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Course :- BCA

Sec :- A

Sem :- 6

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Subject :- Computer Graphics and Animation

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Ans 1

```
#include <stdio.h>
#include <graphics.h>
int main()
{
  int round(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, RED);
  x = x1, y = y1
  while (step > 0)
  { if (m < 1)
    {
      x = x + 1;
      y = y + m;
    }
```

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```
if (m>=1)
{
    x = x+11*m
    y = y+1;
}
putpixel (row(x), col(y), RED);
    step--;
}
getch();
return 0;
}
```

Applications

ALGORITHM OF DDA

Step 1 :- Start

Step 2 :- Read the Values of $x1, y1, y2, x2$

Step 3 :- Calculate Δx, Δy and M from the given Input we know that the slope of a straight line m is generated.

These parameters are Calculated as

- $\Delta x = x_n - x_0$
- $\Delta y = y_n - y_0$
- $m = \Delta y / \Delta x \Rightarrow m = \frac{y_n - y_0}{x_n - x_0}$

Aptitude

Step 4:- Calculate the no of steps on points in b/w the starting and ending coordinates

if (dx) > (dy))

else

steps = dy

Step 5 Calculate the next coordinates by checking following cases.

Case 1
if $m < 1$

$$x_{p+1} = \text{round}(1 + x_p)$$
$$y_{p+1} = \text{round}(m + x_p)$$

Case 2
if $m = 1$

$$x_{p+1} = \text{round}(1 + x_p)$$
$$y_{p+1} = \text{round}(1 + x_p)$$

Case 3
if $m > 1$

$$x_{p+1} = \text{round}(y_m + x_p)$$
$$y_{p+1} = \text{round}(1 + x_p)$$

Step 6:- Keep repealing step 5 until the end points (including the starting and ending points) equals to the step want.

Step 7 Stop.

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