

Algorithm: Bresenham Line Drawing

Step 1: Start and take the input points $((x_1, y_1))$ and $((x_2, y_2))$.

Step 2: Calculate the differences in coordinates:

$$(dx = |x_2 - x_1|) \text{ and } (dy = |y_2 - y_1|).$$

Step 3: Determine the direction of increment:

If $(x_2 \geq x_1)$, set $(s_x = 1)$; otherwise $(s_x = -1)$.

If $(y_2 \geq y_1)$, set $(s_y = 1)$; otherwise $(s_y = -1)$.

Step 4: Initialize the starting point:

$(x = x_1)$ and $(y = y_1)$.

Step 5: If $(dx = dy)$, then:

Set decision parameter $(p = 2dy - dx)$.

For each step from 0 to (dx) :

Plot the point $((x, y))$.

Increment $(x = x + s_x)$.

If $(p \geq 0)$:

Increment $(y = y + s_y)$.

Update $(p = p + 2dy - 2dx)$.

Else:

Update $(p = p + 2dy)$.

Step 6: Otherwise $((dy > dx))$:

Set decision parameter $(p = 2dx - dy)$.

For each step from 0 to (dy) :

Plot the point $((x, y))$.

Increment $(y = y + s_y)$.

If $(p \geq 0)$:

Increment $(x = x + s_x)$

Update $(p = p + 2dx - 2dy)$.

Else:

Update $(p = p + 2dx)$.

Step 7: Continue until the end point is reached and all calculated points are plotted.

Step 8: End.