Name: Aditi Chandel

Program 23: Write a program to implement point clipping.

Code:

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

int main() {
   int gd = DETECT, gm;
   int x, y;
   int x_min = 100, y_min = 100, x_max = 400, y_max = 300;

   initgraph(&gd, &gm, "C:\\Turboc3\\BGI");

   rectangle(x_min, y_min, x_max, y_max);

   printf("Enter point coordinates (x y): ");
   scanf("%d %d", &x, &y);
   if (x >= x_min && x <= x_max && y >= y_min && y <=
y_max) {
      putpixel(x, y, RED);
      outtextxy(x + 10, y + 10, "Inside");
   } else {
      outtextxy(150, 350, "Point lies outside the window");
   }

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

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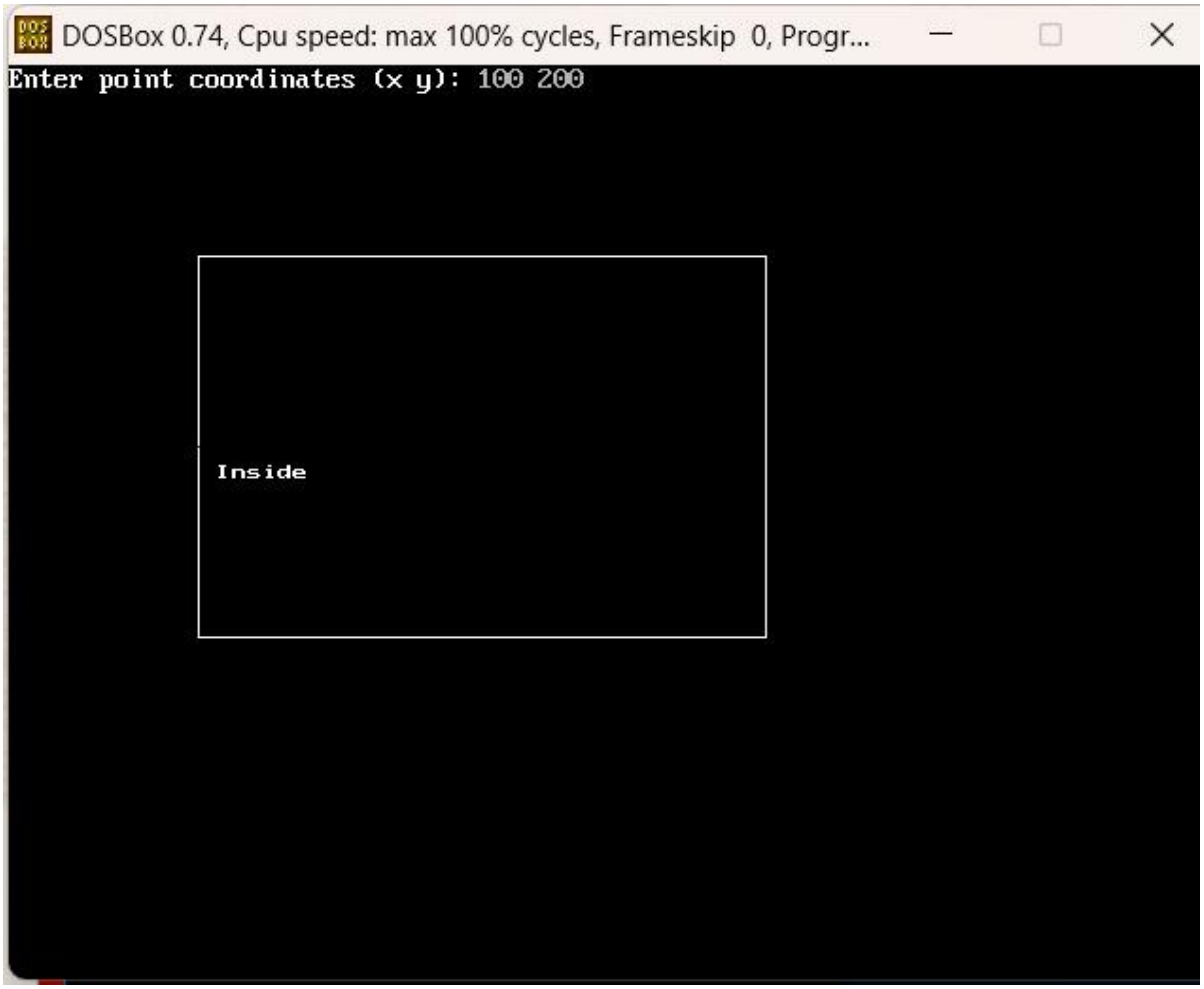
OUTPUT:



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Program 24: Write a program to implement translation.

Code:

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

int main() {
   int gd = DETECT, gm;
   float tx, ty;
   int poly[6] = {100, 100, 200, 100, 150, 200};

   initgraph(&gd, &gm, "C:\\Turboc3\\BGI");
   setcolor(BLUE);
   drawpoly(3, poly);

   printf("Enter translation vector (tx ty): ");
   scanf("%f %f", &tx, &ty);

   setcolor(RED);
   int translated[6];
   for (int i = 0; i < 3; i++) {
      translated[i * 2]     = poly[i * 2] + tx;
      translated[i * 2 + 1] = poly[i * 2 + 1] + ty;
   }
   drawpoly(3, translated);
   getch();
   closegraph();
   return 0;
}
```

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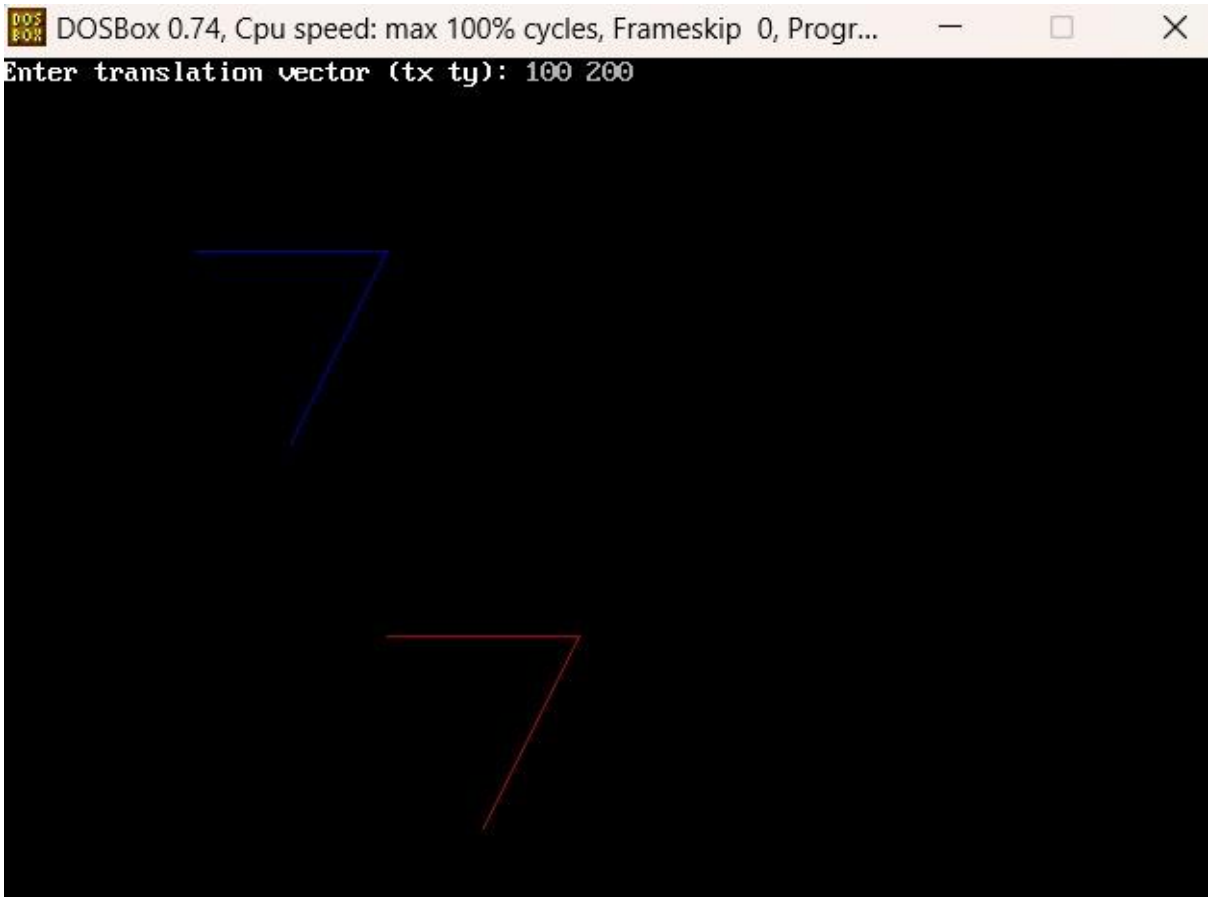
OUTPUT:



Name: Aditi Chandel

Program 25: Write a program to implement rotation.

Code:

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

int main() {
   int gd = DETECT, gm;
   float angle;
   int triangle[3][2] = {{100, 100}, {200, 100}, {150, 200}};
   int i;

   initgraph(&gd, &gm, "C:\\Turboc3\\BGI");
   setcolor(BLUE);
   line(triangle[0][0], triangle[0][1], triangle[1][0],
triangle[1][1]);
   line(triangle[1][0], triangle[1][1], triangle[2][0],
triangle[2][1]);
   line(triangle[2][0], triangle[2][1], triangle[0][0],
triangle[0][1]);

   printf("Enter rotation angle (in degrees): ");
   scanf("%f", &angle);

   float rad = angle * 3.14159 / 180;
   int xr[3], yr[3];
   for (i = 0; i < 3; i++) {
      xr[i] = triangle[i][0] * cos(rad) - triangle[i][1] * sin(rad);
```

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```
        yr[i] = triangle[i][0] * sin(rad) + triangle[i][1] * cos(rad);
    }
    setcolor(RED);
    line(xr[0], yr[0], xr[1], yr[1]);
    line(xr[1], yr[1], xr[2], yr[2]);
    line(xr[2], yr[2], xr[0], yr[0]);

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

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OUTPUT: