Lab Report. 01

Title: Lab Report

Course title: Computer Graphics Lab

Course code: CSE-304

3rd Year 1st Semester 2022

Date of Submission: 28/05/2023

Submitted to-

Dr. Mohammad Shorif Uddin

Dr. Morium Akter

Sl	Class Roll	Exam Roll	Name
01	378		S.I.M. ADNAN

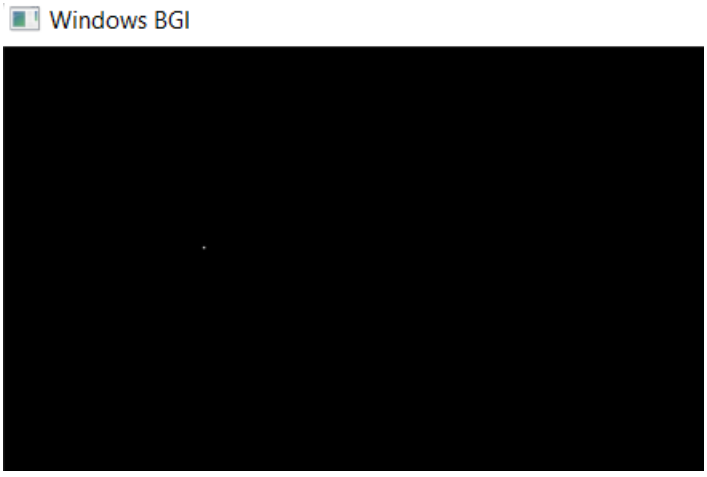
Department of Computer Science and Engineering
Jahangirnagar University
Savar, Dhaka, Bangladesh

1.

Code:

```
#include <iostream>
#include <graphics.h>

void drawPoint(int x, int y) {
   putpixel(x, y, WHITE);
}

int main() {
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "");

   int x = 100;
   int y = 100;

   drawPoint(x, y);

   getch();
   closegraph();

   return 0;
}
```

Output:

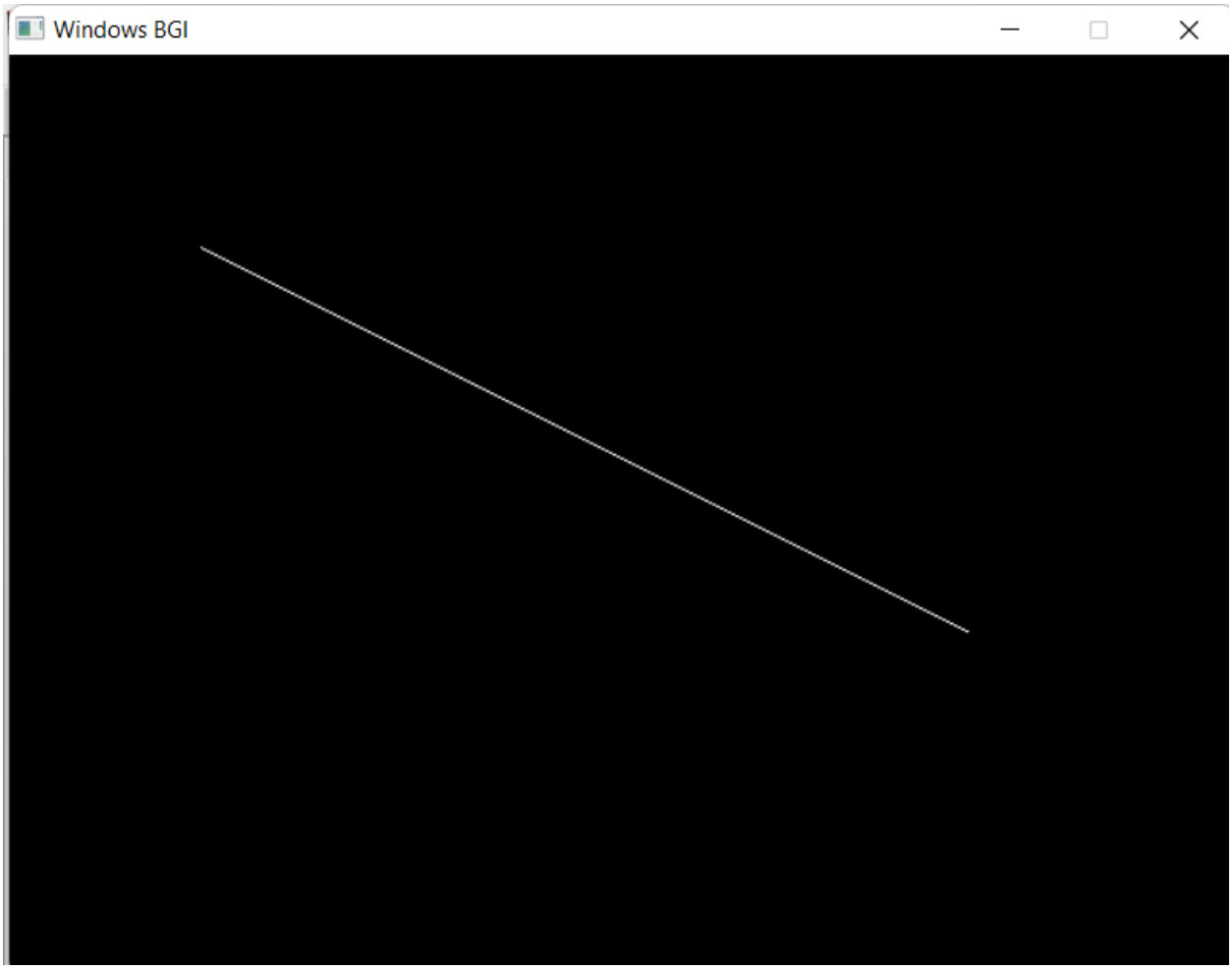


2.

Code:

```
#include <iostream>
#include <cmath>
#include <graphics.h>

void drawLineDDA(int x1, int y1, int x2, int y2) {
   int dx = x2 - x1;
   int dy = y2 - y1;
   int steps = abs(dx) > abs(dy) ? abs(dx) : abs(dy);

   float xIncrement = (float)dx / steps;
   float yIncrement = (float)dy / steps;

   float x = x1;
   float y = y1;


   for (int i = 0; i <= steps; i++) {
      putpixel(round(x), round(y), WHITE);
      x += xIncrement;
      y += yIncrement;
   }
}

int main() {
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "");

   int x1 = 100, y1 = 100;
   int x2 = 500, y2 = 300;

   drawLineDDA(x1, y1, x2, y2);

   getch();
   closegraph();

   return 0;
}
```

Output:



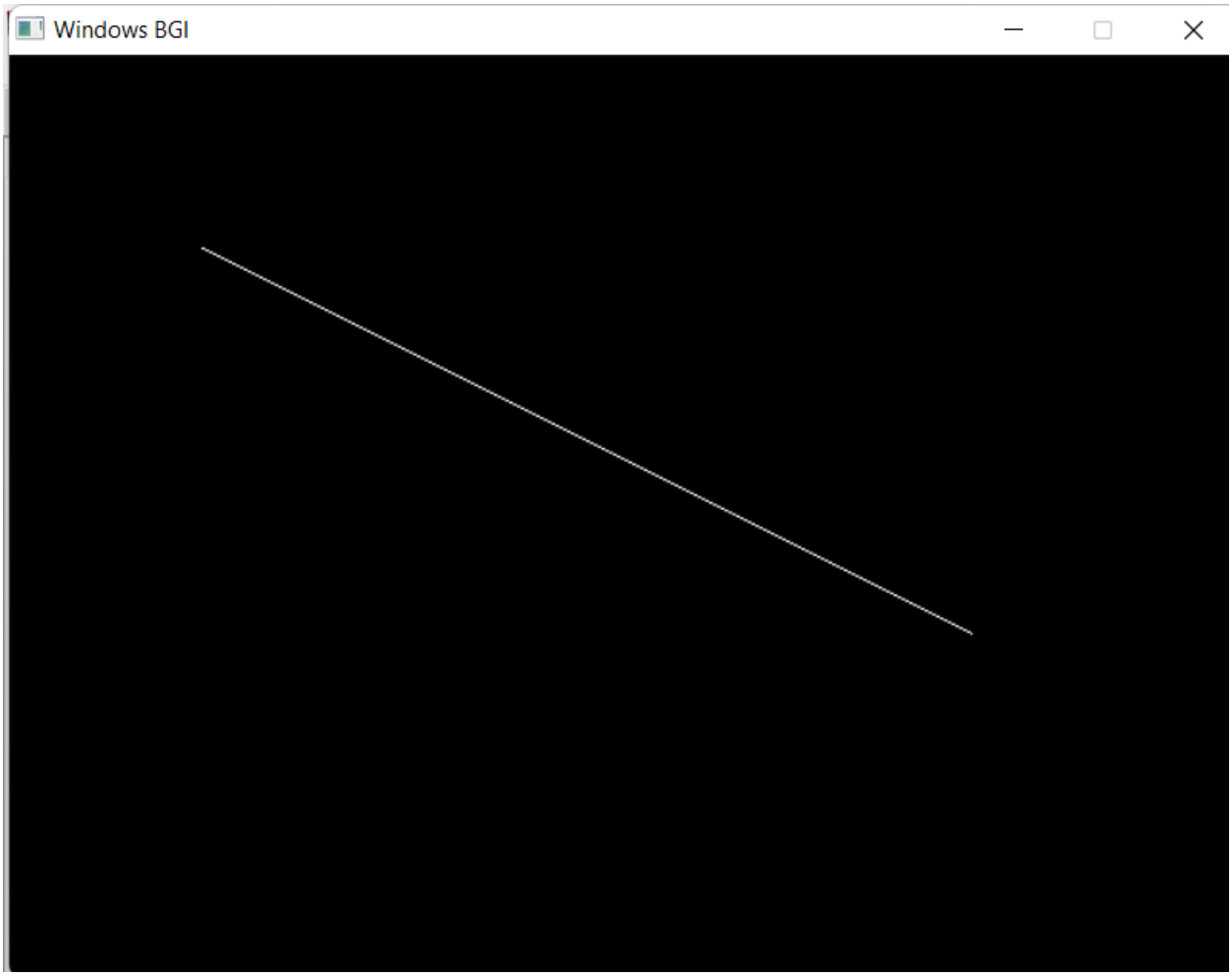
3.

Code:

```
#include <iostream>
#include <cmath>
#include <graphics.h>

void drawLineBresenham(int x1, int y1, int x2, int y2) {
   int dx = abs(x2 - x1);
   int dy = abs(y2 - y1);
   int slopeX = (x2 > x1) ? 1 : -1;
   int slopeY = (y2 > y1) ? 1 : -1;
   int error = dx - dy;

   int x = x1;
   int y = y1;

   while (true) {
      putpixel(x, y, WHITE);

      if (x == x2 && y == y2)
         break;

      int doubleError = 2 * error;

      if (doubleError > -dy) {
         error -= dy;
         x += slopeX;
      }

      if (doubleError < dx) {
         error += dx;
         y += slopeY;
      }
   }
}

int main() {
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "");

   int x1 = 100, y1 = 100;
   int x2 = 500, y2 = 300;
```

```
    drawLineBresenham(x1, y1, x2, y2);

    getch();
    closegraph();

    return 0;
}
```

Output:



4.

Code:

```
#include <iostream>
#include <cmath>
#include <graphics.h>

void drawCircleBresenham(int centerX, int centerY, int radius) {
   int x = 0;
   int y = radius;
   int d = 3 - 2 * radius;

   while (x <= y) {
      putpixel(centerX + x, centerY + y, WHITE);
      putpixel(centerX - x, centerY + y, WHITE);
      putpixel(centerX + x, centerY - y, WHITE);
      putpixel(centerX - x, centerY - y, WHITE);
      putpixel(centerX + y, centerY + x, WHITE);
      putpixel(centerX - y, centerY + x, WHITE);
      putpixel(centerX + y, centerY - x, WHITE);
      putpixel(centerX - y, centerY - x, WHITE);

      if (d < 0)
         d += 4 * x + 6;
      else {
         d += 4 * (x - y) + 10;
         y--;
      }
      x++;
   }
}

int main() {
   int gd = DETECT, gm;
   initgraph(&gd, &gm, "");

   int centerX = 250;
   int centerY = 250;
   int radius = 150;

   drawCircleBresenham(centerX, centerY, radius);

   getch();
   closegraph();
```

```
    return 0;
}
```

Output: