

(1)

CLASSMATE

Date \_\_\_\_\_  
Page \_\_\_\_\_

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Sec A

BCA - 6 - A  
Computer Graphics & Animation

## 1.) Algorithm for DDA

1.) Start

2.) Declare start coordinate of line as  $x_1, y_1$  and end coordinates as  $x_2, y_2$ .

3.) Calculate  $dx = x_2 - x_1$   
and  $dy = y_2 - y_1$

4.) ~~If~~ Check if  $dx > dy$   
then steps =  $dx$   
otherwise steps =  $dy$

5.) Calculate slope  $M = dy/dx$

6.) If  $M \leq 1$   
then  $x_{p+1} = 1 + x_p$   
 $y_{p+1} = M + y_p$

elseif  $M > 1$   
then assign  $x_{p+1} = 1 + x_p$   
 $y_{p+1} = 1 + y_p$

else  $x_{p+1} = 1/M + x_p$   
 $y_{p+1} = 1 + y_p$



(2)

classmate

Date \_\_\_\_\_

Page \_\_\_\_\_

7.) Repeat step 6 until  $n_1 = n_2$

8.) Stop

Program →

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

```
void main()
```

```
{
```

```
float n1, y1, n2, y2, dx, dy, steps
```

```
int i, gd = DETECT, gm;
```

```
scanf ("%f %f %f %f", &n1, &y1, &n2, &y2);
```

```
initgraph (&gd, &gm, " ");
```

```
dx = abs (n2 - n1);
```

```
dy = abs (y2 - y1);
```

```
if (dx >= dy)
```

```
steps = dx;
```

```
else
```

```
steps = dy;
```

```
dx = dx / steps;
```

```
dy = dy / steps;
```

```
n = n1;
```

```
y = y1;
```

```
i = 1;
```

Answer:

③

```
while (i <= steps)
{
    putpixel (x, y, 5);
    x = x + dx;
    y = y + dy;
    i = i + 1;
    delay (50);
}
```

bliss

```
delay (1000);
closegraph();
}
```



(u)

classmate

Date \_\_\_\_\_

Page \_\_\_\_\_

## 2.) Algorithm for Cohen-Sutherland

1.) Start

2.) Get the maximum and minimum coordinates of the viewing pane as  $x_{min}$ ,  $y_{min}$  and  $x_{max}$ ,  $y_{max}$ .

3.) Take the coordinates of line as  $(x_1, y_1)$  and  $(x_2, y_2)$

4.) Perform logical AND on both the coordinates  
If  $AND = 0000$   
Then line is visible or partial  
else ~~AND~~  
line is not visible.

5.) Check if  $x_{min} < x_1 < x_{max}$  AND  
 $y_{max} < y_1 < y_{min}$  AND  
 $x_{min} < x_2 < x_{max}$  AND  
 $y_{max} < y_2 < y_{min}$

Then the line is visible completely  
If one of the condition is false,  
the line will be partial.

6.) Stop



(2)

Date \_\_\_\_\_  
Page \_\_\_\_\_

Code

#include &lt;graphics.h&gt;

void main()

int xmin = 100, ymin = 100;

int xmax = 200, ymax = 200;

int x1 = 150, y1 = 150;

int x2 = ~~100~~160, y2 = 100;

int i, gd = DETECT, gm;

initgraph(&amp;gd, &amp;gm, "");

~~setcolor~~ <sup>WHITE</sup> setcolor(~~white~~);

rectangle(100, 100, 200, 200);

if (~~(xmin < x1 < xmax) AND (ymin < y1 < ymax)~~  
AND (~~xmin < x2 < xmax~~) AND  
(~~ymin < y2 < ymax~~))

line(150, 150, 160, 100);

else if ((xmin &lt; x1 &lt; xmax) AND (ymin &lt; y1 &lt; ymax)

OR (xmin < x2 < xmax) AND  
(ymin < y2 < ymax))

printf("Partial");

~~line~~

else

{

Puttext

~~Point~~

("Not visible");

}

}

Ishti Sam...