Computer Graphics Project Report

Padma Bridge River Scenarion

Group 10
section: I
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Group 10		
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1 Introduction

The project serves as a visual demonstration on how resources such as windmill,River,vehicle,boat etc. can be utilized and used as a power reserve for underdeveloped countries. Here Open Graphics Library is used to create different 2D object of the real-life scenario and Code blocks fulfilled the purpose of an IDE.

2 Problem Background

The Padma bridge added us with southern region.Nowdays any business situation is very easy with the southern region. The Padma bridge is making a very important contribution to our economy due to improved communication media. Also, we added windmill in this project this is help us gain electricity to use wind. More than a third of Bangladesh's 166 million people still do not have access to electricity, while the country is often able to produce only a few of its 11,500-megawatt generating capacity. Therefore, there is a shortage of electricity . Students have to rely on candlelight and when it runs out, they become helpless. Roads are covered with darkness which makes night traffic dangerous. we are proposing the windmill which aims to create a real-life scenario using OpenGL for electricity generation by using natural resources such as wind current.

3 Objective

The main objective o this project is to demonstrate the important of the padma bridge . How to use natural resources in the under developed areas in Bangladesh to meet the power deficit through a demo model of computer graphics. And to suggest potential solutions as well as apply animations for moving objects.

4 Methodology

In this project we have implemented two scenarios and 14 functions so far. They are - .

- Implemented functions –

  - car()
  - bridge()
  - window()
  - cloud()
  - sky()
  - sun()
  - moon()
  - hill()
  - windmill()
  - tunnel()

- Scenarios -
  - Day()
  - Night()

At the time of report writing, we had only implemented two displays; they are "Day" and "Night". However, we intend to include two more displays for the final version of the project named by "Rainy Weather" and "Morning". For "Day" display, the base background is kept white. Then, sky (), cloud () and sun () functions are called to create the environment of a sunny day in OpenGL. Afterwards, to add the hills at the very back of the display, hill () function is called. Similarly, other functions for instance, car (), river (), windmill (), tunnel () are called in a sequence to picturize the scenario in display. Different shapes (such as, triangles, squares, polygons, circles etc.) with regional colors are used to form the overall scenery.

- GL TRIANGLES is used to form a triangle with 3 vertices in 2D. shape.
- GL LINES is used to create a line to particular end.
- GL POLYGON is used for creating a polygon. A polygon is formed by specifying a series of vertices.
- GL QUADS is used for creating a 4 vertex quadrilateral primitive.

- glColor3f() function which takes 3 parameter is used to color particular shape

As for animation, it has been applied to the moving objects that includes cars and clouds. However, we also intend to add animation feature for rainy weather and boats. To create animation like effect glTranslatef () function is used. It receives three parameters x, y, z and they specify the x, y, and z coordinates of a translation vector. The targeted objects is kept inside glPushMatrix () and glPopMatrix (). We further used glScalef () and glRotatef () to fix coordinates of the object shapes. Finally, key controlling system is used to switch between "Day" and "Night" mode and control velocity of cars via keyboard button pressing.

5 Significance of The Project

The country is yet to improve in this sector and meet up the sufficient demand of electricity. Till then, implementing the proposed mechanisms in unprivileged areas can redeem the necessity of electricity to a great extent: scenario

- Setting up of windmill

6 Conclusion

To sum up, the "The Padma Bridge Scenario" is created with OpenGL in Code Blocks that is an open-source Integrated Development Environment. This is a beginner level project with 2D objects only. There are lots of ways to make the scenario more accurate and realistic. For future implementations, the scenario of thunder storming can use better animation effects. The cars and hills can be made more realistic by using 3D effect, shading or projection method. Overall, considering a beginner level project, it serves its purpose to propose a technical solution to cope up with the electricity problem in underdeveloped areas in Bangladesh.

References

[1] S. De Silva, N. Wightman, M. Kamruzzaman, Geotechnical ground investigation for padma main bridge, in: Proc. IABSE–JSCE Conference, Dhaka, 2010, pp. 10–12.

[2] S. Sham, M. Tapley, The design of padma multipurpose bridge–challenges and solutions in design of the river spans, in: Proc. IABSE-JSCE Conference, Dhaka, 2010, pp. 10–12.

[1]

7 Screenshot of the System

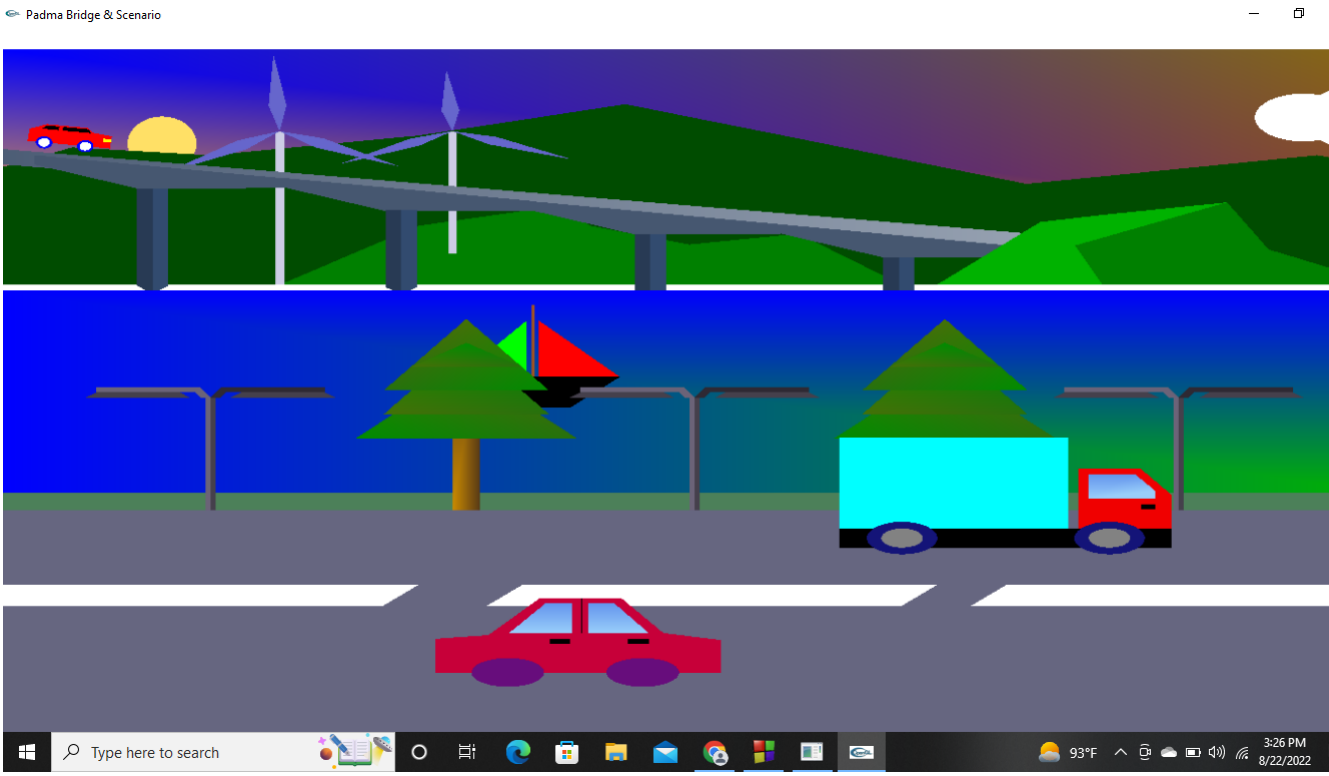

Figure 1: Full Scenarion

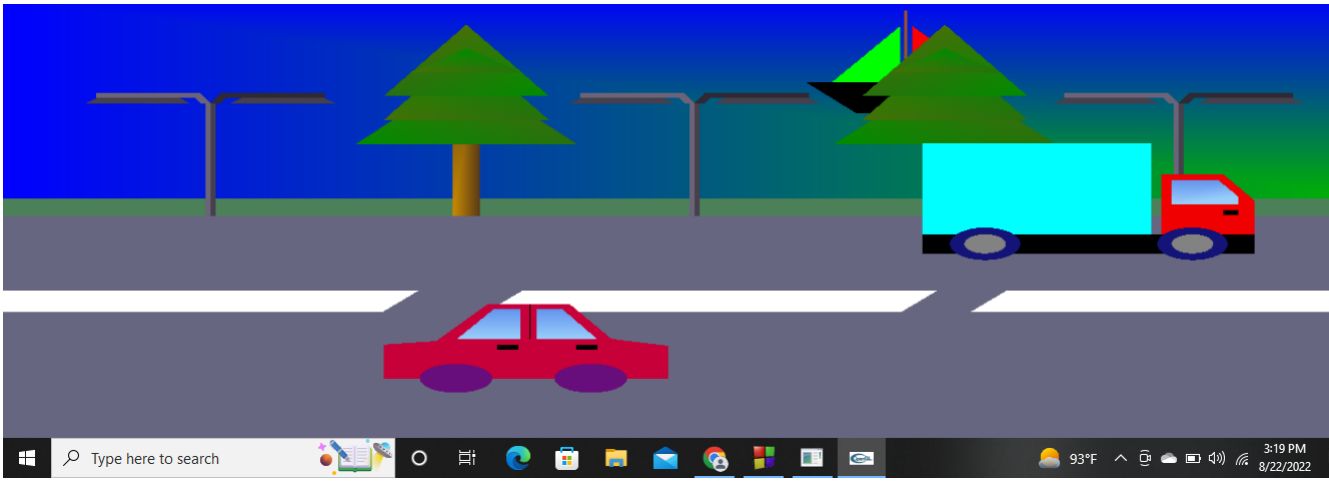

Figure 2: Road and Car

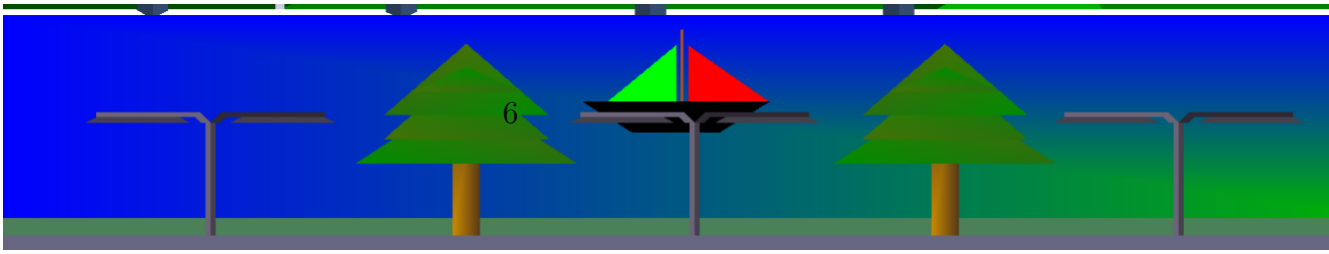

Figure 3: Boat tree and River

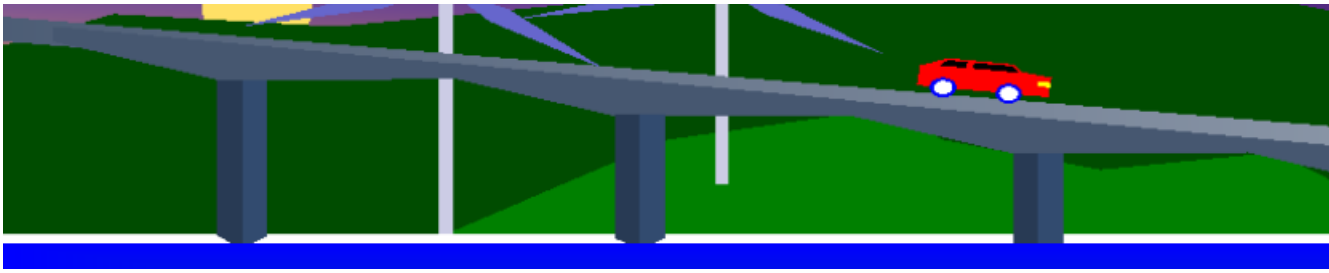

Figure 4: Bridge Windmill and Hill

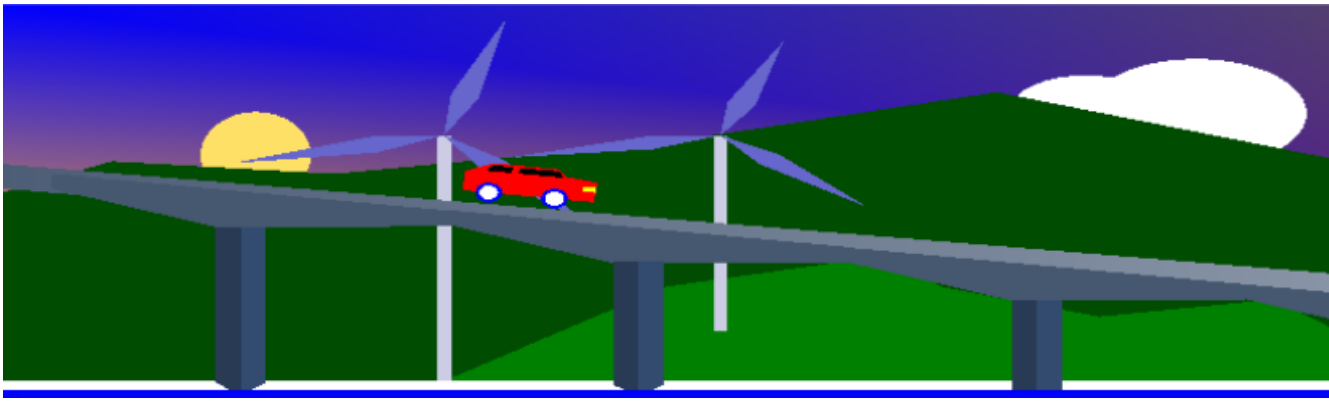

Figure 5: Sky Cloud Sun