Computer Graphics Practicals

Assignment 2

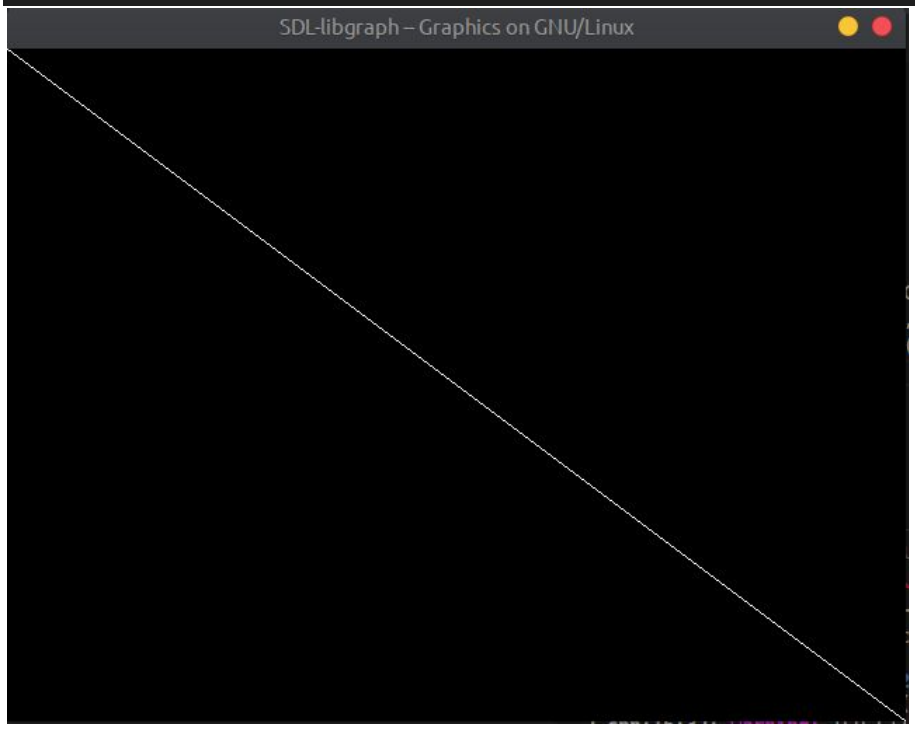
U18CO081
Krunal Rank

1. Explore different functions of graphics.h library.

graphics.h has been installed on Linux Distribution Ubuntu using the given package in the Assignment along with other dependencies. Apart from graphics.h, OpenGL libraries and managers are also installed.

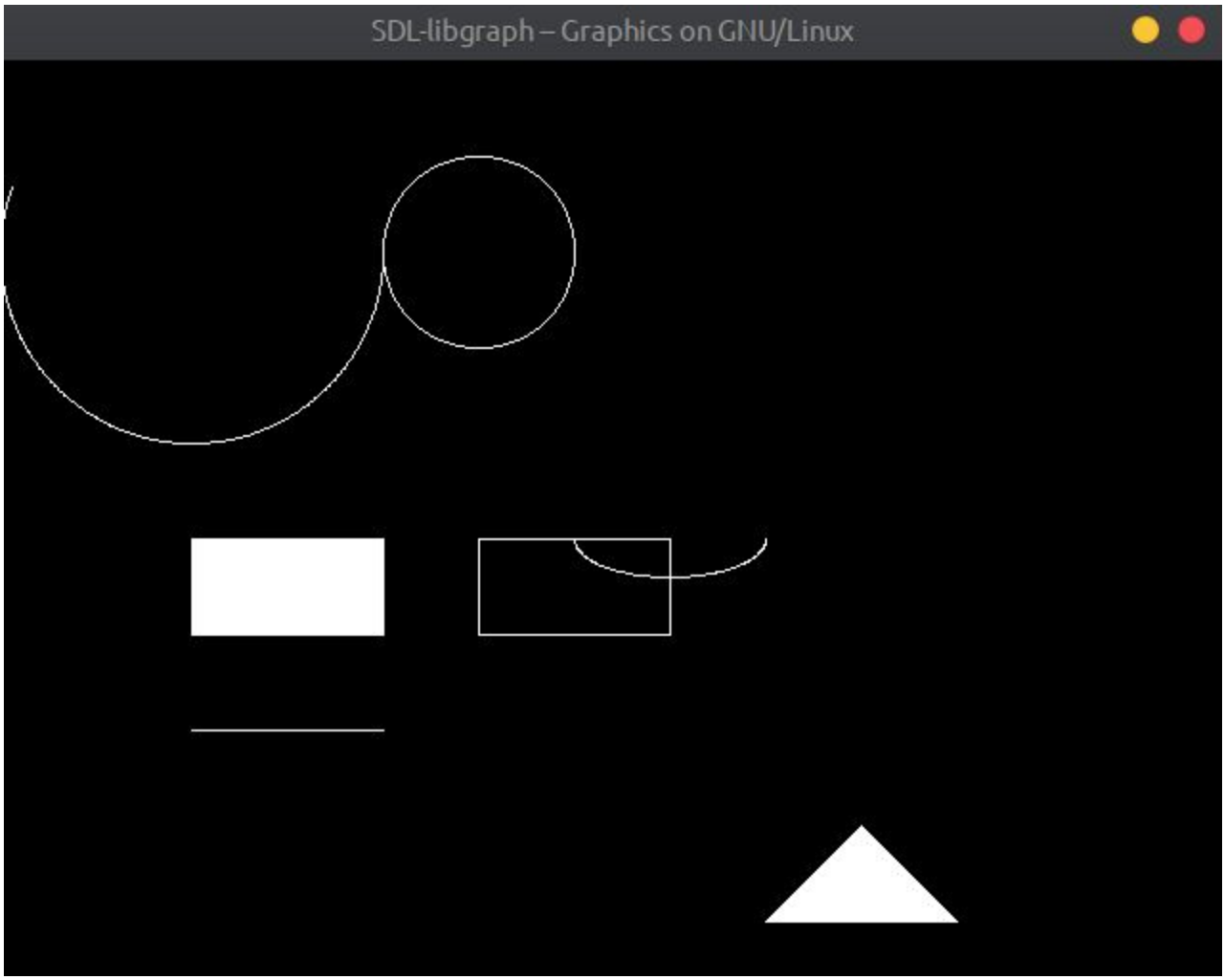
The first code ran using graphics.h is as follows:

```c
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>


int main()
{
  int gdriver = DETECT, gmode, errorcode;
  initgraph(&gdriver, &gmode, "");
  line(0, 0, getmaxx(), getmaxy());
  getch();
  closegraph();
  return 0;

}
```



2. Write a program for the simulation of following functions:
initGraphics, arc, bar, circle, line, rectangle, ellipse, outtext, outtextxy, cleardevice, closegraph, drawpoly, ellipse, fillpoly, fillArc, fillRect, setFont, getFont, getarccoords, getbkcolor, getColor, setColor, pause, waitForClick, settextstyle, setlinestyle, setfillstyle, pieslice.

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>

int main()
{
  int gdriver = DETECT, gmode, errorcode;
  initgraph(&gdriver, &gmode, ""); //Used to fetch graphics driver and initialise the
graph

  arc(100,100,0,200,100); // Draws Arc (x,y,start_angle,end_angle,radius)
  bar(100,250,200,300); // Draws Bar (left,top,right,bottom)
  circle(250,100,50); // Draws circle (x,y,radius)
  line(100,350,200,350); // Draws Lines (start_x,start_y,end_x,end_y)
  rectangle(250,250,350,300); // Draws Rectangle (left,top,right,bottom)
  ellipse (350,250,0, 180,50,20); // Draws Ellipse
(x,y,start_angle,end_angle,x_radius,y_radius)
  int arr[6] = {400,450,450,400,500,450}; // Points in clockwise order
  fillpoly(3,arr); //Fills Polygon (no.of points, point array (having size 2 * no.of
points))



  getch();
  closegraph();
  return 0;
}
```




```c
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>

int main()
{
   int gdriver = DETECT, gmode, errorcode;
   initgraph(&gdriver, &gmode, ""); // Used to fetch graphics driver and initialise
the graph

   cleardevice(); // Clears screen
   outtext("Hello! This is a message"); // Used to write Text (text)
   cleardevice(); // Clears screen
   for(int i = 0;i<10;i++){
       setfontcolor(i); // Sets font color
       /*
       0-Black 1-Blue 2-Green 3-Cyan 4-Red
       5-Pink 6-Brown 7-White 8-Gray 9-Purple
       10-Light Cyan 11-Light Cyan 12-Light Red
       13-Light Pink 14-Yellow 15-White
```

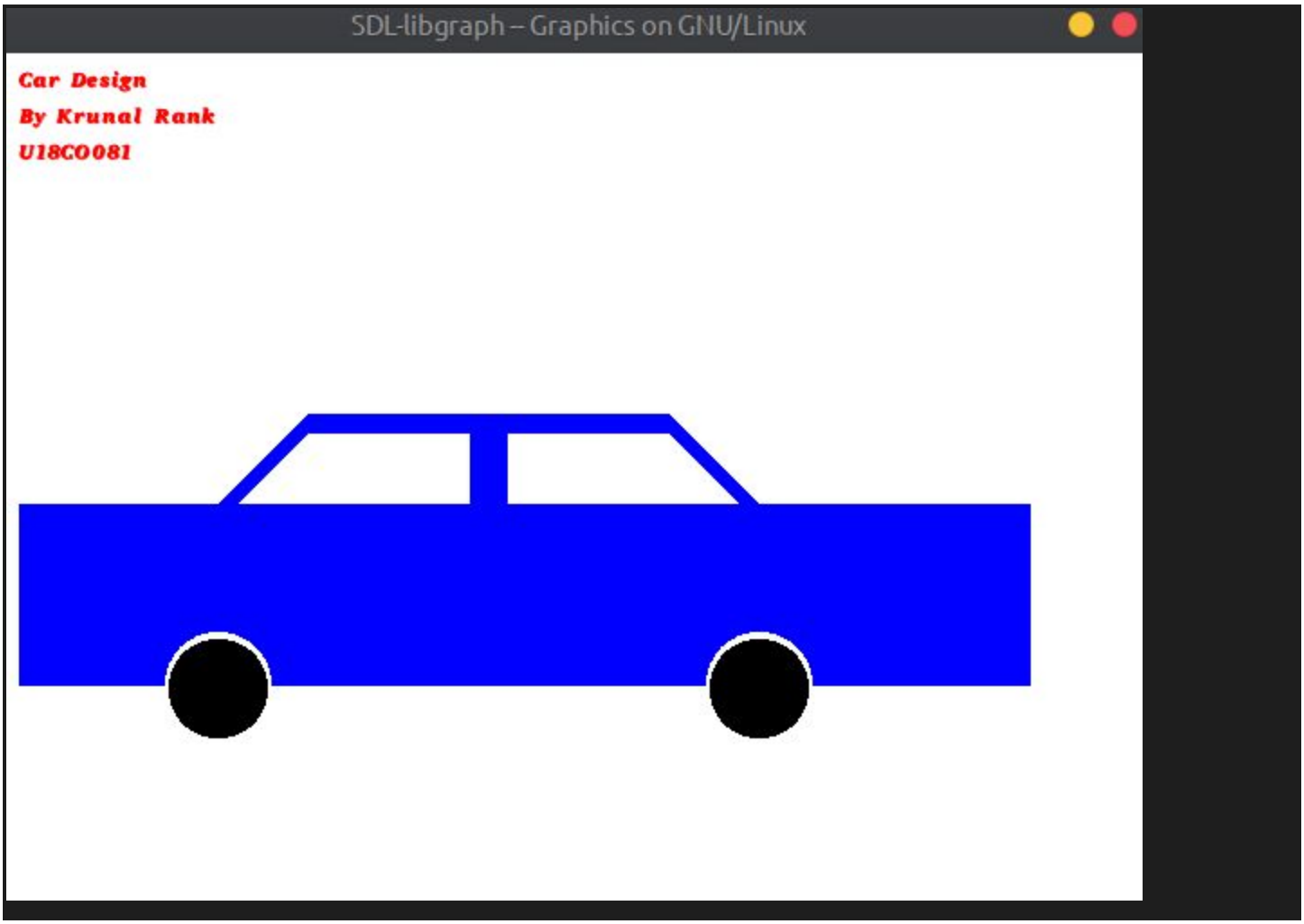
```
        */
    outtextxy(0,(i)*50,"Hello! This is another message"); // Used to write Text at
places (x,y,text)
    }

    //pause(); // Pauses Rendering graphics


    getch();
    closegraph(); // Closes graph and disconnects graphics driver.
    return 0;
}
```

3. Write a program to design a car using predefined functions of graphics.h.

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>

int main()
{
   int gdriver = DETECT, gmode, errorcode;
   initgraph(&gdriver, &gmode, ""); // Used to fetch graphics driver and initialise
the graph

   cleardevice(); // Clears screen

   int maxx = getmaxx();
   int maxy = getmaxy();

   setbkcolor(15);
   setfontcolor(4);
   setcolor(1);
   outtextxy(10,10,"Car Design");
   outtextxy(10,30,"By Krunal Rank");
   outtextxy(10,50,"U18CO081");

   line(10,250,10,350);
   line(10,250,120,250);
   arc(120,350,180,0,30);

   line(10,350,90,350);
   line(120,250,170,200);
   line(170,200,370,200);
   line(370,200,420,250);


   arc(420,350,180,0,30);

   line(150,350,390,350);
   line(420,250,570,250);
   line(450,350,570,350);
   line(570,250,570,350);


   line(130,250,170,210);
   line(170,210,260,210);
   line(260,210,260,250);
   line(130,250,260,250);
```

```
   line(280,210,370,210);
   line(370,210,410,250);
   line(280,210,280,250);
   line(280,250,410,250);
   floodfill(300,300,1);

   setcolor(0);
   circle(120,352,27);
   circle(420,352,27);
   floodfill(120,352,0);
   floodfill(420,352,0);



   getch();
   closegraph(); // Closes graph and disconnects graphics driver.
   return 0;
}
```

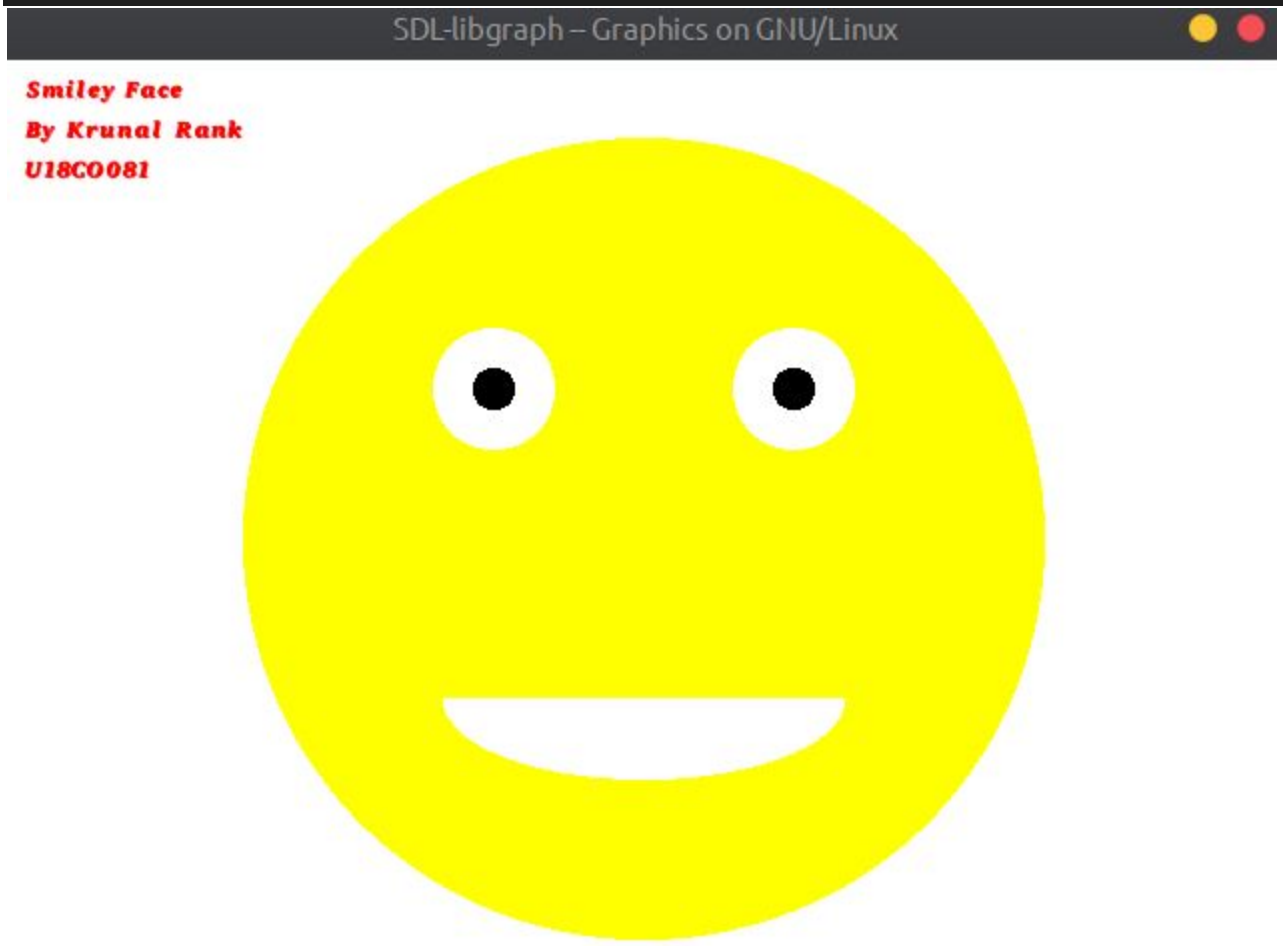
```
   floodfill(300,300,1);
```


SDL-libgraph – Graphics on GNU/Linux
Car Design
By Krunal Rank
U18CO081

4. Write a program to design a smiley face using graphics.h functions.

```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>

int main()
{
   int gdriver = DETECT, gmode, errorcode;
   initgraph(&gdriver, &gmode, ""); // Used to fetch graphics driver and initialise
the graph
   int maxx = getmaxx();
   int maxy = getmaxy();

   cleardevice(); // Clears screen

   setfontcolor(4);
   setbkcolor(15);

   outtextxy(10,10,"Smiley Face");
   outtextxy(10,30,"By Krunal Rank");
   outtextxy(10,50,"U18CO081");

   setcolor(14);
   circle(maxx/2,maxy/2,200);
   floodfill(maxx/2,maxy/2,14);

   setcolor(15);
   circle(maxx/2-75,maxy/2-75,30);
   circle(maxx/2+75,maxy/2-75,30);
   floodfill(maxx/2-75,maxy/2-75,15);
   floodfill(maxx/2+75,maxy/2-75,15);


   setcolor(0);
   circle(maxx/2-75,maxy/2-75,10);
   circle(maxx/2+75,maxy/2-75,10);
   floodfill(maxx/2-75,maxy/2-75,0);
   floodfill(maxx/2+75,maxy/2-75,0);


   setcolor(15);

   ellipse(maxx/2,maxy/2+80,0,180,100,40);
   line(maxx/2-100,maxy/2+80,maxx/2+100,maxy/2+80);
   floodfill(maxx/2,maxy/2+90,15);
```

```
    getch();
    closegraph();
    return 0;
}
```



5. Write a program to create circles inside various circles using graphics.h functions.

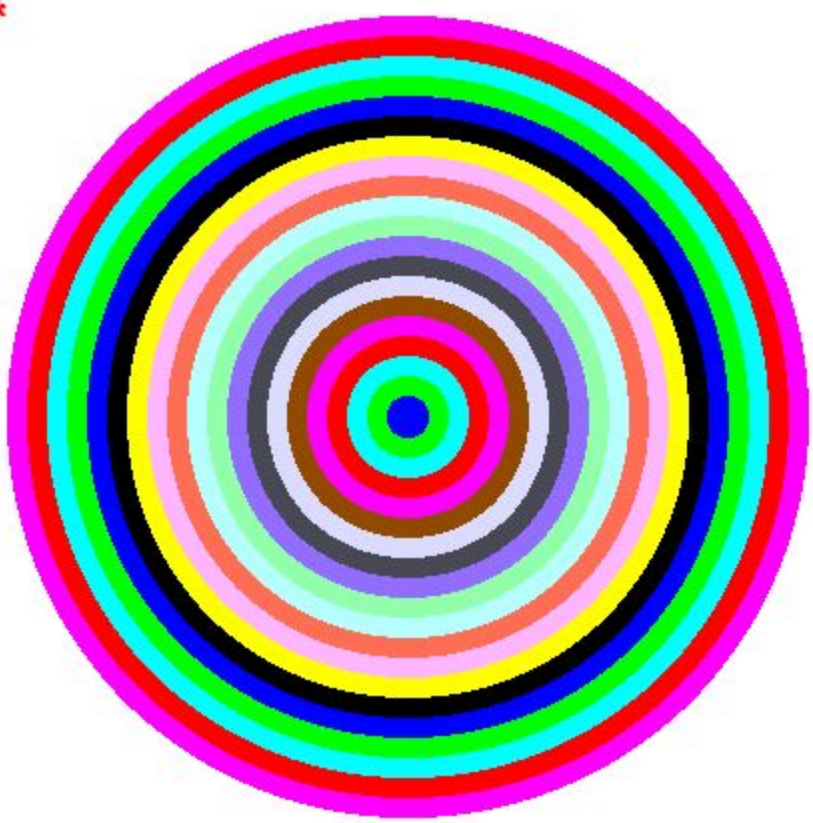
```
#include <graphics.h>
#include <stdlib.h>
#include <stdio.h>

int main()
{
   int gdriver = DETECT, gmode, errorcode;
   initgraph(&gdriver, &gmode, ""); // Used to fetch graphics driver and initialise
the graph
   int maxx = getmaxx();
   int maxy = getmaxy();

   cleardevice(); // Clears screen

   setfontcolor(4);
   setbkcolor(15);

   outtextxy(10,10,"Concentric Circles");
   outtextxy(10,30,"By Krunal Rank");
   outtextxy(10,50,"U18CO081");

   setcolor(0);
   for(int i = 200;i>=10;i-=10){
       setcolor(i/10%15);
       circle(maxx/2,maxy/2,i);
       floodfill(maxx/2,maxy/2,(i/10)%15);
   }


   getch();
   closegraph();
   return 0;
}
```

SDL-libgraph – Graphics on GNU/Linux

Concentric Circles

By Krunal Rank

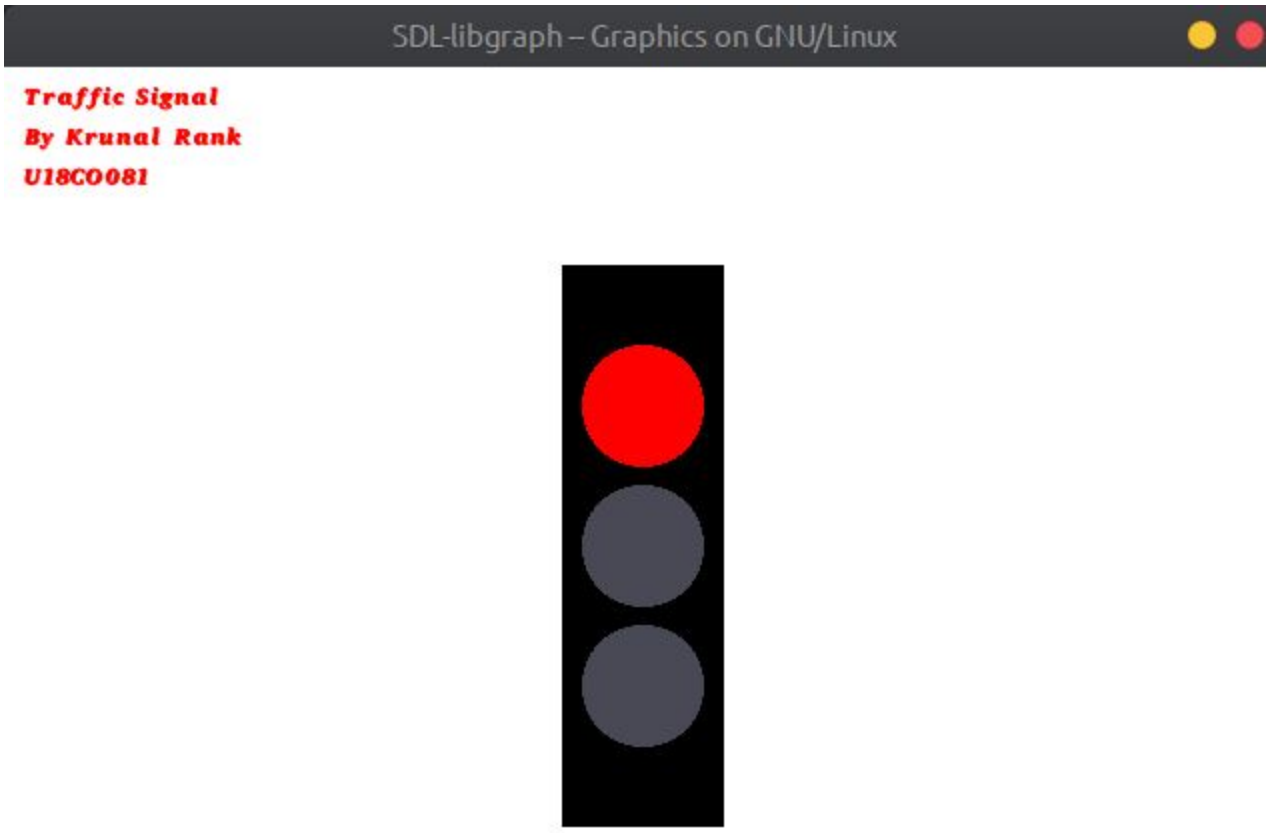
U18CO081



6. Write a program to design traffic signals using graphics.h functions.#include <graphics.h>

```
#include <stdlib.h>
#include <stdio.h>
#include <bits/stdc++.h>
using namespace std;
int main()
{
   int gdriver = DETECT, gmode, errorcode;
   initgraph(&gdriver, &gmode, ""); // Used to fetch graphics driver and initialise
the graph
   int maxx = getmaxx();
   int maxy = getmaxy();


   int state = 0;
   setfontcolor(4);
   setbkcolor(15);
   outtextxy(10, 10, "Traffic Signal");
   outtextxy(10, 30, "By Krunal Rank");
   outtextxy(10, 50, "U18CO081");

   setcolor(0);
   rectangle(maxx / 2 - 40, maxy / 2 - 140, maxx / 2 + 40, maxy / 2 + 140);
   floodfill(maxx / 2, maxy / 2, 0);
   while (true)
   {

       if (state == 0)
       {

           setcolor(4);
           circle(maxx / 2, maxy / 2 - 70, 30);
           floodfill(maxx / 2, maxy / 2 - 70, 4);
       }
       else
       {
           setcolor(8);
           circle(maxx / 2, maxy / 2 - 70, 30);
           floodfill(maxx / 2, maxy / 2 - 70, 8);
       }

       if (state == 1)
       {

           setcolor(14);
```

```
            circle(maxx / 2, maxy / 2, 30);
            floodfill(maxx / 2, maxy / 2, 14);
        }
        else
        {

            setcolor(8);
            circle(maxx / 2, maxy / 2, 30);
            floodfill(maxx / 2, maxy / 2, 8);
        }

        if (state == 2)
        {

            setcolor(2);
            circle(maxx / 2, maxy / 2 + 70, 30);
            floodfill(maxx / 2, maxy / 2 + 70, 2);
        }
        else
        {

            setcolor(8);
            circle(maxx / 2, maxy / 2 + 70, 30);
            floodfill(maxx / 2, maxy / 2 + 70, 8);
        }

        sleep(1);
        state++;
        if (state == 3)
            state = 0;
    }

    getch();
    closegraph();
    return 0;
}
```



Note that the above Traffic signal is animated.