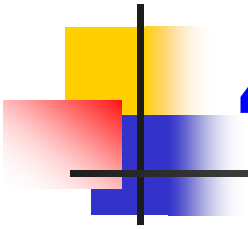


4.2文字的生成技术

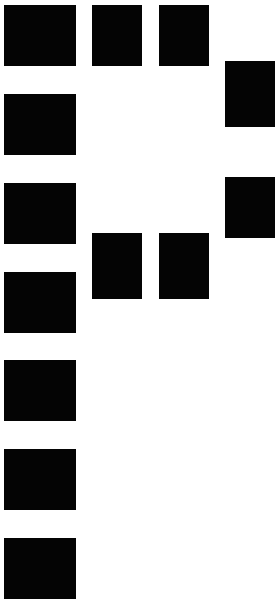
- 点 阵 式 pDotText
- 矢 量 式 pShiLiangText
- 编 码 式 directText

谢忠红

点阵式字符

- DEF：每个字符都定义成一个称为掩膜的矩阵。矩阵中的元素都是一位二进制数，当该位为**1**时，表示字符的笔划经过此位，对应于此位的象素应置为字符颜色；当该位为**0**时，表示字符的笔划不经过此位，对应于此位的象素应置为背景色或不改变。

P-DotText



掩膜的矩阵(16×16)

0000000000000000

0001111111110000

0001100000011000

0001100000001100

0001100000001100

0001100000011000

0001100001100000

0001111111000000

0001100000000000

0001100000000000

0001100000000000

0001100000000000

0000000000000000

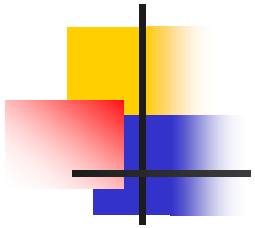
0000000000000000

当该位为1时，表示字符的笔划经过此位

当该位为0时，表示字符的笔划不经过此位

```
int textP[16]={
ox0000,
0x0000,
0x1FF0,
0x1818,
……
0x0000
}
```

```
0000000000000000
0000000000000000
0001111111110000
0001100000011000
0001100000001100
0001100000001100
0001100000011000
0001100001100000
0001111111000000
0001100000000000
0001100000000000
0001100000000000
0001100000000000
0000000000000000
0000000000000000
0000000000000000
```



Text[16]	mask[16]
0000000000000000	1000000000000000
0001111111110000	0100000000000000
0001100000011000	0010000000000000
0001100000001100	0001000000000000
0001100000001100	0000100000000000
0001100000011000	0000010000000000
0001100001100000	0000001000000000
0001111111000000	0000000100000000
0001100000000000	0000000010000000
0001100000000000	0000000001000000
0001100000000000	0000000000100000
0001100000000000	0000000000010000
0000000000000000	0000000000001000
0000000000000000	0000000000000100
0000000000000000	0000000000000010
	0000000000000001

```
int  text[16]={ 0x0000, 0x0000, 0x0000, 0x0000, 0x0000, 0x0000,  0xFFFF,  0xFFFF,0xFFFF, 0xFFFF, 0x0000, 0x0000,  0x0000, 0x0000, 0x0000,0x0000 };

int mask[16]={0x8000, 0x4000, 0x2000, 0x1000, 0x0800, 0x0400, 0x0200, 0x0100, 0x0080, 0x0040, 0x0020, 0x0010, 0x0008, 0x0004, 0x0002, 0x0001 }
```

```
void displayText(int x0,int y0,int Text[],int color)
{ int i,j;
   for (i=0;i<16;i++) {   //行
      for(j=0;j<16;j++) {   //列
         if ((Text[i] & mask[j])!=0)
            putpixel(x0+j,y0+i,color) ;
   }}
}
```

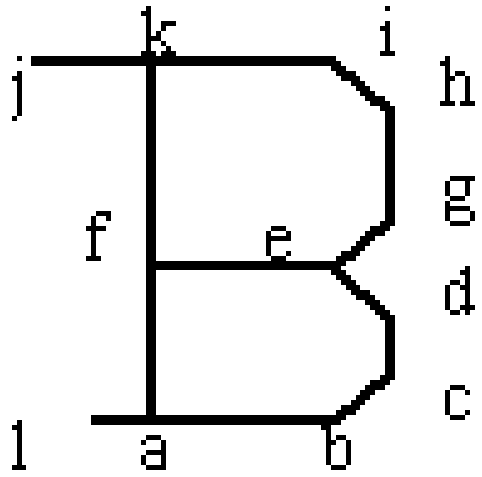
- 点阵式字符时主要的文字表示形式。
- 常用的点阵大小有

- **5 × 7、7 × 9、8 × 8、16 × 16等等**
- 当点阵变大时，字型可以做得非常漂亮。

- 优点：字形美观是字符表示的主要形式
- 缺点：旋转比较困难、占用的存储空间较大

矢量式字符

- DEF：将字符看作是一个图形，用点坐标的序列来表示一个字符，相邻两点表示一条矢量，字符的形状便由矢量序列刻划。

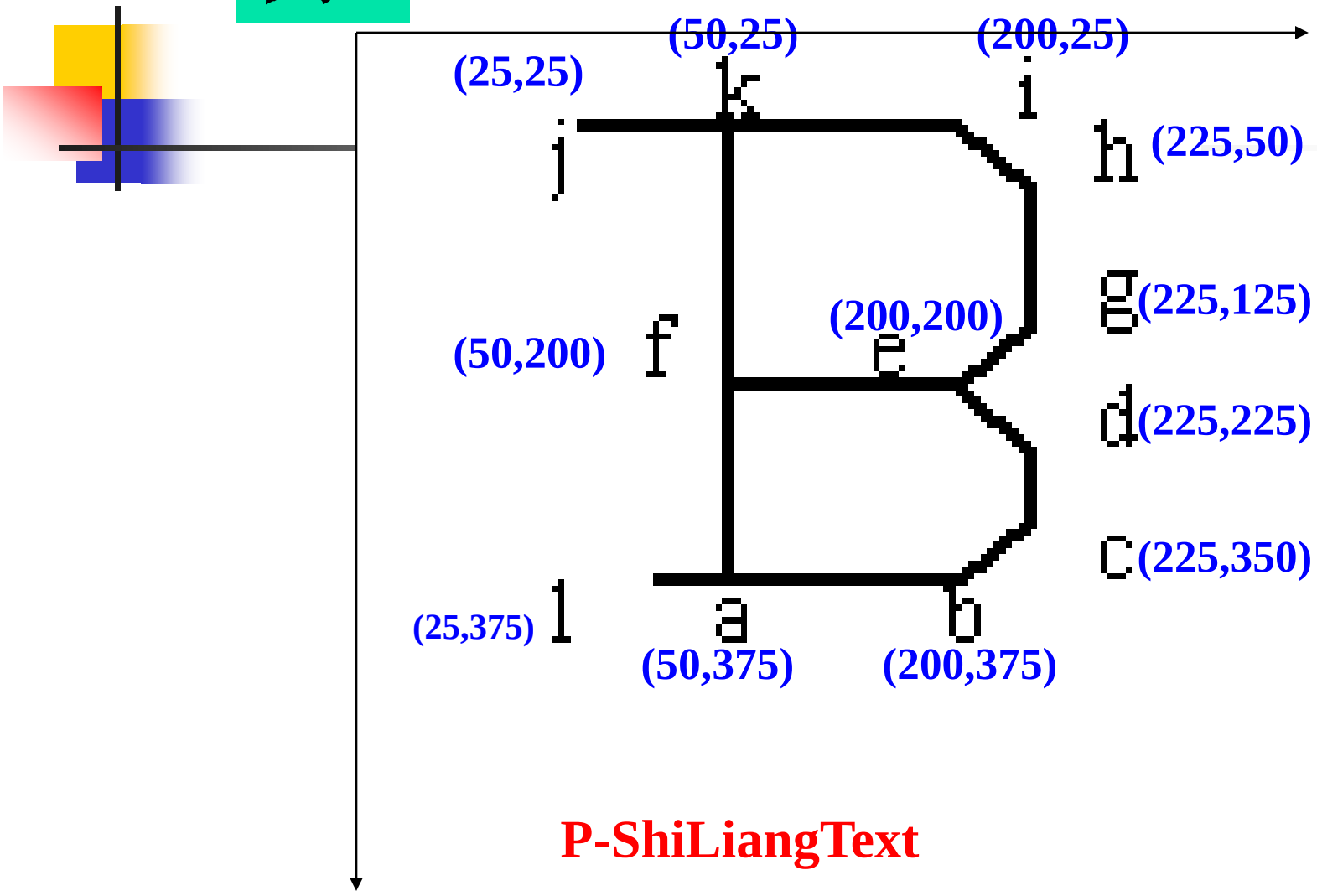


例：“B”是由顶点序列

{a, b, c, d, e, f, e, g, h, I, j, k ,a, l, a}

的坐标表达

例：



P-ShiLiangText

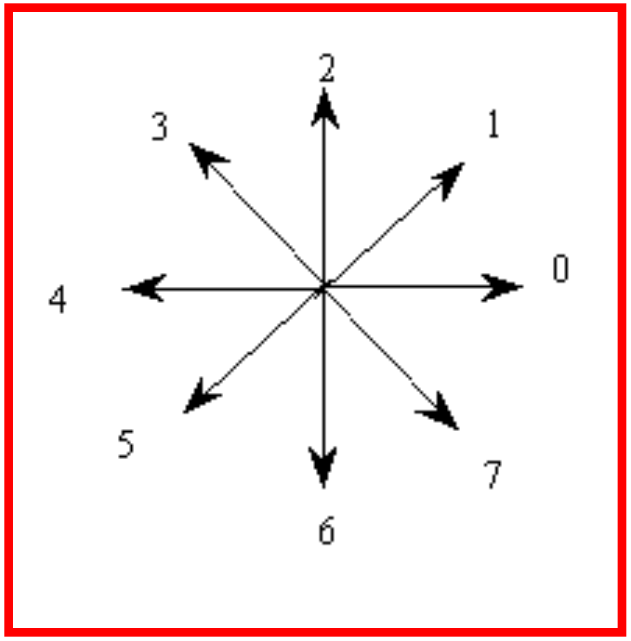
```
int text[]= {50,375,  200,375,  225,350,225,
225,200,200,  50,200,  200,200,  225,175,  225,50,
200,25,  25,25,  50,25,  50,375,  25,375,  50,375};
void displayText(int x,int y,int *text,int len){
   int i;
   int *newText=malloc(sizeof(int)*len);
   for(i=0;i<len/2;i++)   {
      newText[2*i]=x+text[2*i]  ;
      newText[2*i+1]=y+text[2*i+1];
   }
      drawpoly(len/2,newText);
}
```

- 矢量式字符的优点：
- 矢量式字符具有和图形相一致的数据结构，因而可以接受任何对于图形的操作，如放大、旋转，平移等

方向编码

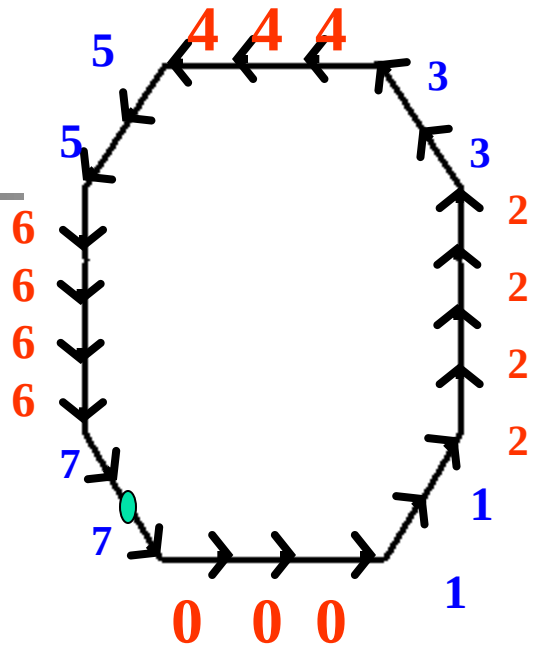
DEF:方向编码式字符用有限的若干种方向编码来表达一个字符.

8个方向的编码为0 ~ 7



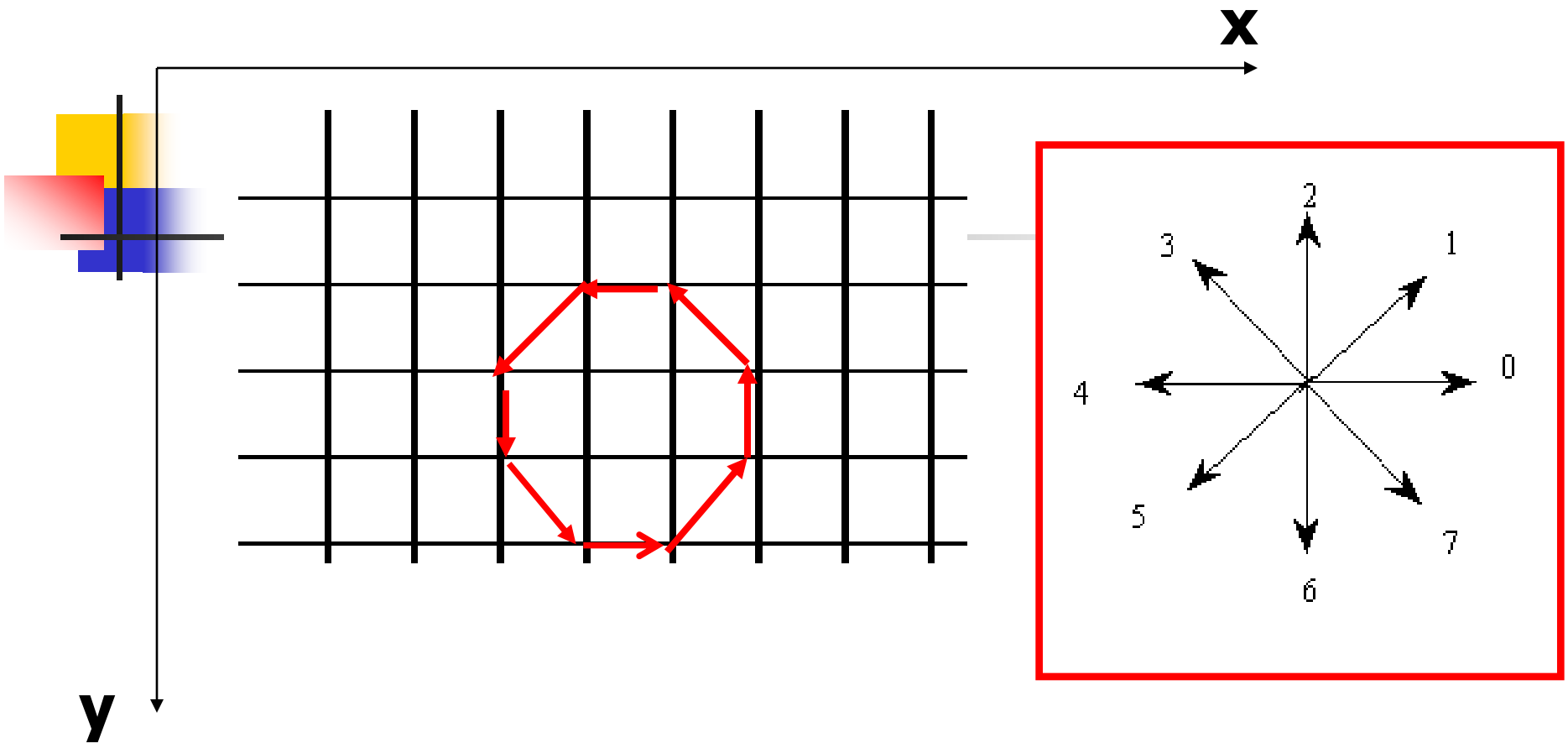
一个字符就可以表示

为一连串方向码



方向编码是：

{ 000 11 2222 33 444 55 6666 77 }



- **Model[8][2]= {{1,0},{1,-1}, {0,-1},{-1,-1},**
- **{-1,0}, {-1,1},{0,1},{1,1}};**

```
int direct[27]={0,0,0,0,1,  2,3,4,4,4,  0,0,0,1,2,
                3,4,4,4,4,    0,6,6,6,6,  6,4 };
void displayText(int x0,int y0,int direct[],
                                        int len,int size)
{  int i;
    float Model[8][2]=  {{1,0},{1,-1}, {0,-1},{-1,-1}, {-1,0},
                         {-1,1},{0,1},{1,1}};
   moveto(x0,y0);
   for (i=1;i<len;i++) {
       linerel(Model [direct[i]][0]*size,
                       Model[direct[i]][1]*size)  ;

   }
}
```