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Course → BCA 6

Section → A

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Ans 1) #include <stdio.h>

#include <graphics.h>

int main()

{

int nou(float num)

{

return num < 0 ? num - 0.5 : num + 0.5;

}

int x1 = 100, x2 = 250, y1 = 100, y2 = 250, step;

int gd = DETECT, gm;

float x, y, m;

int dx = x2 - x1;

int dy = y2 - y1;

m = dy/dx;

if (dx > dy)

{

step = dx;

}

else

{

step = dy;

}

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

outtextxy(x1, y1, "A");

outtextxy(x2, y2, "B");

```
putpixel(x1, y1, BLUE);
```

```
x = x1, y = y1;
```

```
while (step > 0)
```

```
{
```

```
    if (m < 1)
```

```
    {
```

```
        x = x + 1;
```

```
        y = y + m;
```

```
    }
```

```
    if (m >= 1)
```

```
    {
```

```
        x = x + 1/m
```

```
        y = y + 1;
```

```
    }
```

```
    putpixel(round(x), round(y), BLUE);
```

```
    step --;
```

```
}
```

```
getch();
```

```
return 0;
```

```
}
```

## ALGORITHM

• starting Coordinates = ~~xs~~  $(x_1, y_1)$ :

• Ending Coordinates =  $(x_2, y_2)$

The points generation using DDA algorithm involves the following steps

Step-01 → Calculate  $\Delta x$ ,  $\Delta y$  and  $m$  from the given input. We know that the slopes of a straight line  $m$  is given and.

These parameters are calculated as:-

$$\Delta x = x_2 - x_1$$

$$\Delta y = y_2 - y_1$$

$$m = \Delta y / \Delta x \Rightarrow m = (y_2 - y_1) / (x_2 - x_1)$$

Step-02 → Find the numbers of steps or points in between the starting and ending co-ordinates

if  $(\text{absolute}(\Delta x) > \text{absolute}(\Delta y))$

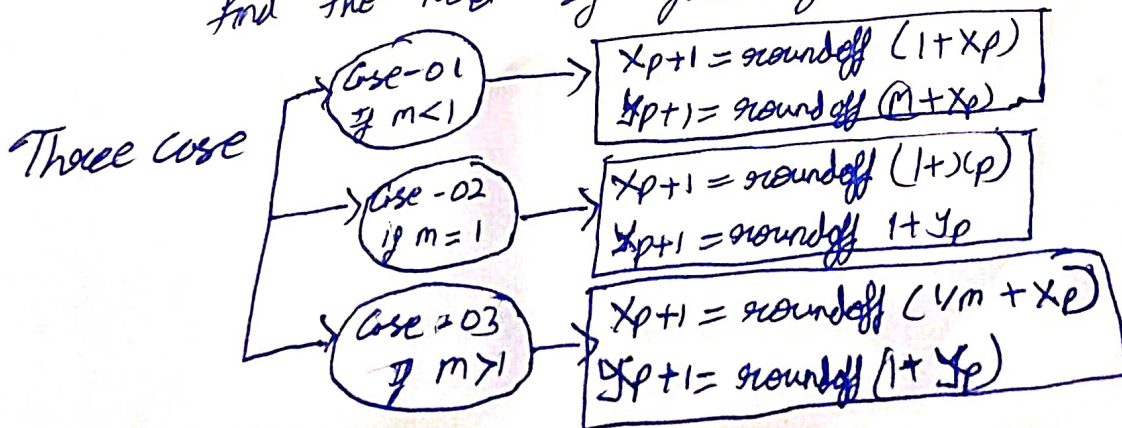
steps =  $\text{absolute}(\Delta x)$ ;

else

steps =  $\text{absolute}(\Delta y)$ ;

Step-03 → Suppose the current point is  $(x_p, y_p)$  & the next point is  $(x_{p+1}, y_{p+1})$

find the next by following the below three cases:-



Step 04  $\rightarrow$  Keep repeating step-03 until end point is reached or the number of generated new points including the starting and ending points equals to the step count.

