**Computer Graphics-Mini Project**

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| **College** | Channabasaveshwara Institute of Technology | | | |
| **Department** | Computer Science | | | |
| **Laboratory Name** | Computer Graphics-Laboratory | | **Subject Code** | 17CSL68 |
| **Student Name** | | **USN** | | |
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| **Project Title** | **DAY-NIGHT COLOR** | | | |

**Synopsis**

**Introduction:**

The ancient Chinese proverb, “a picture is worth ten thousand words” became a cliché in our society. Graphics provides one of the most natural way of communication with the computer, since our highly developed 2D and 3D pattern recognition ability allows us to perceive and process pictorial data rapidly and efficiently. Interactive computer graphics thus permits extensive, high bandwidth user computer interaction. This significantly enhances our ability to understand data, to perceive trends and to visualize real and imaginary objects, indeed to create a “virtual world” that we can explore from arbitrary points and views. It makes communication more efficient, graphics makes possible higher quality and more precise results or products, greater productivity, and lower analysis and design cost.

OpenGL is a premier environment for developing portable, interactive 2D and 3D graphics applications. Since its introduction in 1992, OpenGL has become the industry’s most widely used and supported 2D and 3D graphics application programming interface (API), bringing thousands of applications to a wide variety of computer platforms. OpenGL fosters innovation and speeds application development by incorporating a broad set of rendering, texture mapping, special effects, and other powerful visualization functions. Developers can leverage the power of OpenGL across all popular desktop and workstation platforms, ensuring wide application deployment.

**Objective:**

The following are the objectives of the project:

* In this project, we get to see the day time and night time through the options available in the menu.
* The initial output window contains the outlines of the different objects present in the created environment such as Hills, a house and a tree.
* The menu consists of three options which are Quit- to quit the program, night color change- to change the mode to night mode and day color change- to change the mode to day mode.
* We can also use the keyboard keys to show the different positons of the Sun during day time and to see the different phases of the moon during different nights.
* The menu is controlled with the help of the Right click whereas the user can control the movement of both sun and moon through keyboard keys.

**HARDWARE AND SOFTWARE REQUIREMENTS**

1. **HARDWARE REQUIREMENTS**

Minimum hardware requirement specifications are:

* Processor : Intel i3 4th Gen or better
* GPU : NVidia GT750M or better or Intel Iris Pro or better
* RAM : 1 GB or more
* HDD : 60 GB or more at 5400 RPM or better
* Keyboard : US English QWERTY keyboard
* Mouse : Normal working mouse
* Monitor : 800 x 600 or better

1. **SOFTWARE REQUIREMENTS**

Minimum software specifications are:

* OS : Ubuntu 16.06 ( Linux 4.6 ) or MacOS/OSX 10.7 or Windows 7 or better
* Latest NVidia and/or Intel Drivers for GPU
* Tools, IDE, Compilers:
* freeglut3-dev, freeglut3, g++, C++11 for Linux
* XCode 8.3, C++11 for MacOS/OSX
* Visual Studio 2017, glut files, Visual C++ latest one for Windows

**Conclusion:**

The mini project designed here provides the complete view of a normal day and night scene. Here we have designed a house, mountains, trees, the sun, the moon and the stars. We have implemented different functions in order to show the different instances of the Sun’s position during daytime as well as the phases of the Moon in different nights. In all the mini project provides a good view of the different instances of day time and night time.

This mini project helps me in learning how to use simple codes to build simple graphic content. These simple graphic contents can help render a complex set of graphical objects easily. It also helps me understand the mechanics of OpenGL programming, handling various functionalities to give the user a different experience.

**Signature of Faculty Student signature with date**