“Scenic Mountain Beauty of Different Seasons”

# Insights:

# TABLE OF CONTENTS:

|  |  |
| --- | --- |
| TOPICS | Page no. |
| Title Page | 1 |
| Table of Content | 2 |
| Introduction | 3 |
| Project Graph | 4 |
| List of Functions to Represent Objects | 5 |
| List of animation Functions | 6 |
| Description | 7 |
| Contribution | 8 |
| 10. Conclusion | 9 |

# INTRODUCTION:

The aim of this project is to design and implement a computer graphics program that can generate and render scenes of mountains in different seasons, such as **summer day, autumn evenings, winter morning, spring night.**

The program will use OpenGL, a cross-platform graphics library, to create and manipulate geometric objects, apply textures and lighting effects, and display the scenes on the screen. The program will also allow the user to interact with the scenes, such as changing the viewpoint, the season & also moving objects like Car, Boat, Plane, Cloud, Bird, Windmill etc. using keyboard & mouse.

# A drawing of a car and a landscape Description automatically generatedPROJECT GRAPH:

A drawing of a car and a windmill

Description automatically generatedA drawing of a village and tents

Description automatically generated

# LIST OF FUNCTIONS TO REPRESENT OBJECTS

|  |  |  |
| --- | --- | --- |
| **SL#** | **OBJECT NAME** | **FUNCTION NAME** |
|  | Sky | sky(); |
|  | Sun | sun(); |
|  | Moon, Star | moon(); |
|  | River, River line | river(); |
|  | Road, Road line | road(); |
|  | Grass, Grass Shade | grass(); |
|  | Wood, Bonfire Base | wood(); |
|  | Walkway, Stone Shadow | walkway(); |
|  | Mountain | mountain(); |
|  | Near Tree | Tree1(); |
|  | Far Tree | Tree2(); |
|  | Christmas Tree | cTree(); |
|  | Snow Man | snowMan(); |
|  | Snow | snowFall(); |
|  | Cloud | cloud(); |
|  | House | House(); |
|  | Car | car(carPositionX, 0.09); |
|  | Plane | plane(planePositionX, 2.92); |
|  | Tent | tent(); |
|  | Boat | Boat(); |
|  | Windmill | Windmill(); |
|  | Bird | bird(); |
|  | Fire | Fire(); |
|  | Fireflies | fireFlies(); |

# LIST OF ANIMATION FUNCTIONS:

|  |  |  |
| --- | --- | --- |
| **SL#** | **ANIMATION FUNCTION** | **OBJECT / SCENE** |
| 01 | Translation | * Plane * Cloud * Bird * Wave * Boat * Car |
| 02 | Rotation | * Windmill (Day, Night, afternoon, Winter) * Snow Fall (Winter) |
| 03 | Mouse Interaction | * Windmill (Right Button) |
| 04 | Keyboard Interaction | Summer Day (1):   * Plane(p) * Cloud(c) * Bird(b) * Wave(w) * Car(x)   Autumn Afternoon (2):   * Plane(p) * Cloud(c) * Bird(b) * Wave(w) * Boat(y)   Spring Night (3):   * Plane(p) * Cloud(c) * Wave(w) * Boat(y) * Car(x)   Winter Morning (4):   * Plane(p) * Snow Fall(s) * Cloud(c) * Boat(y) * Car(x) |

# Description:

The program will also allow the user to interact with four different scenarios of different seasons. Here is a manual guide to enjoy the project:   
Press 1 on keyboard to view the Summer Day and other animations on that scenario are:

* Plane(p)
* Cloud(c)
* Bird(b)
* Wave(w)
* Car(x)

Mouse Right: Windmill Rotation

Press 2 on keyboard to view the Autumn Afternoon and other animations on that scenario are:

* Plane(p)
* Cloud(c)
* Bird(b)
* Wave(w)
* Boat(y)

Mouse Right: Windmill Rotation

Press 3 on keyboard to view the Spring Night and other animations on that scenario are:

* Plane(p)
* Cloud(c)
* Wave(w)
* Boat(y)
* Car(x)

Mouse Right: Windmill Rotation

Press 4 on keyboard to view the Winter Morning and other animations on that scenario are:

* Plane(p)
* Snow Fall(s)
* Cloud(c)
* Boat(y)
* Car(x)

Mouse Right: Windmill Rotation

# CONTRIBUTION:

|  |  |  |  |
| --- | --- | --- | --- |
| **MEMBER NAME** | **IMPLEMENTED FUNCTIONS** | **IMPLEMENTED ANIMATION FUNCTION** | **PERCENTAGE OF CONTRIBUTION** |
| Riyad, Mahadi Kabir | All functions of scenario ‘Summer Day’ | All animations of scenario ‘Summer Day’ | 25% |
| Kalam, Safkat | All functions of scenario ‘Autumn Afternoon’ | All animations of scenario ‘Autumn Afternoon’ | 25% |
| Nurshed, Nur-E Habib | All functions of scenario ‘Spring Night’ | All animations of scenario ‘Spring Night’ | 25% |
| Reza, Shahriar | All functions of scenario ‘Winter Morning’ | All animations of scenario ‘Winter Morning’ | 25% |

# CONCLUSION

The project has demonstrated the potential of computer graphics to create stunning and dynamic scenes of natural phenomena, such as the scenic mountain beauty of different seasons with animations.

The project can be improved and extended in several ways, such as:

* Adding more features and options to the user interface, such as zooming and rotating animations.
* Implementing more advanced graphics techniques, such as shadows, reflections, and refractions etc.
* Incorporating more details and variations to the mountain models and textures to increase the diversity and richness of the scenes.
* Exploring other types of natural scenes, such as oceans, forests, deserts, and volcanoes, to expand the scope and application of the program.