## 1. 直线(2,5)～(7,9)

中点画线算法

a = y0 – y1 = -4

b = x1 – x0 = 5

c = x0y1 - x1y0 = -17

F(x, y) = -4x + 5y – 8 = 0

2a = -8

2(a+b) = 2

迭代次数 n = 7 – 2 – 1 = 4

|  |  |  |  |
| --- | --- | --- | --- |
| i | 2di | xi | yi |
| 1 | 2a+b = -3 < 0 | x0 + 1 = 3 | y0 + 1 = 6 |
| 2 | 2d1 + 2(a+b) = -1 < 0 | x1 + 1 = 4 | y1 + 1 = 7 |
| 3 | 2d2 + 2(a+b) = 1 > 0 | x2 + 1 = 5 | y2 = y1 = 7 |
| 4 | 2d3 + 2a = -7 < 0 | x3 + 1 = 6 | y3 + 1 = 8 |

故为(3, 6) (4, 7) (5, 7) (6, 8)

Bresenham画线算法

△x = 5 △y = 4

迭代次数 n = 7 – 2 – 1 = 4

|  |  |  |  |
| --- | --- | --- | --- |
| i | ei | xi | yi |
| 1 | 2△y - △x = 3 > 0 | 3 | 5 + 1 = 6 |
| 2 | e1 + 2△y - 2△x(y1 – y0) = 1 > 0 | 4 | 6 + 1 = 7 |
| 3 | e2 + 2△y - 2△x(y2 – y1) = -1 < 0 | 5 | 7 |
| 4 | e3 + 2△y - 2△x(y3 – y2) = 7 > 0 | 6 | 7 + 1 = 8 |

故为(3, 6) (4, 7) (5, 7) (6, 8)

## 2.写出下列二维图形变换的变换矩阵：

1）绕（2，4）点顺时针旋转30度；

2）以（3，6）点为对称中心的中心对称变换；

3）以y=3x-4为对称轴的轴对称变换；