BUS STOP SIMULATION"

SUBMITTED TO THE VI SEMESTER COMPUTER GRAPHICS -2020

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE & ENGINEERING

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CERTIFICATE

This is to certify that Mr./Ms. _____ *bearing USN*

_____ *has satisfactorily completed his/her Mini Project as prescribed by the University for the* _____ *semester B.Tech. programme in Computer Science & Engineering during the year* _____ *at the School of Engineering, Dayananda Sagar University., Bangalore.*

Date: _____   _____

                                                            Signature of the faculty in-charge

Max Marks	Marks Obtained

_____

Signature of Chairman

Department of Computer Science & Engineering

DECLARATION

We hereby declare that the work presented in this mini project entitled-
"Bus Stop Simulation" has been carried out by us and it has not been submitted
for the award of any degree, diploma or the mini project of any other college or
university.

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ACKNOWLEDGEMENT

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We have received a great deal of guidance and co-operation from our friends and we wish to thank all that have directly or indirectly helped us in the successful completion of this project work.

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ABSTRACT

On the basis of the research conducted at the bus stops in Bangalore, the movement processes, related with functioning of a bus stop have been identified. As a result, the simulation model imitating its functioning has been formulated and verified.

The stop has been analysed as a system, in which the input flow comprises of university bus transport, whereas the service time corresponds the dwell time. The formulas for time losses incurred due to queuing to reach the boarding and University have been derived, constituting a basis for operative capacity estimation of a bus stop and specifying the selection determinants for the number of boarding and university in regards to traffic intensity as well as boarding and alighting time.

CHAPTER 1

1.   INTRODUCTION

1.1   Introduction to Computer Graphics

Computer Graphics is the creation of pictures with the help of a computer. The end product of the computer graphics is a picture it may be a business graph, drawing, and engineering. In computer graphics, two or three-dimensional pictures can be created that are used for research.

Many hardware devices algorithm has been developing for improving the speed of picture generation with the passes of time. It includes the creation storage of models and image of objects. These models for various fields like engineering, mathematical and so on.

Today computer graphics is entirely different from the earlier one. It is not possible. It is an interactive user can control the structure of an object of various input devices.

The term computer graphics refers to several different things:

- The representation and manipulation of image data by a computer

- The various technologies used to create and manipulate images

- The sub-field of computer science which studies methods for digitally synthesizing and manipulating visual content, see study of computer graphics.

Computer graphics has emerged as a sub-field of computer science which studies methods for digitally synthesizing and manipulating visual content.

Computer graphics is responsible for displaying art and image data effectively and meaningfully to the consumer. It is also used for processing image data received from the physical world. Computer graphics development has had a significant impact on many types of media and has revolutionized animation, movies, advertising, video games and graphic design in general.

1.2   Introduction to Open GL

As a software interface for graphics hardware, OpenGL's main purpose is to render two- and three-dimensional objects into a frame buffer. It's the specification of an application programming interface (API) for computer graphics programming. The interface consists of different function calls, which may be used to draw complex 3D scenes. It is widely used in CAD, virtual reality, scientific and informational visualisation, flight simulation and video games.

OpenGL draws primitives—points, line segments, or polygons—subject to several selectable modes. Nearly all modern operating systems and hardware devices support OpenGL, making it an easy choice for graphics development. Additionally, many video cards and integrated GPUs are optimized for OpenGL, allowing them to process OpenGL commands more efficiently than other graphics libraries.
Examples of OpenGL commands include drawing polygons, assigning colours to shapes, applying textures to polygons (texture mapping), zooming in and out, transforming polygons, and rotating objects. OpenGL is also used for managing lighting effects, such as light sources, shading, and shadows. It can also create effects like haze or fog, which can be applied to a single object or an entire scene.

1.3   Introduction to Bus Stop Simulation

• Bus stop is a place where we can see the public transport vehicles come and stop and wait for the regular commuter board and also drop the ones whose destination is nearby.

• A bus is the only public transportation vehicle allowed to stop here.

• We can observe different kind of passengers who come to wait for their respective busses' and board accordingly.

• The understanding of bus stop can be attained by observing how the commuters move into the bus stream by mathematical models, or analytical methods.

• In this Project we are considering a single bus which is passing through the road from bust stop to the university by using the clicks on the mouse.

CHAPTER 2

2.   PROBLEM STATEMENT

- To design a moving graphical visualization of the scenario of a bus picking up the students from bus stop and dropping to the college.
- Background should be stable.
- Bus should be the moving character.
- The bus should pick exactly 3 students from the bus stop i.e., 2 female and 1 male.
- Drop exactly 2 females at the university.

CHAPTER 3

3.   OBJECTIVE:

The objective of this project is to demonstrate the useful functions of the OPENGL library which uses OGEN GL, internally and supposedly overcome the platform specific nuances, therey making it easier to simulate graphical objects on-screen.

CHAPTER 4

4.   METHODOLOGY

Modules:

1.Bus stop

2.Wheel 1, Wheel 2, Colour cube (The bus)

3.Man

4.Woman

5.Tree

6.Shrubs

7.Lamp Post

8.Building

9.Wall

10.Gate

11.Sign post

12.Text

CHAPTER 5

5. Literature Survey

Background operation:-

Broadcast GL: An Alternative Method for Distributing

OpenGL API Calls to Multiple Rendering Slaves

This paper describes the use of UDP/IP broadcast for distributing OpenGL API calls. We present an overview of the system and benchmark its performance against other common distribution methods. The use of network broadcasts makes this approach highly scalable. The method was found effective for applications that need to transmit changing vertex arrays or textures frequently

Typically the most efficient way to accomplish high frame rates is to write applications that can be distributed and only send minimal amount of application data to the renderers. In these cases the application copies must produce identical behavior in all situations, which requires the programmer to write the application to support multiple hosts.

Simulation Operation:-

Multiagent-Based Demand Bus Simulation for Shanghai

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Demand Bus System, a new public transportation system, is expected to be a convenient service for special transportation demands to solve more and more serious traffic problems concerning

metropolises as Shanghai. Under this background, this paper focuses on evaluating the usability of the demand bus system rather than on the algorithms as the previous researches did. As a useful

evaluation tool for achieving this objective, Multi-Agent Based Simulation is used to obtain a better understanding of such system in particular when lacking real applications for a large scale. By using the participatory solution, we propose a multiagent simulation framework to include domain experts, stakeholders, system users, as well as computer scientists to build and modify the computational model directly. The implementation of the prototype system shows that it is easy to build such system from scratch to mega by this mechanism. Initial analysis shows the demand bus system is a convenient service supplement to the fast transportation for community in Shanghai.

Keyboard Operation:-

https://patents.google.com/patent/US6388181B2/en

The present invention provides an apparatus for and novel method for representing the blocks of a floor map in an animated format that graphically prompts the user of a keyboard operation. The animation is displayed on the screen of a computer monitor together with a live video image with the user's hands-on operating keyboard.

Viewing only the images on the monitor, the user guide his fingers to the keys targeted by the

animation. He is thus able to play the proper keys on the real keyboard without diverting his

eyes from the monitor. In the preferred embodiment, the system provides a real-time display of both the score information, keyboard and the user's hand placement relative to the keyboard.

CHAPTER 6

6. REQUIREMENTS:

i.   Hardware requirements:
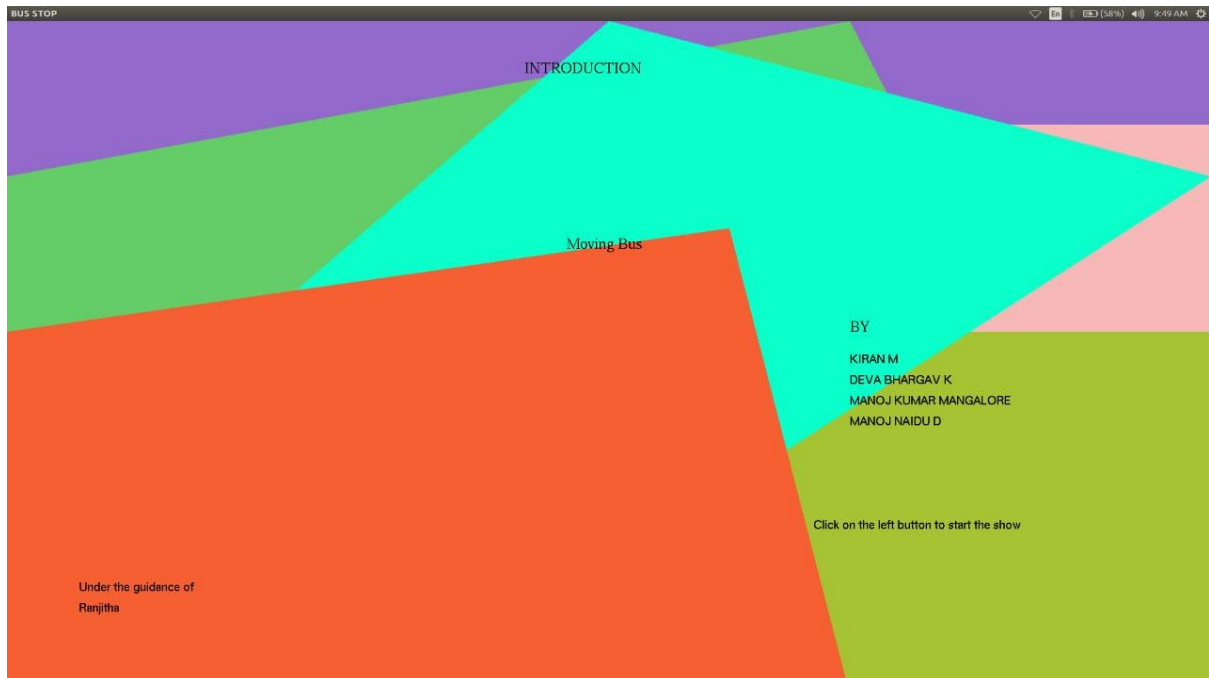
- Keyboard
- Mouse
- Color monitor (60Hz)

ii.   Software requirements:

- Operating System
- Open GL Library
- Mini GW
- Tools: DEV C++
- Graphical Driver
- C++ Language

CHAPTER 7

7. SNAPSHOTS:

CHAPTER 8

8. CONCLUSION:

        We found designing and developing the "Bus Stop Simulation" project as a very interesting and learning experience. This helped us to learn about Computer Graphics, design of Graphical User Interface, interface of the user, user interaction handling aand screen management. The graphics editor provides all and more than the features that have been detailed in the university syllabus.

CHAPTER 9

9. REFERENCES:

- https://www.javatpoint.com/computer-graphics-tutorial

- https://www.tutorialspoint.com/computer_graphics/index.htm

- https://www.explainthatstuff.com/computer-graphics.html

- https://www.tutorialandexample.com/computer-graphics-tutorial/