Assignment No. B(1) DATE:

Problem Statement: Write C++ Program for line drawing using DDA or Bresenham's algorithm with patterns such as solid, dotted, dashed, dashed dot and thick.

Learning objective: Different types of lines will be drawn using DDA or Bresenham's line drawing algorithms.

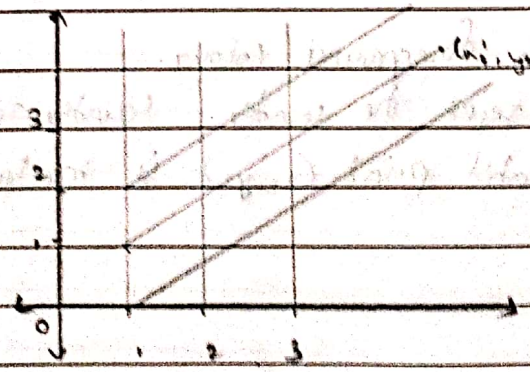
Learning outcome: We should study different algorithms to draw different types of lines.

Requirements: Fedora 20, QT creator.

Theory:

Thick line generation:

1. Take first and last point of line as input (x_1, y_1 & x_2, y_2).
2. The width of line (w) as input.
3. Draw line from x_1, y_1 to x_2, y_2.
4. If $(x_2 - x_1)$ is greater than $(y_2 - y_1)$
   Then draw lines parallel to original line by inc / dec y.
   else inc / dec x to draw lines parallel to original line.
6. Repeat step 4 & 5 (w-1) times.
7. END.



DATE:

Dotted line generation:

1. Accept starting point (x_1, y_1) & final point (x_2, y_2) as input.
2. Plot 1st point (x_1, y_1).
3. Initialize a counter variable (i) with 1.
4. If i is completely divisibly 2 then don't plot pixel.
5. else plot the pixel.
6. Repeat the steps 4 & 5 until the whole line is drawn.
7. End.

Dashed line generation:

1. Accept starting point (x_1, y_1) and final point (x_2, y_2) of line as input
2. Plot 1st pixel (x_1, y_1) in foreground color and initialize counter variable 'y'
3. Accept length of dashes as input (w)
4. If (w+1) completely divides the counter then don't plot the pixel.
5. else plot the pixel in foreground color.
6. Repeat step 4 & 5 until whole line is drawn
7. END.

Dash-dot line generation:

1. Take starting point and final point as input from user.
2. Initialize counter variable with 0.
3. If counter variable is completely divisible by 3 or 5 then leave the pixel empty.
4. else fill the pixel in foreground colour.
5. If counter = 5 then reset the counter. counter = 0
6. Repeat step 3 to 5 until point (x_2, y_2) is reached.
7. END.

DATE:

Test cases :

	Description	Expected O/P	Actual O/P	Result
1.	(10,10) (60,10) Thickness = 2			Pass
2.	(10,10) (60,10) Dotted line			Pass
3.	(10,10) (60,10) Dashed line			Pass
4.	(10,10)(60,10) Dash-dot line			Pass

Conclusion:

Thus, from this assignment, the different types of lines were drawn using line generation algorithm.