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SUBJECT - COMPUTER GRAPHICS

SUBJECT Code - TBC 602

SECTION - A

COURSE - BCA

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

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

```
int main()
```

```
{
```

```
    int used(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");
```

```
    outtextd(x1, y1, "R(0)",
```

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

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

```
{
```

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

```
    {
```

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

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

```
    }
```

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

```
    {
```

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

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

```
    }
```

```
    putpixel( row(x), row(y), RED);
```

```
    step--;
```

```
}
```

```
getch()
```

```
return 0;
```

```
}
```

-ALGORITHM OF DDA

step 1 Start

step 2 Read the values of x_1, y_1, x_2, y_2

step 3 Calculate $\Delta x, \Delta y$ and m from the given input. 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 4 Calculate the no. of steps or points in between the starting and ending coordinates

if (~~use~~ $\Delta x > \Delta y$)

steps = ~~use dx~~; Δx

else

steps = Δy

step 5. ~~Suppose~~ Calculate the next coordinates by checking following cases

Case 1
if $m < 1$ →
$$\begin{aligned} x_{p+1} &= \text{mod}(1+x_p) \\ y_{p+1} &= \text{mod}(m+x_p) \end{aligned}$$

Case 2
if $m = 1$ →
$$\begin{aligned} x_{p+1} &= \text{mod}(1+x_p) \\ y_{p+1} &= \text{mod}(1+x_p) \end{aligned}$$

Case 3
if $m > 1$ →
$$\begin{aligned} x_{p+1} &= \text{mod}(y_p + x_p) \\ y_{p+1} &= \text{mod}(1+x_p) \end{aligned}$$

step 6 keep repeating step 5 untill the end points
(including the starting and ending points)
equals to the step count

step 7 Stop

```
admin@lab4-pc:~$ touch dda.c
admin@lab4-pc:~$ gcc dda.c -lgraph -o dda
dda.c: In function 'main':
dda.c:34:18: error: request for member 'row' in something not a structure
on
  putpixel(row(x).row(y),810);
               ^
dda.c:34:11: error: too few arguments to function 'putpixel'
  putpixel(row(x).row(y),810);
          ^
In file included from dda.c:2:8:
/usr/local/include/graphics.h:72:8: note: declared here
void putpixel(int x, int y, int color);
       ^
admin@lab4-pc:~$ gcc dda.c -lgraph -o dda
admin@lab4-pc:~$ ./dda
[xcb] Unknown sequence number while processing queue
[xcb] Most likely this is a multi-threaded client and XinitThreads has not
called
[xcb] Aborting, sorry about that.
dda: ../../src/xcb_io.c:274: poll_for_event: Assertion '!xcb_allb_threads
or lost' failed.
```

