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2003085
C21

Page No.
Date

Experiment 1

Aim: DDA line drawing algorithm implementation.

Algorithm:

Step 0: Two end points
Step 1: Input the coordinates of two ends A(X_1, Y_1) and B(X_2, Y_2) for the line AB resp.

Step 2: Calculate
$dx = X_2 - X_1$
$dy = Y_2 - Y_1$

Step 3: Calculate the length L
if (abs($X_2 - X_1$) >= abs($Y_2 - Y_1$))
L = abs($X_2 - X_1$);
else
L = abs($Y_2 - Y_1$);

Step 4: Calculate increment factor.

→ $X_i = dx / L$
→ $Y_i = dy / L$
$X_{new} = X_1$; $Y_{new} = Y_1$.

Step 5: Initialize the point.
while (i<=L) {
$X_{new} += X_i$
$Y_{new} += Y_i$

Plot (Integer(X_{new}), Integer(Y_{new})) ; i++; }.

PROGRAM:

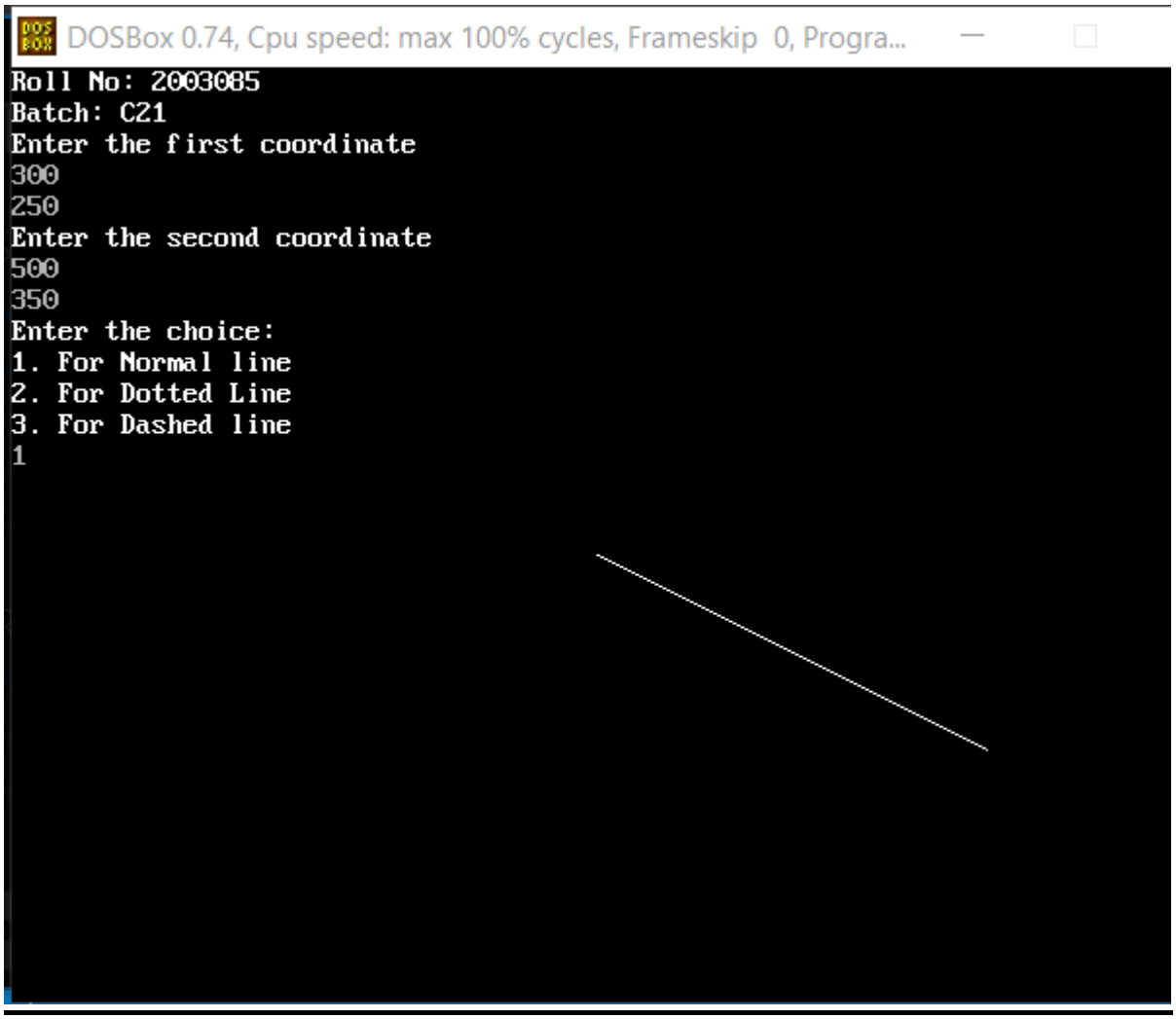
```
#include <stdio.h>
#include <conio.h>
#include <graphics.h>

void main()
{
        int gd = DETECT, gm;
        float x, y, dx, dy, xi, yi, steps;
        int i, x1, y1, x2, y2, ch;
        initgraph(&gd, &gm, "C:\\TURBOC3\\BGI");
        printf("Roll No: 2003085 \nBatch: C21 \n");
        printf("Enter the first coordinate\n");
        scanf("%d %d", &x1, &y1);
        printf("Enter the second coordinate\n");
        scanf("%d %d", &x2, &y2);
        dx = abs(x2-x1);
        dy = abs(y2-y1);
        if(dx <= dy)
                steps = dy;
        else
                steps = dx;
        xi = dx/steps;
        yi = dy/steps;
        i = 0;
        x = x1; y = y1;
        printf("Enter the choice: \n");
        printf("1. For Normal line \n2. For Dotted Line \n3. For Dashed line \n");
```

```
scanf("%d", &ch);
switch(ch){
case 1:{
while(i <= steps){
        putpixel(x, y, 15);
        x += xi;
        y += yi;
        i++;}
break;
}
case 2:{
while(i <= steps){
        if(i%10==0)
        putpixel(x, y, 15);
        x += xi;
        y += yi;
        i++;}
break;
}
case 3:{
while(i <= steps){
        if(i%6!=4 && i%6!=5)
        putpixel(x, y, 15);
        x += xi;
        y += yi;
        i++;}
break;
}
default:
```

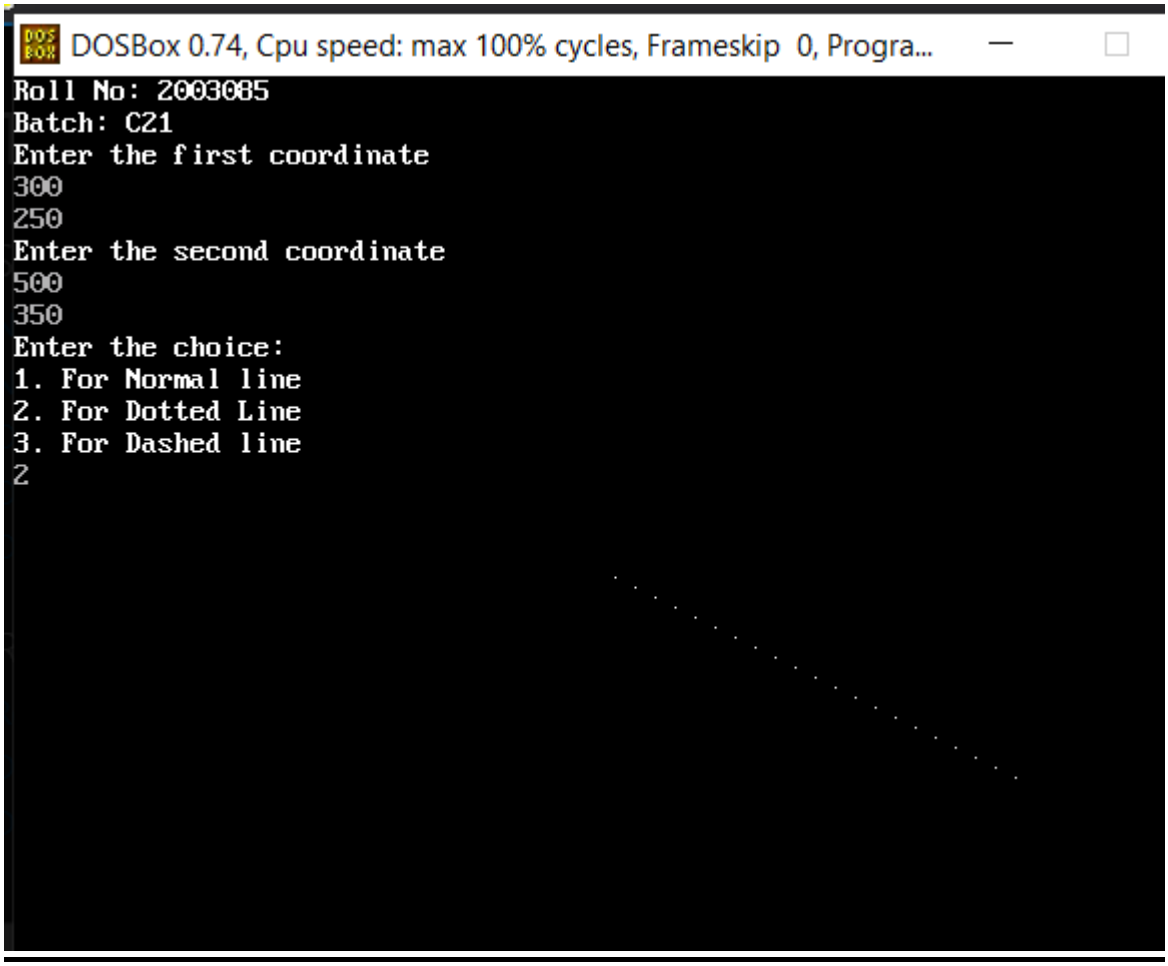
```
        printf("Invalid Choice!\n");


}
        getch();
}
```

OUTPUT:

1. Normal Line:



2. Dotted Line:



3. Dashed Line