

(12)

## \* Assignment No - 1 \*

Aim:- write a c++ program for line drawing using DDA or Bresenham's algorithm with pattern such as solid, dotted, dashed.

Theory:-

line - It is the path between two end points.

we can draw line by two methods:-

1) using In-built function:-

purpose:- Draw a line between two specific point.

syntax:- `void for line (int x1, int y1, int x2, int y2)`

This function used to set the linestyle and width or pattern.

`void for linestyle (int style, unsigned pattern, int thickness).`

- Three style are,

1) Solid line

2) Dashed line

3) Dotted line.

Thickness:-

Normal - 1 pixel

Thick - 3-pixel.

2) using 'Pixel filling (by logic)

\* Solid line:-

we can use general line drawing algorithm display solid line. e.g. DDA or Bresenham's

## line drawing algorithms

### \* Dashed line:-

we can easily modify the general line drawing algorithm to display dashed line. we have to plot alternative group of pixel along the line to get dashed line.

### \* Dotted line:-

we can easily modify the general line drawing algorithm to display dotted line plotting alternative pixel in line.

### \* properties of good line drawing algorithm

- 1) Straight line should appear as straight
- 2) They should start and end accurately
- 3) displayed lines should have constant brightness along their length, independent of the line length and orientation
- 4) line should be drawn rapidly

Q. Difference between DDA line drawing algorithm and Bresenham's line drawing algorithm.



## DDA Algorithm

- 1) It uses floating point.
- 2) less efficient
- 3) less calculation speed.
- 4) It's costlier
- 5) less precision or accuracy
- 6) Complex calculation
- 7) optimization is not provided.

## Bresenham's algorithm

- 1) It uses fixed point.
- 2) More efficient
- 3) More calculation speed
- 4) It is cheaper.
- 5) More precision or accuracy.
- 6) simple calculation.
- 7) optimization is provided.