Computer Graphics: CSE-414

LAB -1

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- Platform: CodeBlocks and others
- Language: C++
- Graphics Setup: How to Setup graphics.h in CodeBlocks 2023 | How to Run Graphics Program in C/C++ CodeBlocks V20.03 - YouTube
- Drive: 2. CG - Google Drive

LAB-1: Outlines:

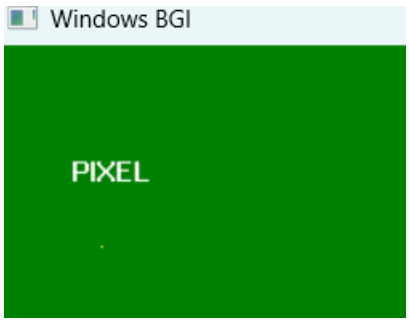
1. Pixel print
2. Line draw using line() function
3. Circle draw using circle() function
4. Draw triangle using line()
5. Draw rectangle using rectangle()
6. Draw ellipse using ellipse()
7. Draw Arc using arc()
8. Draw bar using bar()
9. Draw 3D bar using bar3d()
10. Draw a Home Page

- List of available colors and their values

Color Name	Color Value
BLACK	0
BLUE	1
GREEN	2
CYAN	3
RED	4
MAGENTA	5
BROWN	6
LIGHTGRAY	7
DARKGRAY	8
LIGHTBLUE	9
LIGHTGREEN	10
LIGHTCYAN	11
LIGHTRED	12
LIGHTMAGENTA	13
YELLOW	14
WHITE	15

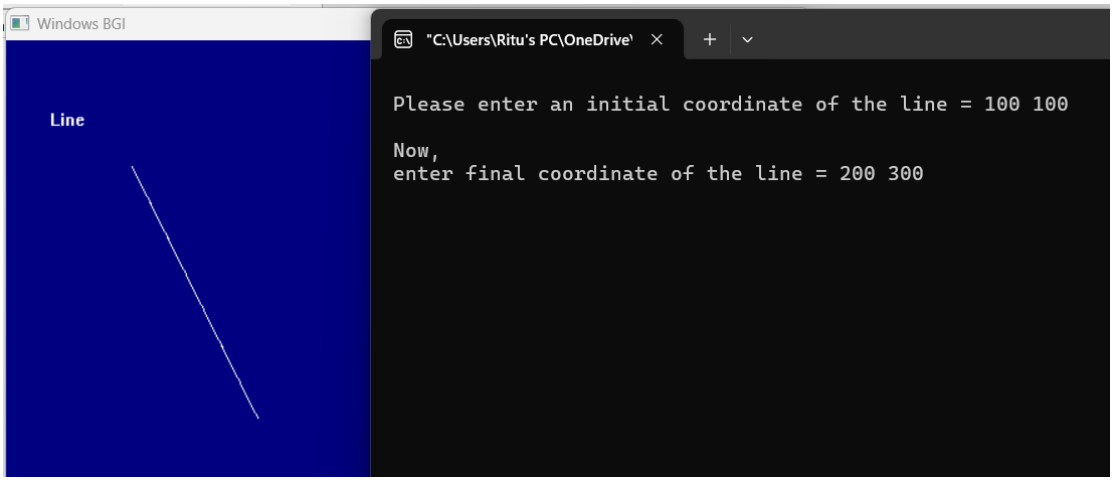
Program-1: Print Pixel

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>
int main(){
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");

    setbkcolor(GREEN);
    cleardevice();
    putpixel(50, 100, YELLOW);
    outtextxy(35, 55, "PIXEL");
    getch();
    closegraph();
   return 0;
}
/*
Function   Description
initgraph--It initializes the graphics system by loading the passed graphics driver then changing the system into graphics mode.
getmaxx--It returns the maximum X coordinate in current graphics mode and driver.
getmaxy--It returns the maximum Y coordinate in current graphics mode and driver.
outtextxy--It displays a string at a particular point (x,y) on screen.
circle--It draws a circle with radius r and centre at (x, y).
closegraph--It unloads the graphics drivers and sets the screen back to text mode.*/
```



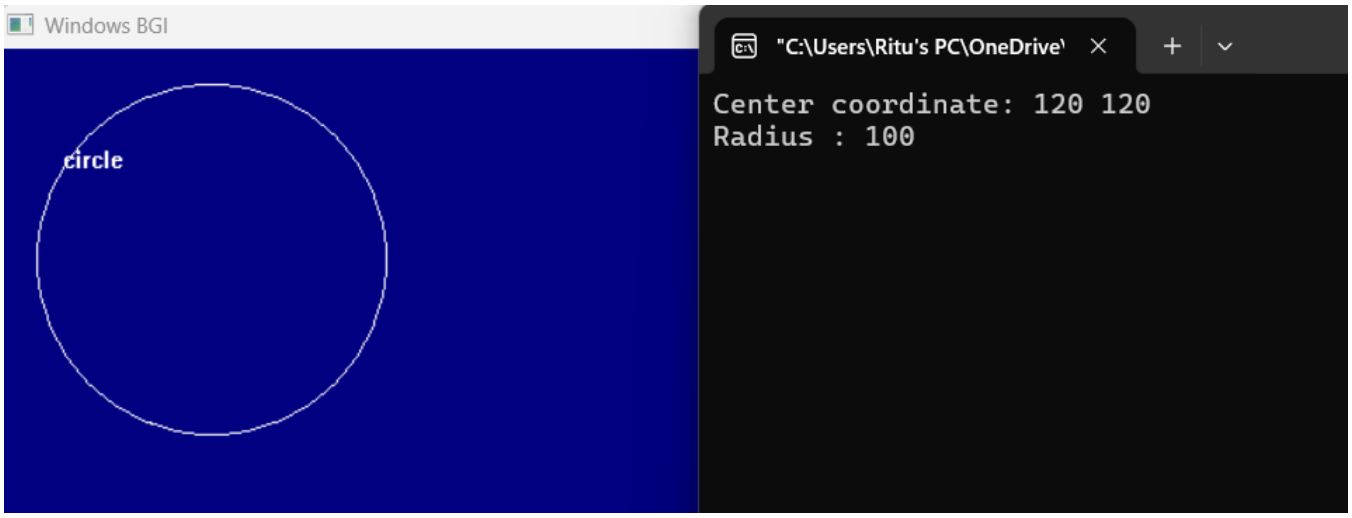
Program – 1: Print line using line()

```
#include<bits/stdc++.h>
#include<conio.h>
#include<graphics.h>

using namespace std;
int main()
{
    int gd=DETECT,gm;
    initgraph(&gd, &gm,"C:\\TURBOC3\\BGI");


    int x_initial,y_initial,x_final,y_final;
    printf("\n Please enter an initial coordinate of the line = ");
    scanf("%d %d", &x_initial,&y_initial);
    printf("\n Now, \n enter final coordinate of the line = ");
    scanf("%d %d",&x_final,&y_final);


    setbkcolor(BLUE);
    cleardevice();
    outtextxy(35, 55, "Line");
    line(x_initial,y_initial,x_final,y_final);

    getch();
    closegraph();
}
/*Sample Input Output
 Please enter an initial coordinate of the line = 100 100

 Now,
 enter final coordinate of the line = 200 300*/
```



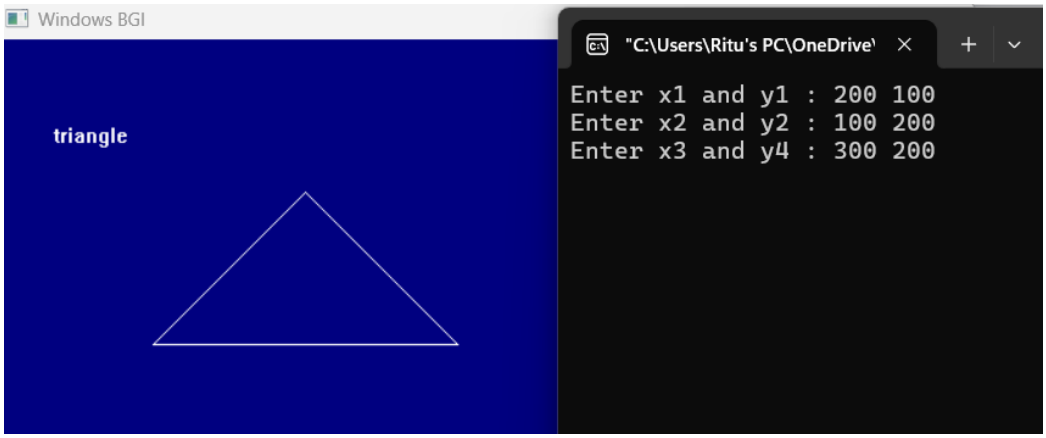
Program – 3: Print circle using circle()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>

int main(){
   int gd = DETECT,gm;
   initgraph(&gd, &gm, "C:\\TC\\BGI");

   int h,k,radius;
   printf("Center coordinate: ");
   scanf("%d %d", &h, &k);

   printf("Radius : ");//radius
   scanf("%d", &radius);


    setbkcolor(BLUE);
    cleardevice();
    outtextxy(35, 55, "circle");
    circle(h, k, radius);



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



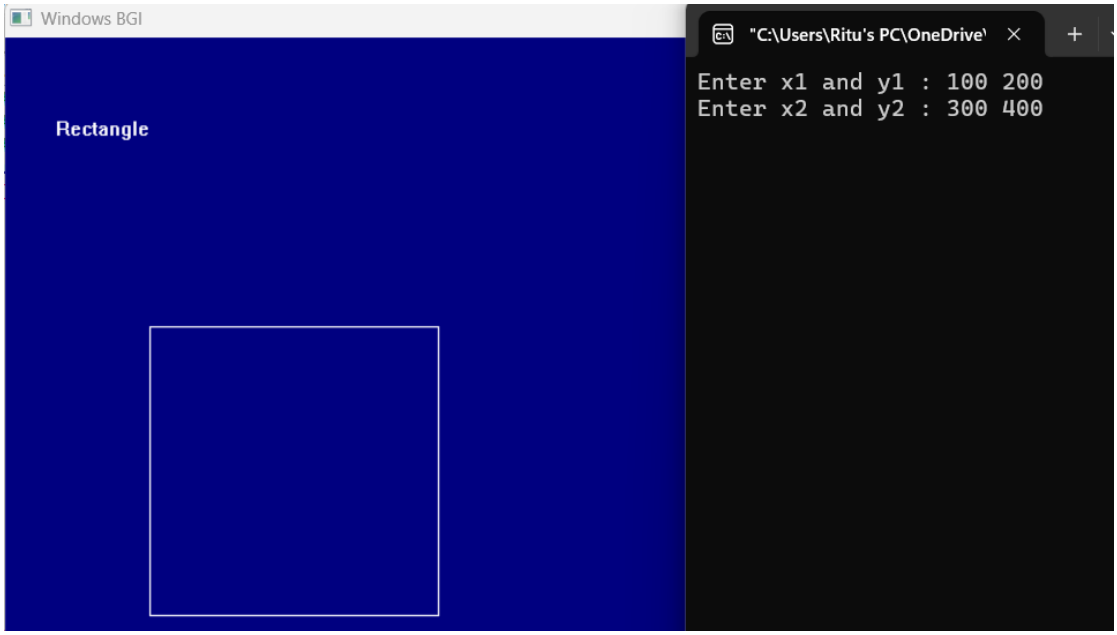
Program – 4: print triangle using line()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>
int main()
{
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");

    int x1,y1,x2,y2,x3,y3;
    printf("Enter x1 and y1 : ");
    scanf("%d %d", &x1, &y1);

    printf("Enter x2 and y2 : ");
    scanf("%d %d", &x2, &y2);

    printf("Enter x3 and y4 : ");
    scanf("%d %d", &x3, &y3);

    setbkcolor(BLUE);
    cleardevice();

    outtextxy(35, 55, "triangle");
    line(x1,y1, x2,y2);
    line(x2,y2, x3,y3);
    line(x3,y3, x1,y1);


    getch();
    closegraph();
}
///200 100 100 200 300 200
```



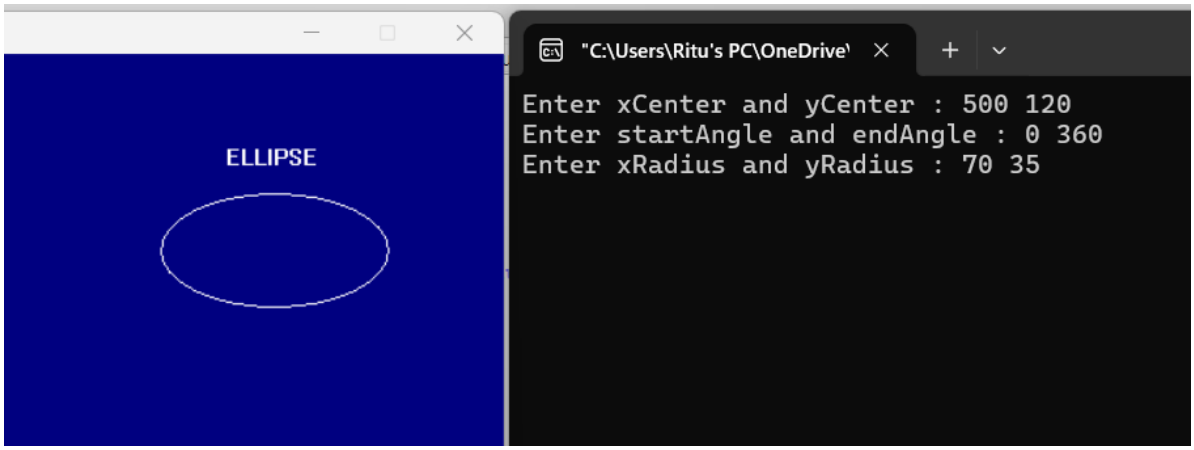
Program – 5: Draw rectangle using rectangle()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>
int main()
{
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");

    int x1,y1,x2,y2,x3,y3;
    printf("Enter x1 and y1 : ");
    scanf("%d %d", &x1, &y1);

    printf("Enter x2 and y2 : ");
    scanf("%d %d", &x2, &y2);

    setbkcolor(BLUE);
    cleardevice();

    outtextxy(35, 55, "Rectangle");
    rectangle(x1,y1, x2,y2);

    getch();
    closegraph();
}

///100 200 300 400
```



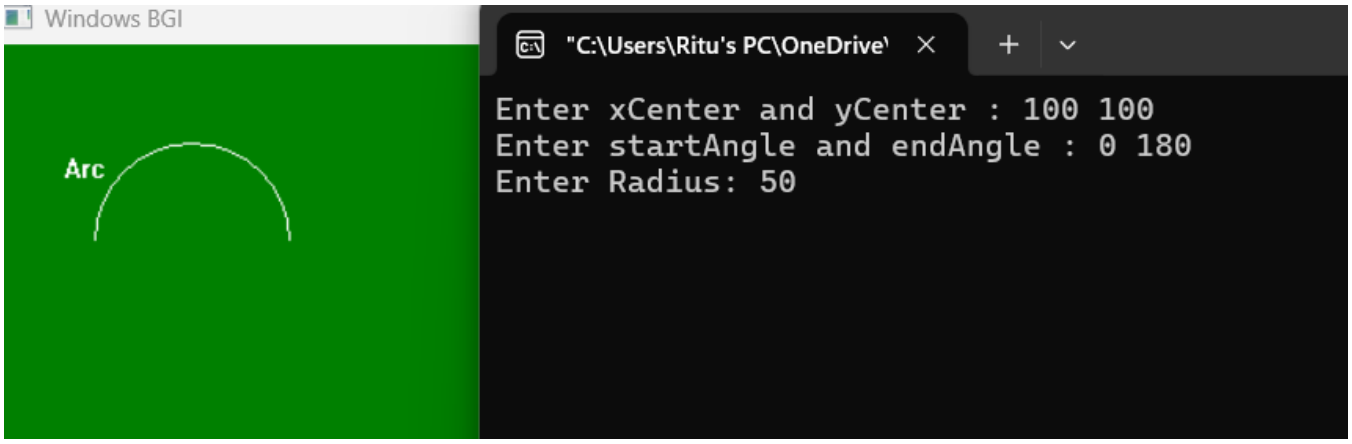
Program – 6: Draw ellipse using ellipse()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>
int main()
{
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");
    /// ellipse(xCenter, yCenter, startAngle, endAngle, xRadius, yRadius):
    // Draws an ellipse for a given center, starting and ending angle
    // and horizontal and vertical radius.

    int x1,y1,x2,y2,x3,y3;
    printf("Enter xCenter and yCenter : ");
    scanf("%d %d", &x1, &y1);

    printf("Enter startAngle and endAngle : ");
    scanf("%d %d", &x2, &y2);

    printf("Enter xRadius and yRadius : ");
    scanf("%d %d", &x3, &y3);

    setbkcolor(BLUE);
    cleardevice();
    outtextxy(470, 55, "ELLIPSE");
    ellipse(x1,y1, x2,y2, x3,y3);


    getch();
    closegraph();
}

///500 120 0 360 70 35
```



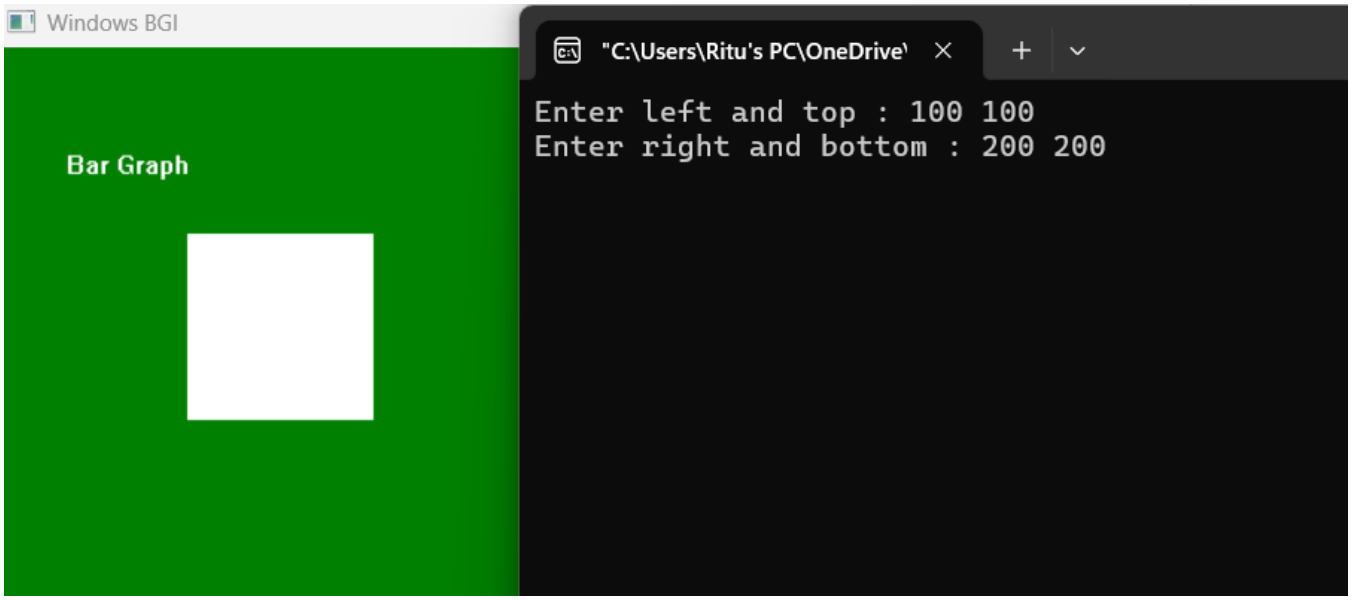
Program – 7: Draw Arc using arc()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>

int main()
{
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");
    ///Syntax: arc(int x, int y, int startAngle, int endAngle, int radius);
    int x1,y1,x2,y2,r;

    printf("Enter xCenter and yCenter : ");
    scanf("%d %d", &x1, &y1);

    printf("Enter startAngle and endAngle : ");
    scanf("%d %d", &x2, &y2);

    printf("Enter Radius: ");
    scanf("%d", &r);

    setbkcolor(GREEN);
    cleardevice();
    outtextxy(35, 55, "Arc");
    arc(x1,y1, x2,y2,r);

    getch();
    closegraph();
}
///100 100 0 135 50
```



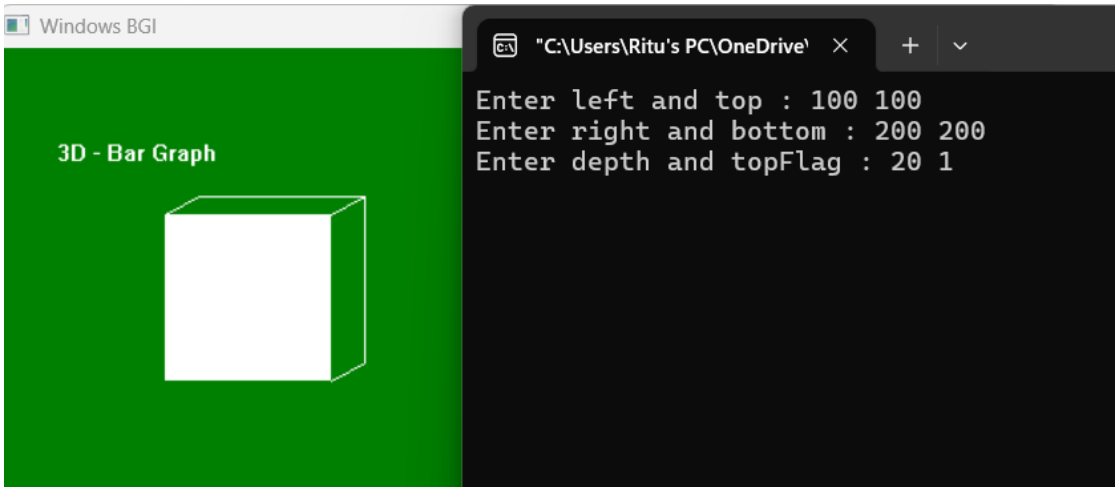
Program – 8: Draw a bar using bar()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>

int main()
{
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");
    ///Syntax: bar(int left, int top, int right, int bottom);
    int x1,y1,x2,y2,r;
    printf("Enter left and top : ");
    scanf("%d %d", &x1, &y1);

    printf("Enter right and bottom : ");
    scanf("%d %d", &x2, &y2);


    setbkcolor(GREEN);
    cleardevice();
    outtextxy(35, 55, "Bar Graph");
    bar(x1,y1, x2,y2);

    getch();
    closegraph();
}
///100 100 200 200
```



Program – 9 : Draw 3D bar using bar3d()

```
#include<bits/stdc++.h>
#include<graphics.h>
#include<conio.h>
int main(){
    int gd = DETECT,gm;
    initgraph(&gd, &gm, "C:\\TC\\BGI");
    ///bar3d(int left, int top, int right, int bottom, int depth, int topflag);
    ///left, top, right, bottom are the positions
    ///depth specifies the depth of bar in pixels
    ///topflag determines whether a 3 dimensional top is put on the bar or not
    ///(1 for yes, 0 for not )

    int x1,y1,x2,y2,depth, topFlag;
    printf("Enter left and top : ");
    scanf("%d %d", &x1, &y1);

    printf("Enter right and bottom : ");
    scanf("%d %d", &x2, &y2);

    printf("Enter depth and topFlag : ");
    scanf("%d %d", &depth, &topFlag);

    setbkcolor(GREEN);
    cleardevice();
    outtextxy(35, 55, "3D - Bar Graph");
    bar3d(x1, y1, x2, y2, depth, topFlag);

    getch();
    closegraph();
}
///100 100 200 200 20 1
```



Program – 10: Draw a Home Page

```
#include<bits/stdc++.h>
#include<conio.h>
#include<graphics.h>
int main(){
    int gd=DETECT,gm;
    initgraph(&gd, &gm,"C:\\TURBOC3\\BGI");
    setbkcolor(LIGHTBLUE); // Set background color to white
    cleardevice(); // Clear the screen with the background color
    // Draw each letter with specific colors and positions
    setcolor(RED); // Color for 'G'
    settextstyle(SANS_SERIF_FONT, HORIZ_DIR, 4);
    outtextxy(150, 100, "G");
    setcolor(BLUE); // Color for 'O'
    outtextxy(200, 100, "O");
    setcolor(YELLOW); // Color for 'O'
    outtextxy(250, 100, "O");
    setcolor(GREEN); // Color for 'G'
    outtextxy(300, 100, "G");
    setcolor(MAGENTA); // Color for 'L'
    outtextxy(350, 100, "L");
    setcolor(CYAN); // Color for 'E'
    outtextxy(400, 100, "E");
    // Draw additional text
    setcolor(BLACK); // Color for 'surf'
    settextstyle(SANS_SERIF_FONT, HORIZ_DIR, 2);
    outtextxy(180, 200, "surf");
    setcolor(BLACK); // Color for 'Go AHEAD'
    outtextxy(250, 300, "Go AHEAD");
    // Draw rectangles
    setcolor(BLACK);
    rectangle(120, 180, 300, 220); // Rectangle around 'surf'
    rectangle(240, 280, 400, 320); // Rectangle around 'Go AHEAD'
    getch();
    closegraph();
}
```