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Class - BCA

Sem - 6th

Roll no - 1171022

Subject - Computer Graphics

Ans 1)

```
#include <stdio.h>
# include <graphics.h>
int main ()
{
  int Rom ( 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;
  int graph (& gd, & gm , " ");
  out text xy (x1, y1, "A");
```

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```
outtextxy (x2, y2, "B");
putpixel (x1, y1, RED);
  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 (Sam (x), Sam (y) RED);
     step --;
 }
   getch ()
   return 0;
 }
```

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Ans 1) Algorithm for DDA Algorithm →

- Starting Coordinates = (x_0, y_0) {Given}
- Ending Coordinates = (x_n, y_n)

The points generation using DDA Algorithm involves the following steps →

Step 1 → Calculate Δx, Δy and M from the given output. We know that the slope of a straight line M is given as- these parameters are calculated as →

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

Step 2 - find the number of steps or points in between the starting and ending coordinates

```
if (absolute (Δx) > absolute (Δy))
    steps = absolute (Δx);
else
    steps = absolute (Δy);
```

Step 3 → suppose the current point is (x_p, y_p) and the next point is (x_{p+1}, y_{p+1})

find the next by following the below three cases →

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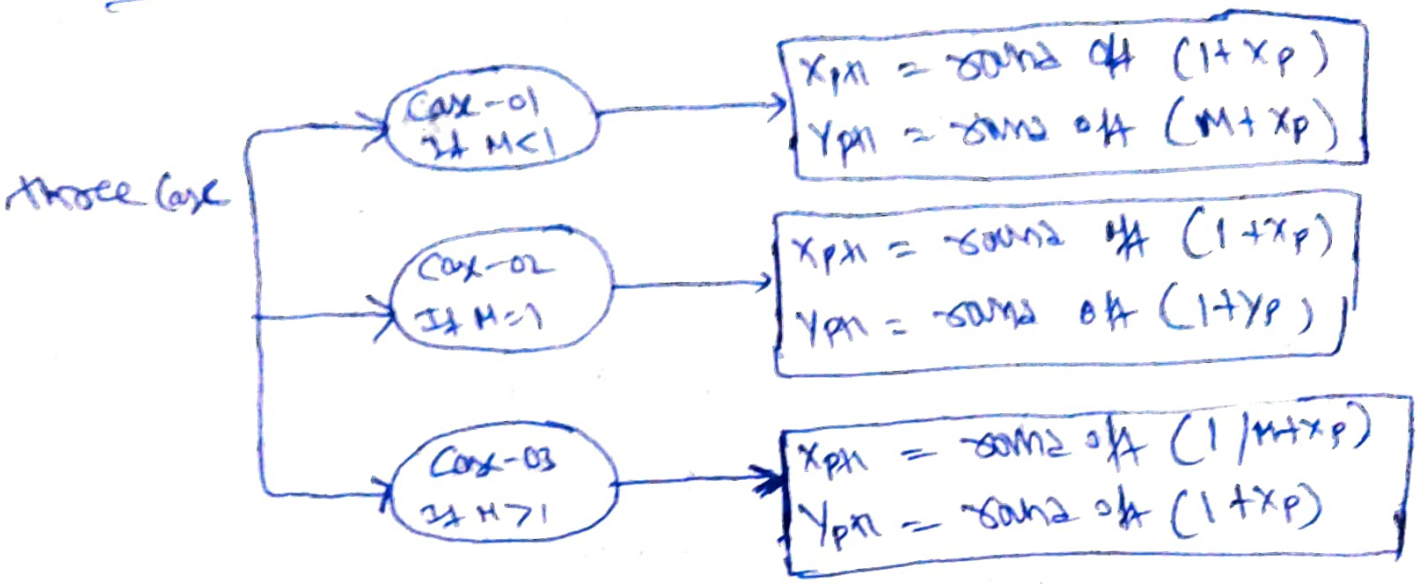
Three cases →



Step4 → Keep repeating step-03 until the end point is reached or the number of generated new points (including the starting points and ending points) equals to the steps count.