‘Project Report’

Group No. - 02

I. INTRODUCTION

• **Project Title**: ***Industrial View with Wind Turbines.***

• **Project Members**:

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II. BACKGROUND ANALYSIS

Industrial View with Wind Turbines captures the scenic atmosphere of an enterprise zone in a day-to-day basis. Cars driving through the roads, industrial buildings, falling sun, rising moon, running cloud, hill view, river view, house, tree, grass, moving boat, rotating windmill, moving car, truck and bridge, etc. So, summarized, the project will have 2 modes.

1. Day Mode
2. Night Mode

That are the requirement what will have in our project. In this project, the natural beauty is shown through computer graphics. Night and day mode are highlighted here. The moon rises in the night and the sun fall down in the day have been seen. Trees, houses and hills are available here. There is a boat moving in the river and vehicles moving on the road. The speed of the moving vehicle can be controlled. There is a windmill which is rotating.

III. SYSTEM IMPLEMENTATION METHOD

Background: For all the background objects (Road, Road Lines, Border, Sky, Clouds) we have used GL_QUADS and as for data type we have chosen double instead of float for easier calculation of position. We have used glColor3ub() function to add colors to our objects. For the sky we use the GL_POLYGAN function. For Moon, we have used GL_TRIANGLE_FAN and constructed a function that will draw circle. We have used this function also for the turbine controller and sky. For this we have taken variables for setting colors.

Rotating Wind Mill: We have used GL_POLYGAN, GL_TRIANGLE function to shape wind turbine. To rotate the turbines, we have used glRotatef(), glTranslatef(), and variables. To Modify the speed of turbines, we have used the glutTimerFunc() function to call the update function simultaneously and in the function, we modified the speed by using mouse event handler.

Moving Cars and Truck: We have used GL_POLYGAN to draw the cars and in order to move them we have used the glTranslated() function and used a variable inside it so that we can modify the speed of the cars. To Modify the speed of cars, we have used the glutTimerFunc() function to call the update function simultaneously and in the function, we modified the speed by using mouse event handler.

Clouds: We have used the glTranslatef() function to move the clouds and glScaled() function to resize the clouds when we didn't want those to be seen. We have done the same for moon also.

Day/Night: We have used glutKeyboardFunc() function to add features of pressing various buttons to change the day/night cycle. Because of this we had to change the background shading using variables.

IV. OBJECTIVE OF THE PROJECT

By doing this project, we are learning to draw objects, to move, to make the object bigger & smaller. Learning to draw circles without using any pre-defined function. Learning to use the handler function to take input from mouse & keyboard. This will help us in the future **"OpenGL"** projects. It will help us in the Game development. We will also be able to make games with **"OpenGL".**

V. CONCLUSION

Our project topic is Industrial View with Wind Turbines and we successfully completed 100% of the topic. We couldn't manage to implement more functionalities but rest of the functionalities were properly implemented. We found out that OpenGL doesn't support simultaneous playing of multiple sound track and extra audio library is required to do so. That's why we couldn't play multiple sound at once. We have 2 modes available and various movement functionality of car and turbines. We used the concept of translation and scaling based on our learnings.

VI. SCREENSHOTS OF THE SYSTEM

i. DAY MODE

ii. NIGHT MODE