**A**

**PROJECT REPORT**

**ON**

**“ANALOG CLOCK”**

**BY**

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**ERANDWANE, PUNE-04**

**FOR**

**SAVITRIBAI PHULE PUNE UNIVERSITY**

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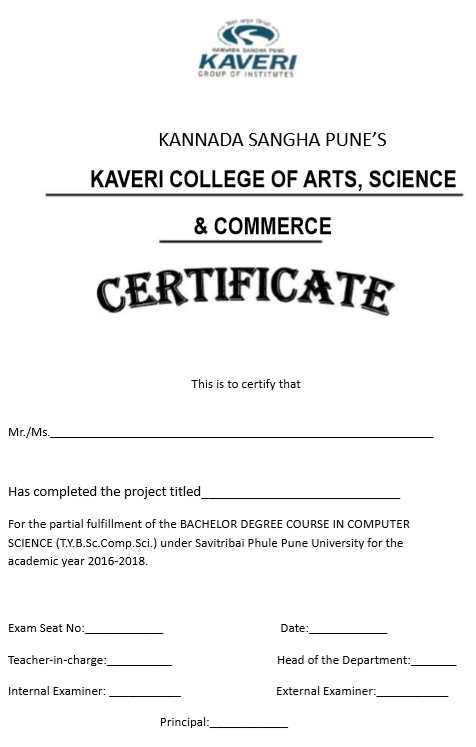
**BACHELOR OF SCIENCE (Computer Science)**

**(PATTERN-2013)**

**SEMESTER-VI**

**UNDER THE GUIDANCE OF**

**Mrs. Pallavi Joshi**

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**Acknowledgement**

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**Computer Graphics**

* Graphics provides one of the most natural means of communicating with a computer, since our highly developed 2D Or 3D pattern-recognition abilities allow us to perceive and process pictorial data rapidly.

* Computers have become a powerful medium for the rapid and economical production of pictures.  Graphics provide a so natural means of communicating with the computer that they have become widespread.
* Interactive graphics is the most important means of producing pictures since the invention of photography and television .
* We can make pictures of not only the real world objects but also of abstract objects such as mathematical surfaces on 4D and of data that have no inherent geometry.
* A computer graphics system is a computer system with all the components of the general purpose computer system. There are five major elements in system: input devices, processor, memory, frame buffer, output devices.

**OpenGL libraries and method –**

**Libraries used in the project**

#include <gl/glut.h>

#include <gl/gl.h>

#include <math.h>

#include <time.h>

#include <sys/timeb.h>

**Methods used**

1. **glutInit();**

Initialize GLUT library

1. **glutInitDisplayMode();**

Display mode : GLUT\_DOUBLE & GLUT\_RGBA

1. **glutCreateWindow("Analog Clock by Chinmay & Shaunak");**

Title of window

1. **glutDisplayFunc(); -**

Syntax - void glutDisplayFunc(void (\*func)(void));

Functionality - The new display callback function.

1. **glutReshapeFunc();**

Syntax : void glutReshapeFunc(void (\*func)(int width, int height))

Funcionaliy : The new reshape callback function.

1. **glutTimerFunc();**

Syntax : void glutTimerFunc(unsigned int msecs, void (\*func)(int value), value);

1. **SetupRC();**

Clear color window

1. **glutMainLoop();**

Window closes only after clicking cross "x"

**Other methods :**

1. **glVertex2f() :**

The glVertex function commands are used within **[glBegin](https://docs.microsoft.com/en-us/windows/win32/opengl/glbegin)**/**[glEnd](https://docs.microsoft.com/en-us/windows/win32/opengl/glend)** pairs to specify point, line, and polygon vertices.

1. **glClear();**

clear buffers to preset values

1. **glColor3f();**

Can be used to give each vertex its own color

1. **glLineWidth(2.0f)**

|  |  |
| --- | --- |
| void **glLineWidth**( | GLfloat *width*); |

specify the width of rasterized lines

1. **glEnable(GL\_LINE\_SMOOTH);**

|  |  |
| --- | --- |
| void **glEnable**( | GLenum *cap*); |

enable or disable server-side GL capabilities

1. **glBegin(GL\_LINES);**

void **glBegin**(GLenum mode);

delimit the vertices of a primitive or a group of like primitives

1. **glLineWidth(1.0f);**

void **glLineWidth**(GLfloat width);

specify the width of rasterized lines

1. **glEnd();**

|  |  |
| --- | --- |
| void **glBegin**( | GLenum *mode*) |

delimit the vertices of a primitive or a group of like primitives

1. **glutSwapBuffers();**

swaps the buffers of the current window if double buffered.

1. **glMatrixMode(GL\_MODELVIEW);**

void **glMatrixMode**(GLenum mode);

specify which matrix is the current matrix

1. **glLoadIdentity();**

replace the current matrix with the identity matrix

1. **glViewport(0, 0, w, h);**

|  |  |
| --- | --- |
| void **glViewport**( | GLint *x*, |
|  | GLint *y*, |
|  | GLsizei *width*, |
|  | GLsizei *height*); |
| set the viewport |  |
|  |  |

1. **glutPostRedisplay();**

marks the current window as needing to be redisplayed.

1. **glutTimerFunc(33,TimerFunction, 1);**

void glutTimerFunc(unsigned int msecs,

void (\*func)(int value), value);

registers a timer callback to be triggered in a specified number of milliseconds.

**Screenshot :**



**Bibliography :**

**Book :**

Poonam Ponde ,

***Computer Graphics****,* Vision Publications, 2020 edition

**Website :**

<http://www.opengl-tutorial.org/>

<https://www.youtube.com/>