EXPERIMENT – 5

Perform Clipping Operation On line Using Cohen Sutherland.

CODE :

```
#include<GL/glut.h>
#include<math.h>
#include<stdio.h>
#include<iostream>
void display();
using namespace std;
float xmin=-100;
float ymin=-100;
float xmax=100;
float ymax=100;
float xd1,yd1,xd2,yd2;
void init(void)
{
 glClearColor(0.0,0,0,0);
 glMatrixMode(GL_PROJECTION);
 gluOrtho2D(-300,300,-300,300);
}
int code(float x,float y)
{
 int c=0;
 if(y>ymax)c=8;
 if(y<ymin)c=4;
 if(x>xmax)c=c|2;
 if(x<xmin)c=c|1;
 return c;
}
void cohen_Line(float x1,float y1,float x2,float y2)
{
```

```
int c1=code(x1,y1);
int c2=code(x2,y2);
float m=(y2-y1)/(x2-x1);
while((c1|c2)>0)
{
if((c1 & c2)>0)
{
exit(0);
}
float xi=x1;float yi=y1;
int c=c1;
if(c==0)
{
c=c2;
xi=x2;
yi=y2;
}
float x,y;
if((c & 8)>0)
{
y=ymax;
x=xi+ 1.0/m*(ymax-yi);
}
else
if((c & 4)>0)
{
y=ymin;
x=xi+1.0/m*(ymin-yi);
}
else
if((c & 2)>0)
```

```
{
x=xmax;
y=yi+m*(xmax-xi);
}
else
if((c & 1)>0)
{
x=xmin;
y=yi+m*(xmin-xi);
}
if(c==c1)
{
xd1=x;
yd1=y;
c1=code(xd1,yd1);
}
if(c==c2)
{
xd2=x;
yd2=y;
c2=code(xd2,yd2);
}
}
display();
}
void mykey(unsigned char key,int x,int y)
{
if(key=='c')
{ cout<<"Hello";
cohen_Line(xd1,yd1,xd2,yd2);
glFlush();
```

```
 }
}
void display()
{
 glClear(GL_COLOR_BUFFER_BIT);
 glColor3f(1.0,1.0,1.0);
 glBegin(GL_LINE_LOOP);
 glVertex2i(xmin,ymin);
 glVertex2i(xmin,ymax);
 glVertex2i(xmax,ymax);
 glVertex2i(xmax,ymin);
 glEnd();
 glColor3f(1.0,0.0,0.0);
 glBegin(GL_LINES);
 glVertex2i(xd1,yd1);
 glVertex2i(xd2,yd2);
 glEnd();
 glFlush();
}
int main(int argc,char** argv)
{
 printf("Enter line co-ordinates:");
 cin>>xd1>>yd1>>xd2>>yd2;
 glutInit(&argc,argv);
 glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
 glutInitWindowSize(600,600);
 glutInitWindowPosition(0,0);
 glutCreateWindow("Cohen Sutherland Algorithm");
 glutDisplayFunc(display);
 glutKeyboardFunc(mykey);
 init();
```

```
 glutMainLoop();

 return 0;

}
```

Output: