

## Bresenham's Line Drawing Algorithm

Step 1: Start.

Step 2: Declare variables  $x_1, x_2, y_1, y_2$ , label x, label y,  $\Delta x, \Delta y, P, x$  and  $y$ .

Step 3: Calculate

$$\Delta x = |x_2 - x_1|$$

$$\Delta y = |y_2 - y_1|$$

Step 4: If  $x_2 > x_1$ , assign label x = 1, else label x = -1

Step 5: If  $y_2 > y_1$ , assign label y = 1, else label y = -1

Step 6: Plot  $x_1, y_1$

Step 7: If  $\Delta x > \Delta y, p_0 = 2\Delta y - \Delta x$

If ( $p_k < 0$ ) then

$$x_{k+1} = x_k + \text{label } x$$

$$y_{k+1} = y_k$$

$$p_{k+1} = p_k + 2\Delta y$$

Else ( $p_k > 0$ ) then

$$x_{k+1} = x_k + \text{label } x$$

$$y_{k+1} = y_k + \text{label } y$$

$$p_{k+1} = p_k + 2\Delta y - 2\Delta x$$

Else  $\Delta x < \Delta y, p_0 = 2\Delta x - \Delta y$

If ( $p_k < 0$ ) then

$$x_{k+1} = x_k$$

$$y_{k+1} = y_k + \text{label } y$$

$$p_{k+1} = p_k + 2\Delta x$$

Else ( $p_k > 0$ ) then

$$x_{k+1} = x_k + \text{label } x$$

$$y_{k+1} = y_k + \text{label } y$$

$$p_{k+1} = p_k + 2\Delta x - 2\Delta y$$

$$\text{plot } (x_{k+1}, y_{k+1})$$

Step 8: Stop