EXPERIMENT - 1

Computer Graphics and Multimedia

a) Study and prepare list of Graphic functions.

b) Write a C program to make a hut and car using built-in graphic function.

syeda reeha quasar
14114802719
3C7

EXPERIMENT - 1

Aim: a) Study and prepare list of Graphic functions.

b) Write a C program to make a hut and car using built-in graphic function.

Theory:

The graphics. h header file provides access to a simple graphics library that makes it possible to draw lines, rectangles, ovals, arcs, polygons, images, and strings on a graphical window.

Functions:

initGraphics() or initwindow(): Creates the graphics window on the screen.
Syntax - initGraphics(width, height), initwindow(width, height)

1. **Putpixel**

Purpose:-Putpixel function is to draw the pixel on the screen. Pixel is small dot on the screen.
Syntax:-putpixel(x co-orinate, y co-ordinate,COLOR);
Example: – putpixel(100,100,BLUE);

2. **SetbkColor**

Purpose:-Setbkcolor function is used to set background color of the screen.
Syntax:-setbkcolor(COLOR);
Example:-setbkcolor(RED);

3. **Setlinestyle**

Purpose:-setlinestyle function is used to set the current line style, width and pattern
Syntax:-setlinestyle(linestyle, pattern, thickness);
Example:-setlinestyle(SOLID_LINE,1,2);

4. **Setcolor**

Purpose:-setcolor is to set color of the objects which is to be drawn after this setcolor line.
Syntax:-setcolor(COLOR);
Example:-setcolor(RED);

5. **Rectange:-**

Purpose:- Rectangle function is used to draw the rectangle on the screen. X1,y1 are the lower left co-ordinates of the rectangle and the x2,y2 are the upper right co-ordinates of the rectangle.
Syntax:– rectangle(x1,,y1,x2,y2);
Example:– rectangle(100,100,200,200);

6. Textheight

Purpose:-textheight returns the height of a string in pixels.
Syntax:-textheight(STRING);
Example:-i=textheight("HELLO");

7. Textwidth

Purpose:-textwidth returns the width of a string in pixels
Syntax:-textwidth(STRING);
Example:-i=textwidth("HELLO");

8. Getx

Purpose:-getx returns the current position's of x o-ordinate
Syntax:-getx();
Example:-x=getx();

9. Gety

Purpose:-gety returns the current position's of y co-ordinate
Syntax:-gety();
Example:-y=gety();

10. Getmaxx

Purpose:-getmaxxreturns the maximum x co-ordinate on the screen
Syntax:-getmaxx();
Example:-maxx=getmaxx();

11. Getmaxy

Purpose:-getmaxy returns the maximum y co-ordinate on the screen
Syntax:-getmaxy();
Example:-maxy=getmaxy();

12. Line

Purpose:-Line function is used to draw the line on the screen.
Syntax: line(x1,y1,x2,y2);
Example:-line(100,100,200,100);

13. Closegraph

Purpose:-closegraph function shut down the graphic system
Syntax:-closegraph();
Example:-closegraph();

14. Moveto

Purpose:-moveto function moves current cursor position on the screen
Syntax:-moveto(x co-ordinate, y co-ordinate);
Example:-moveto(getmaxx/2, getmaxy/2);

15. Settextstyle

Purpose:-settextstyle sets the current text characteristics like font, direction and size
Syntax:-settextstyle(font, direction size);
Example:-settextstyle(1,1,10);

16. Circle

Purpose: Circle function is used to draw the circle on the screen
Syntax:– circle(x,y,radius);
Example:circle(100,100,50);

17. Cleardevice

Purpose: cleardevice function is used to clear the contents or graphic images on the screen in graphics mode.
Syntax:cleardevice();
Example:cleardevice();

18. Outtextxy

Purpose: outtextxy function is used to print the text on the screen in graphics mode.
Syntax:outtext(x,y,text);
Example:-outtextxy(100,100,"HELLO");

19. Sector

Purpose:sector function draws and fills an elliptical pie slice.
Syntax:sector(x, y, starting angle, ending angle, xradius, yradius);
Example:sector(100,100,45 135 100 50);

20. Arc

Purpose:arc draws the arc on the screen, arc is a part of the circle
Syntax:arc(x, y, starting angle, ending angle, radius);
Example:arc(100,100,90,180,50);

21. Setfillstyle

Purpose: setfillstyle is used to set the color and style to be filled in the object using the flood fill method.
Syntax:stefillstyle(STYLE, COLOR);
Example:setfillstyle(1,RED)

22. Floodfill

Purpose:floodfill function is used to fill the color in the object, object may be circle, rectangle or any other closed image.
Syntax:floodfill(x,y,boundary color);
Example:floodfill(100,100,BLUE);

23. Ellipse

Purpose:ellipse function is used to draw the ellipse on the screen.
Syntax:ellipse(x, y, starting angle, ending angle, xradius, yradius);
Example:ellipse(100,100,90,200,20,20);

24. Outtext

Purpose:outtext function is used to display the text on the screen, using this function text is display in the current position.
Syntax:outtext(STRING);
Example:outtex("HELLO");

25. Getcolor

Purpose:getcolor returns the current drawing color.
Syntax:getcolor();
Example:intclr = getcolor();

26. Getpixel

Purpose:getpixel gets the color of a specified pixel.
Syntax:getpixel(x,y);
Example: color=getpixel(100,100);

Drawing Functions

For drawing arc:
void arc(int x, int y, int stangle, int endangle, int radius);

for drawing bar:
void bar(int left, int top, int right, int bottom);

for drawing 3d bar:
void bar3d(int left, int top, int right, int bottom, int depth, int topflag);

for drawing a circle:
void circle(int x, int y, int radius);

for clearing:
void cleardevice( );
void clearviewport( );

for drawing polygon:
void drawpoly(int n_points, int* points);
void fillpoly(int n_points, int* points);

for drawing ellipse:

void ellipse(int x, int y, int stangle, int endangle, int xradius, int yradius);
void fillellipse(int x, int y, int xradius, int yradius);

for filling:
void floodfill(int x, int y, int border);

for making line:
void line(int x1, int y1, int x2, int y2);

void linerel(int dx, int dy);
void lineto(int x, int y);

void pieslice(int x, int y, int stangle, int endangle, int radius);

void putpixel(int x, int y, int color);

for drawing rectangle:
void rectangle(int left, int top, int right, int bottom);

for drawing sector:
void sector(int x, int y, int stangle, int endangle, int xradius, int yradius);

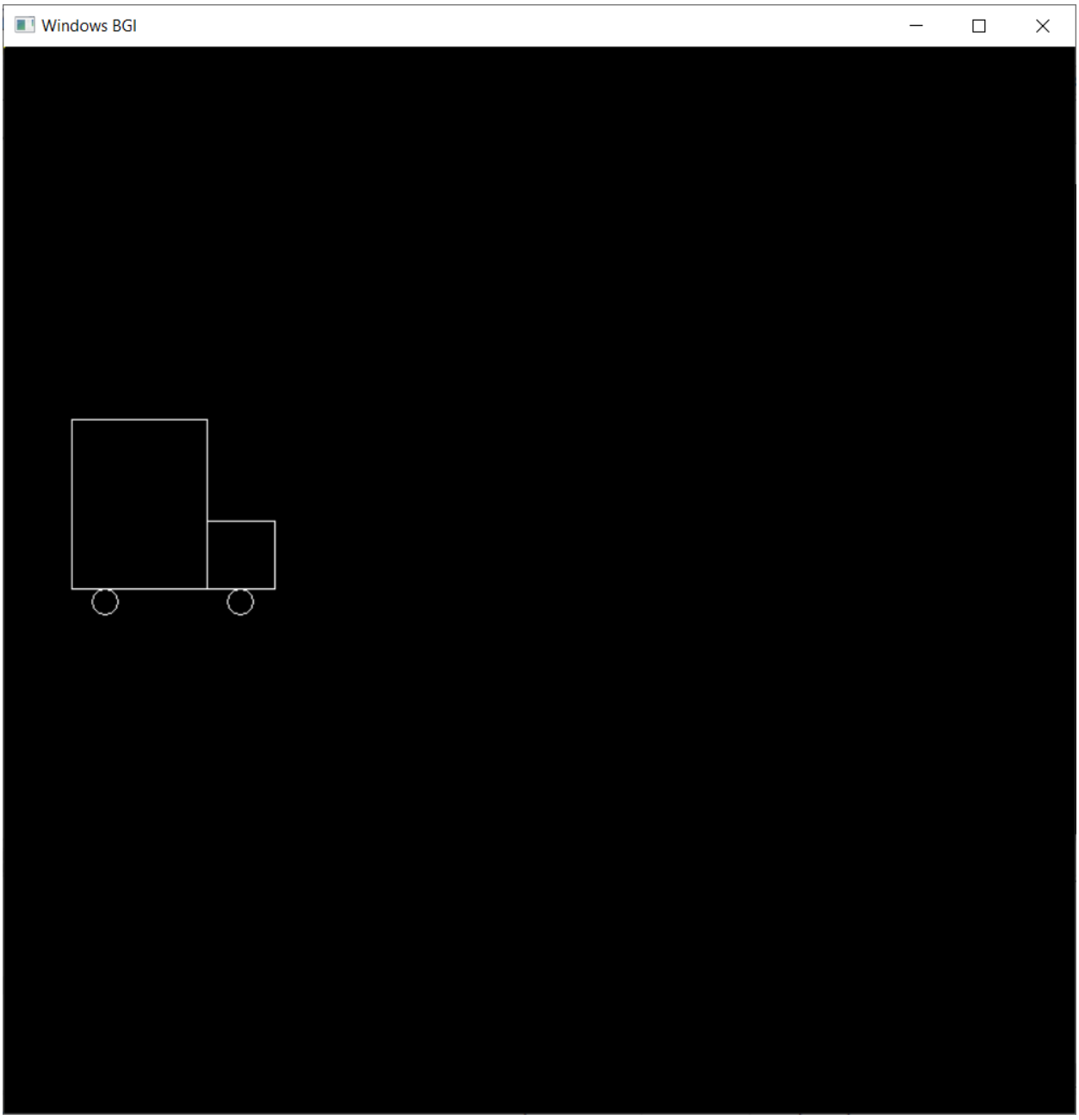
Source Code:

CAR

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

main()
{
        initwindow(800, 800);
        rectangle(50,275,150,400);
          rectangle(150,350,200,400);
```

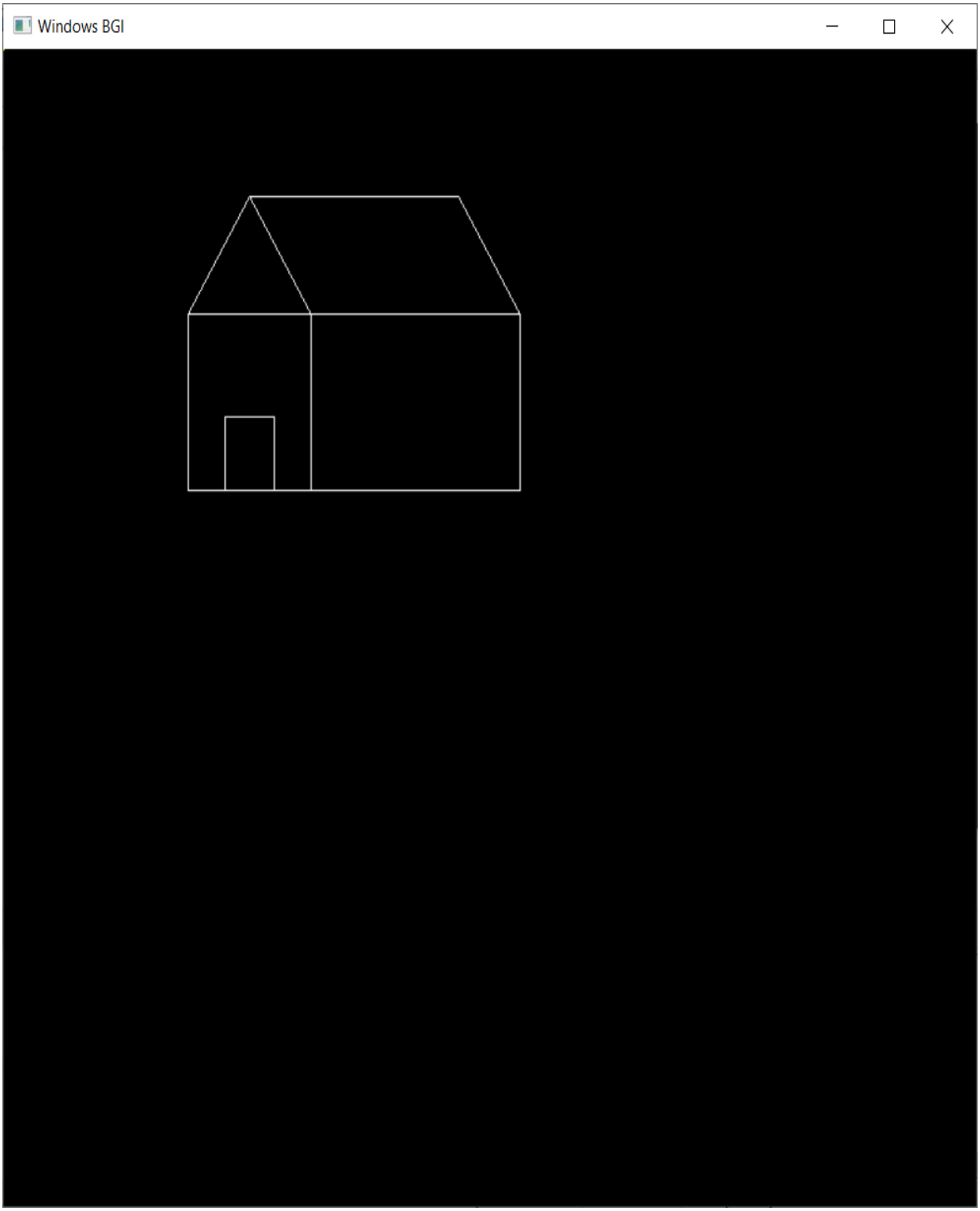
```
        circle(75,410,10);
        circle(175,410,10);
        getch();
}
```

OUTPUT



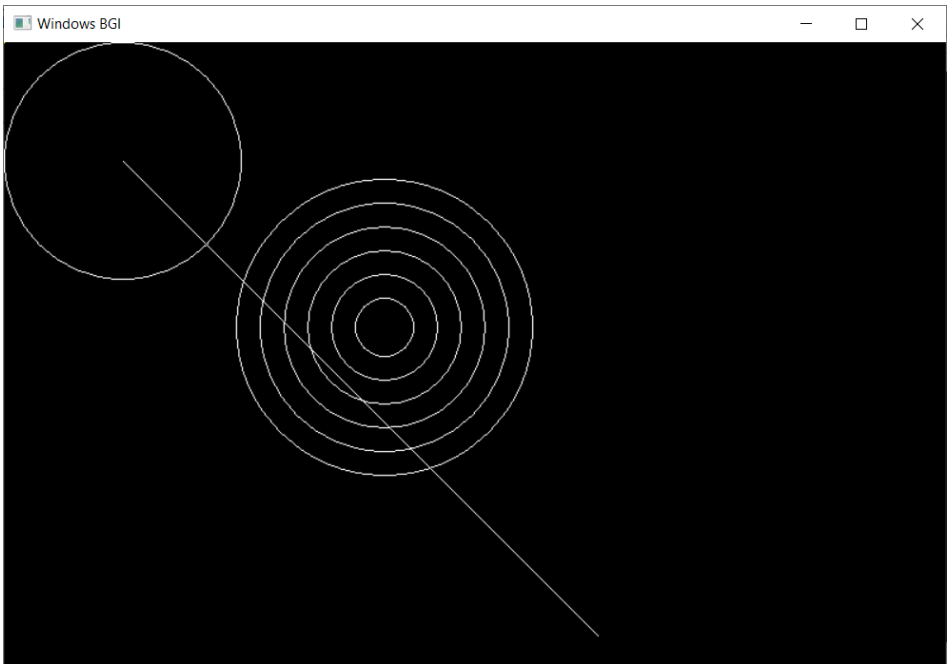
HUT

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

main()
{
        initwindow(800, 800);
        rectangle(150,180,250,300);
        rectangle(250,180,420,300);
        rectangle(180,250,220,300);

        line(200,100,150,180);
        line(200,100,250,180);
         line(200,100,370,100);
         line(370,100,420,180);

        getch();
}
```

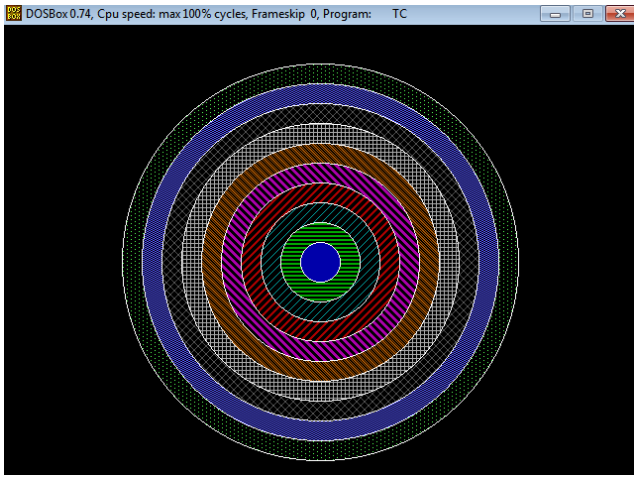

Windows BGI

Concentric circle and lines:

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

main()
{
        initwindow(800, 800);
        line(100, 100, 500, 500);
        circle(100, 100, 100);
        int x = 320, y = 240, radius;
        for ( radius = 25; radius <= 125 ; radius = radius + 20)
                circle(x, y, radius);
        getch();
}
```



```
#include<graphics.h>
#include<conio.h>
void main()
{
   intgd=DETECT, gm, i, x, y;
   initgraph(&gd, &gm, "C:\\TC\\BGI");
   x=getmaxx()/3;
   y=getmaxx()/3;
   setbkcolor(WHITE);
   setcolor(BLUE);
   for(i=1;i<=8;i++)
        {
      setfillstyle(i,i);
      delay(20);
      circle(x, y, i*20);
      floodfill(x-2+i*20,y,BLUE);
   }
   getch();
   closegraph();
}
```



VIVA QUESTIONS:

1. **What is the use of initgraph() and closegraph() function?**

ANS. initgraph() function is used to enter in the graphics mode and closegraph() function is used to exit from the graphics mode and also enter in the text mode .

2. **Why do we need to use closegraph() function after getch() ?**

ANS. Getch() helps us to wait until a key is pressed, closegraph() function closes the graphics mode, and finally return statement returns a value 0 to main indicating successful execution of the program. Getch is used to hold the output sceen and wait until user gives any type of input(i.e. Until user press any key) so that they can read the character and due to this we able to see the output on the screen.

3. **Which parameters are used to find the resolution of the screen?**

ANS. Pixels are the parameter for measuring the resolution.

4. **How is putpixel() different from getpixel()?**

ANS. Function getpixel returns the color of pixel present at point(x, y).
Function putpixel plots a pixel at a point(x, y) of the specified color.

5. **Explain various other graphic functions.**

ANS.

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