**Computer Graphics**

***A Mini Project Report***

**Bachelor Of Engineering**

**In**

**Computer Science & Engineering**

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**Title Of Project: Water Cycle**

**Problem Statement: Learn How To Use C++ And Opengl For Represent Water Cycle.**

**Prerequisites:**

* **Code Blocks**
* **Or Dev C++**
* **Free Glut Library**

**Objectives:**

* **To Easily Learn Process Of Water Cycle**
* **To Learn Opengl Using Dev++/Code Blocks**
* **To Use OOP /CG Concepts For Opengl**

**Programming Concepts Used:**

* **Opengl**
* **C++**

**Header Files Used:**

* #include<GL/gl.h>
* #include<GL/glu.h>
* #include<Gl/glut.h>
* #include<math.h>

**Functions used:**

* **Polymorphism**
* **Inheritance**

**Applications:**

* **It Is Helpful For Teaching Water Cycle Process.**
* **Useful For Learning Of Operations On Opengl**
* **Making Water Cycle Representation Using C++ Concepts.**

**Source Code:**

#include<GL/gl.h>

#include<GL/glu.h>

#include<Gl/glut.h>

#include<math.h>

void display();

void reshape(int,int);

void timer(int);

void init()

{

glClearColor(0.0,0.0,0.6,1.0);

}

int main(int argc,char\*\*argv)

{

glutInit(&argc,argv);

glutInitDisplayMode(GLUT\_RGB | GLUT\_DOUBLE);

glutInitWindowPosition(200,100);

glutInitWindowSize(650,500);

glutCreateWindow("WaterCycle");

glutDisplayFunc(display);

glutReshapeFunc(reshape);

glutTimerFunc(0,timer,0);

init();

glutMainLoop();

}

float x\_position = 6.5;

float y\_position = -3.0;

float y2\_position = 6.5;

int state = 1;

float theta;

void display()

{

glClear(GL\_COLOR\_BUFFER\_BIT);

glLoadIdentity();

//draw

//sky

glColor3f(0.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-10.0,-2.0);

glVertex2f(10.0,-2.0);

glColor3f(0.4,0.4,1.0);

glVertex2f(10.0,10.0);

glVertex2f(-10.0,10.0);

glEnd();

//ground

glColor3f(0.4,0.5,0.0);

glBegin(GL\_POLYGON);

glVertex2f(-10.0,-10.0);

glVertex2f(0.0,-10.0);

glVertex2f(-2.0,-2.0);

glVertex2f(-10.0,-2.0);

glEnd();

//sea

glColor3f(0.0,0.5,1.0);

glBegin(GL\_POLYGON);

glVertex2f(0.0,-10.0);

glVertex2f(10.0,-10.0);

glColor3f(0.0,0.0,0.6);

glVertex2f(10.0,-2.0);

glVertex2f(-2.0,-2.0);

glEnd();

//mountains

glColor3f(0.4,0.1,0.1);

glBegin(GL\_POLYGON);

glVertex2f(-10.0,-2.0);

glVertex2f(-8.0,3.5);

glVertex2f(-7.5,4.5);

glColor3f(0.6,0.3,0.2);

glVertex2f(-7.0,3.5);

glVertex2f(-5.0,-2.0);

glEnd();

glColor3f(0.4,0.1,0.1);

glBegin(GL\_POLYGON);

glVertex2f(-7.0,-2.0);

glVertex2f(-5.0,3.5);

glVertex2f(-4.5,4.5);

glColor3f(0.6,0.3,0.2);

glVertex2f(-4.0,3.5);

glVertex2f(-2.0,-2.0);

glEnd();

//river

glColor3f(0.0,0.3,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.5,-3);

glVertex2f(-5.5,-3);

glVertex2f(-7.0,-2.0);

glEnd();

glColor3f(0.0,0.3,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.8,-4.5);

glVertex2f(-5.3,-4.0);

glVertex2f(-5.5,-3.0);

glVertex2f(-6.5,-3.0);

glEnd();

glColor3f(0.0,0.3,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.7,-6.0);

glVertex2f(-4.9,-4.8);

glVertex2f(-5.3,-4.0);

glVertex2f(-6.8,-4.5);

glEnd();

glColor3f(0.0,0.3,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-5.4,-6.8);

glVertex2f(-3.6,-5.4);

glVertex2f(-4.9,-4.8);

glVertex2f(-6.7,-6.0);

glEnd();

glColor3f(0.0,0.3,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-5.4,-6.8);

glVertex2f(-0.3,-8.8);

glVertex2f(-1.0,-6.0);

glVertex2f(-4.9,-4.8);

glEnd();

//cloud1

glColor3f(0.7,0.8,0.8);

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(x\_position+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f((x\_position-1)+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f((x\_position-0.5)+0.63\*cos(theta),8.2+1.12\*sin(theta));

}

glEnd();

//cloud2

glColor3f(0.7,0.8,0.8);

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f((x\_position-4.0)+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f((x\_position-5.0)+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f((x\_position-4.5)+0.63\*cos(theta),8.2+1.12\*sin(theta));

}

glEnd();

//cloud3

glColor3f(0.7,0.8,0.8);

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(-5.5+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(-6.5+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(-6+0.63\*cos(theta),8.2+1.12\*sin(theta));

}

glEnd();

//cloud4

glColor3f(0.7,0.8,0.8);

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(-8.5+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(-9.5+0.9\*cos(theta),8+0.9\*sin(theta));

}

glEnd();

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(-9.0+0.63\*cos(theta),8.2+1.12\*sin(theta));

}

glEnd();

//rain1

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-9.1,y2\_position);

glVertex2f(-9.05,y2\_position);

glVertex2f(-9.0,y2\_position+0.4);

glVertex2f(-9.05,y2\_position+0.4);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-9.7,y2\_position);

glVertex2f(-9.65,y2\_position);

glVertex2f(-9.6,y2\_position+0.4);

glVertex2f(-9.65,y2\_position+0.4);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-8.5,y2\_position);

glVertex2f(-8.45,y2\_position);

glVertex2f(-8.4,y2\_position+0.4);

glVertex2f(-8.45,y2\_position+0.4);

glEnd();

//rain2

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-9.1,y2\_position-1.0);

glVertex2f(-9.05,y2\_position-1.0);

glVertex2f(-9.0,y2\_position-0.6);

glVertex2f(-9.05,y2\_position-0.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-9.7,y2\_position-1.0);

glVertex2f(-9.65,y2\_position-1.0);

glVertex2f(-9.6,y2\_position-0.6);

glVertex2f(-9.65,y2\_position-0.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-8.5,y2\_position-1.0);

glVertex2f(-8.45,y2\_position-1.0);

glVertex2f(-8.4,y2\_position-0.6);

glVertex2f(-8.45,y2\_position-0.6);

glEnd();

//rain3

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-9.1,y2\_position-2.0);

glVertex2f(-9.05,y2\_position-2.0);

glVertex2f(-9.0,y2\_position-1.6);

glVertex2f(-9.05,y2\_position-1.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-9.7,y2\_position-2.0);

glVertex2f(-9.65,y2\_position-2.0);

glVertex2f(-9.6,y2\_position-1.6);

glVertex2f(-9.65,y2\_position-1.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-8.5,y2\_position-2.0);

glVertex2f(-8.45,y2\_position-2.0);

glVertex2f(-8.4,y2\_position-1.6);

glVertex2f(-8.45,y2\_position-1.6);

glEnd();

//rain4

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-9.1,y2\_position-3.0);

glVertex2f(-9.05,y2\_position-3.0);

glVertex2f(-9.0,y2\_position-2.6);

glVertex2f(-9.05,y2\_position-2.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-9.7,y2\_position-3.0);

glVertex2f(-9.65,y2\_position-3.0);

glVertex2f(-9.6,y2\_position-2.6);

glVertex2f(-9.65,y2\_position-2.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-8.5,y2\_position-3.0);

glVertex2f(-8.45,y2\_position-3.0);

glVertex2f(-8.4,y2\_position-2.6);

glVertex2f(-8.45,y2\_position-2.6);

glEnd();

//rain5

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.1,y2\_position);

glVertex2f(-6.05,y2\_position);

glVertex2f(-6.0,y2\_position+0.4);

glVertex2f(-6.05,y2\_position+0.4);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-6.7,y2\_position);

glVertex2f(-6.65,y2\_position);

glVertex2f(-6.6,y2\_position+0.4);

glVertex2f(-6.65,y2\_position+0.4);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-5.5,y2\_position);

glVertex2f(-5.45,y2\_position);

glVertex2f(-5.4,y2\_position+0.4);

glVertex2f(-5.45,y2\_position+0.4);

glEnd();

//rain6

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.1,y2\_position-1.0);

glVertex2f(-6.05,y2\_position-1.0);

glVertex2f(-6.0,y2\_position-0.6);

glVertex2f(-6.05,y2\_position-0.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-6.7,y2\_position-1.0);

glVertex2f(-6.65,y2\_position-1.0);

glVertex2f(-6.6,y2\_position-0.6);

glVertex2f(-6.65,y2\_position-0.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-5.5,y2\_position-1.0);

glVertex2f(-5.45,y2\_position-1.0);

glVertex2f(-5.4,y2\_position-0.6);

glVertex2f(-5.45,y2\_position-0.6);

glEnd();

//rain7

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.1,y2\_position-2.0);

glVertex2f(-6.05,y2\_position-2.0);

glVertex2f(-6.0,y2\_position-1.6);

glVertex2f(-6.05,y2\_position-1.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-6.7,y2\_position-2.0);

glVertex2f(-6.65,y2\_position-2.0);

glVertex2f(-6.6,y2\_position-1.6);

glVertex2f(-6.65,y2\_position-1.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-5.5,y2\_position-2.0);

glVertex2f(-5.45,y2\_position-2.0);

glVertex2f(-5.4,y2\_position-1.6);

glVertex2f(-5.45,y2\_position-1.6);

glEnd();

//rain8

glColor3f(1.0,1.0,1.0);

glBegin(GL\_POLYGON);

glVertex2f(-6.1,y2\_position-3.0);

glVertex2f(-6.05,y2\_position-3.0);

glVertex2f(-6.0,y2\_position-2.6);

glVertex2f(-6.05,y2\_position-2.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-6.7,y2\_position-3.0);

glVertex2f(-6.65,y2\_position-3.0);

glVertex2f(-6.6,y2\_position-2.6);

glVertex2f(-6.65,y2\_position-2.6);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(-5.5,y2\_position-3.0);

glVertex2f(-5.45,y2\_position-3.0);

glVertex2f(-5.4,y2\_position-2.6);

glVertex2f(-5.45,y2\_position-2.6);

glEnd();

//arrow1

glBegin(GL\_POLYGON);

glVertex2f(3.0,y\_position);

glVertex2f(3.07,y\_position);

glVertex2f(3.07,y\_position+2);

glVertex2f(3.0,y\_position+2);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(2.9,y\_position+1.8);

glVertex2f(3.17,y\_position+1.8);

glVertex2f(3.035,y\_position+2.1);

glEnd();

//arrow2

glBegin(GL\_POLYGON);

glVertex2f(2.0,y\_position);

glVertex2f(2.07,y\_position);

glVertex2f(2.07,y\_position+2.0);

glVertex2f(2.0,y\_position+2.0);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(1.9,y\_position+1.8);

glVertex2f(2.17,y\_position+1.8);

glVertex2f(2.035,y\_position+2.1);

glEnd();

//arrow3

glBegin(GL\_POLYGON);

glVertex2f(4.0,y\_position);

glVertex2f(4.07,y\_position);

glVertex2f(4.07,y\_position+2.0);

glVertex2f(4.0,y\_position+2.0);

glEnd();

glBegin(GL\_POLYGON);

glVertex2f(3.9,y\_position+1.8);

glVertex2f(4.17,y\_position+1.8);

glVertex2f(4.035,y\_position+2.1);

glEnd();

//sun

glColor3f(0.9,0.8,0.0);

glBegin(GL\_POLYGON);

for(int i=0;i<360;i++)

{

theta=i\*3.142/180;

glVertex2f(8.5+0.63\*cos(theta),8.5+1.12\*sin(theta));

}

glEnd();

//lines

glColor3f(0.0,0.7,1.0);

glRasterPos2f(-1.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.0,-3.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(-0.75,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.25,-4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(-0.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.5,-5.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(-0.25,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.75,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.0,-7.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.25,-8.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(0.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(1.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(2.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(3.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(4.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(5.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(6.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(7.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(8.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

glRasterPos2f(9.5,-9.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'-');

//text

glColor3f(0.0,0.0,0.0);

glRasterPos2f(4.5,-1.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'E');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'v');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'a');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'p');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'o');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'r');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'a');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'t');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'i');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'o');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glRasterPos2f(8.1,6.8);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'S');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'u');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glRasterPos2f(1.7,4.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'C');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'o');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'d');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'e');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'s');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'a');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'t');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'i');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'o');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glRasterPos2f(-8.0,5.3);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'P');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'r');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'e');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'c');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'i');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'p');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'i');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'t');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'a');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'t');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'i');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'o');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glRasterPos2f(-7.5,-6.0);

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'S');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'u');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'r');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'f');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'a');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'c');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'e');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,' ');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'R');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'u');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'n');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,' ');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'O');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'f');

glutBitmapCharacter(GLUT\_BITMAP\_TIMES\_ROMAN\_24,'f');

glutSwapBuffers();

}

void reshape(int w,int h)

{

glViewport(0,0, (GLsizei)w, (GLsizei)h);

glMatrixMode(GL\_PROJECTION);

glLoadIdentity();

gluOrtho2D(-10,10,-10,10);

glMatrixMode(GL\_MODELVIEW);

}

//Animation

void timer(int)

{

glutPostRedisplay();

glutTimerFunc(1000/60,timer,0);

//cloud

switch(state)

{

case 1:

if(x\_position>-5)

x\_position-=0.04;

else

x\_position = 6.5;

break;

}

//arrow

switch(state)

{

case 1:

if(y\_position<0)

y\_position+=0.02;

else

y\_position= -3.0;

break;

}

//rain

switch(state)

{

case 1:

if(y2\_position>5.6)

y2\_position-=0.02;

else

y2\_position= 6.5;

break;

}

}

**Group Members:**

**1.Rakesh Chandrabhan Wagh (69)**

**2.Rishikesh Sanjay Patil (49)**

**3.Pranjal Rajendra Aher (71)**

**4. Rushikesh Arun Gaikwad (22)**