# Experiment – 2

## Theory:

There are several line drawing algorithms used in computer graphics, each with its own advantages and disadvantages. Here are brief descriptions of a few popular algorithms:

1. DDA (Digital Differential Analyzer) Algorithm: This algorithm is one of the simplest line drawing algorithms. It involves calculating the slope of the line and using that value to increment either the x or y coordinate of the pixel, depending on which direction the line is going. The advantage of this algorithm is its simplicity, but it can be slow for longer lines.
2. Bresenham's Algorithm: This algorithm is more efficient than the DDA algorithm and is widely used in computer graphics. It uses integer arithmetic to avoid the need for floating-point calculations, making it faster. It also produces very accurate lines. The algorithm works by choosing the pixel that is closest to the actual line path, which minimizes the error that accumulates over longer lines.
3. Midpoint Algorithm: This algorithm is similar to Bresenham's algorithm but uses midpoint calculations to determine which pixel to choose. It is slightly slower than Bresenham's algorithm but is more accurate.

   In summary, there are several line drawing algorithms available, each with its own advantages and disadvantages. The choice of algorithm will depend on the specific needs of the application and the desired trade-off between speed and accuracy.