MALNAD COLLEGE OF ENGINEERING

(An Autonomous Institute under VTU, Belagavi)

HASSAN – 573202

Subject: Computer Graphics and Visualization **Code:**

18CS602

Submitted by:

Jayshankar

4MC18CS057

6th Sem, B sec

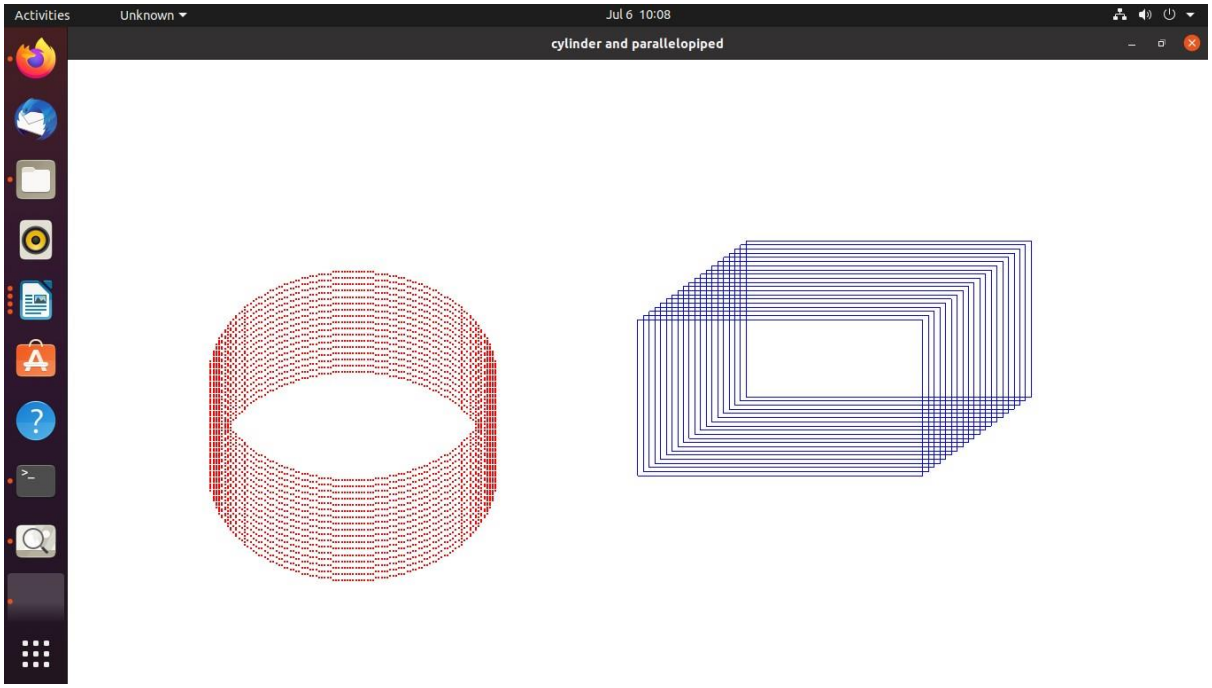
Computer Science

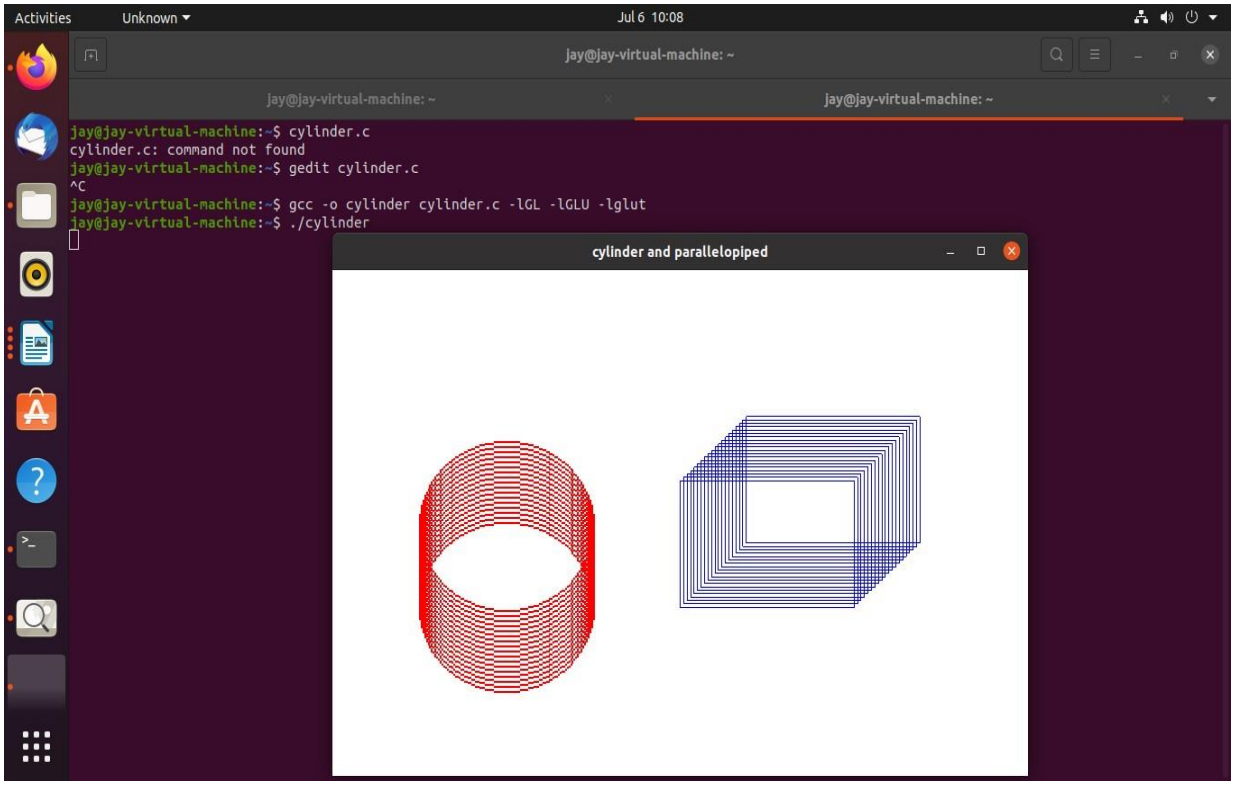
Program to create a cylinder and a parallelepiped by extruding a circle and a quadrilateral respectively. Allow the user to specify the circle and the quadrilateral.

```
#include <stdlib.h>
#include <math.h>
#include <GL/glut.h>

void draw_pixel(GLint cx,GLint cy)
{
        glColor3f(1.0,0.0,0.0);
glBegin(GL_POINTS);
        glVertex2f(cx,cy);
        glEnd();
}

void plot_pixel(GLint h,GLint k,GLint x,GLint y)
{
        draw_pixel(x+h,y+k);          draw_pixel(-
x+h,y+k);       draw_pixel(x+h,-y+k);
draw_pixel(-x+h,-y+k);         draw_pixel(y+h,x+k);
draw_pixel(-y+h,x+k);          draw_pixel(y+h,-x+k);
        draw_pixel(-y+h,-x+k);
}

void circle_draw(GLint h,GLint k,GLint r)
{
        GLint d=1-r,x=0,y=r;
        while(y>x)
      {
                plot_pixel(h,k,x,y);
if(d<0)  d+=2*x+3;              else
                 {
                  d+=2*(x-y)+5;
                  --y;
                 } ++x;
                }
plot_pixel(h,k,x,y);
}

void cylinder_draw()
{
        GLint xc=100,yc=100,r=50;
GLint i,n=50;
for(i=0;i<n;i+=3)
             circle_draw(xc,yc+i,r); }

void parallelopiped(int x1,int x2,int y1,int y2,int y3,int y4)
{
        glColor3f(0.0,0.0,1.0);
glPointSize(2.0);
```

```
glBegin(GL_LINE_LOOP);
glVertex2f(x1,y1);
glVertex2f(x2,y3);
glVertex2f(x2,y4);
glVertex2f(x1,y2);
        glEnd();
}


void parallelopiped_draw()
{
        int x1=200,x2=300,y1=100,y2=175,y3=100,y4=175;
GLint i,n=40;
        for(i=0;i<n;i+=2)
            parallelopiped(x1+i,x2+i,y1+i,y2+i,y3+i,y4+i);
}

void init(void)
{
        glClearColor(1.0,1.0,1.0,1.0);
glMatrixMode(GL_PROJECTION);
        gluOrtho2D(0.0,400.0,0.0,300.0);
}

void display(void)
{

glClear(GL_COLOR_BUFFER_BIT);
glColor3f(1.0,0.0,0.0);
glPointSize(2.0);       cylinder_draw();
parallelopiped_draw();
        glFlush();
}

int main(int argc,char *argv[])
{
        glutInit(&argc,argv);
        glutInitDisplayMode(GLUT_SINGLE|GLUT_RGB);
        glutInitWindowSize(500,500);
glutInitWindowPosition(0,0);          glutCreateWindow("cylinder
and parallelopiped");

glutDisplayFunc(display);
init();  glutMainLoop();
}
```

Output:


Activities
Unknown
Jul 6 10:08
cylinder and parallelopiped


Activities
Unknown
Jul 6 10:08
jay@jay-virtual-machine: ~
jay@jay-virtual-machine: ~
jay@jay-virtual-machine: ~
jay@jay-virtual-machine:~$ cylinder.c
cylinder.c: command not found
jay@jay-virtual-machine:~$ gedit cylinder.c
^C
jay@jay-virtual-machine:~$ gcc -o cylinder cylinder.c -lGL -lGLU -lglut
jay@jay-virtual-machine:~$ ./cylinder
cylinder and parallelopiped