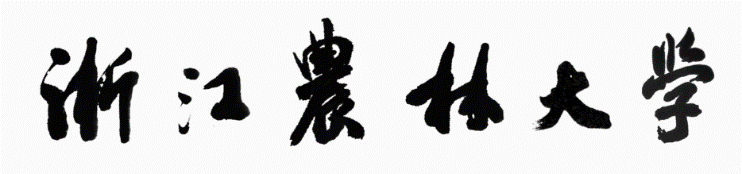
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**《微机系统与接口技术》课程设计报告**

**（2020-2021学年第一学期）**

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# 程序总体介绍

设计一个英雄联盟里面的一个英雄“提莫”，能够放出QWER技能及“闪现”并带有音效。

# 大体功能介绍

1. 初始化界面，类似于记事本；
2. 单击1~7，可发出do（哆）、baire（来）、mi（咪）、fa（发）、sol（唆）、la（拉）、si（西）；
3. 单击“S”，播放一首歌曲《小星星》；
4. 单击“P”，打印原“提莫”模型；
5. 单击“Q”，打印发出Q技能“提莫”模型，并带有音效；
6. 单击“C”，清屏结束。

# 运用到所学的知识

* 1. 清屏（通过打印白色的模块实现）；
  2. 打印字符串；
  3. 图形的封装（横、竖、框、绝对、相对）；
  4. 封装颜色调整（通过计时器调整）；
  5. 绘框界面（通过封装的形状来实现）；
  6. 键盘中断（按下、弹起）；
  7. 绘图界面（打印格点）；
  8. 播放声音（连续、非连续）；
  9. 调整音频（快、慢）。

# 操作实现流程图

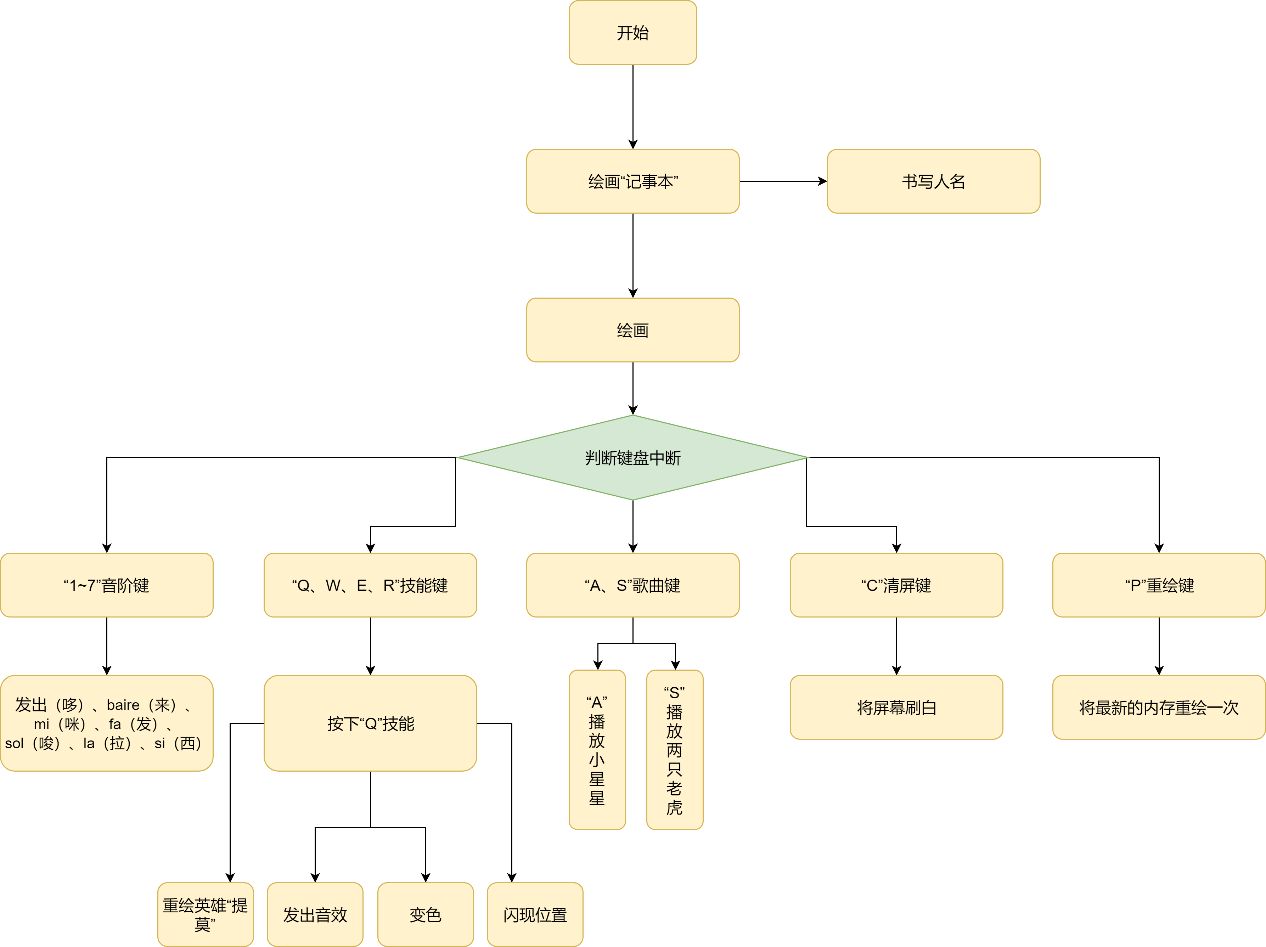


图4-1 操作流程

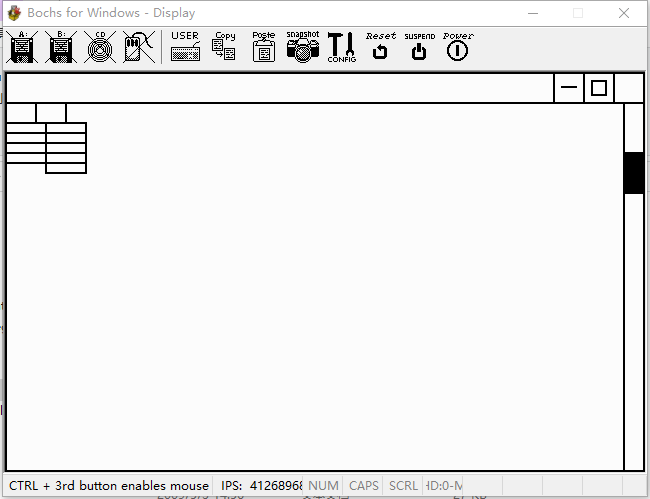


图4-2 绘画笔记本界面

代码：

1. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画外框\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
2. call DrawRectangle
3. call DrawGundongtiao
4. call DrawTopmenu
5. call DrawTopmenuItem
6. call DrawSonmenuItem
7. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画外框\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
9. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制界面\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
10. ;横线
11. DrawLineOfH:
12. cmp bx,ax
13. ja DrawLineOfHExit
14. mov byte [es:bx], 1
15. inc bx
16. jmp DrawLineOfH
17. DrawLineOfHExit:
18. ret
19. ;竖线
20. DrawLineOfV:
21. cmp bx,ax
22. ja DrawLineOfVExit
23. mov byte [es:bx], 1
24. add bx,320
25. jmp DrawLineOfV
26. DrawLineOfVExit:
27. ret
28. ;外方框
29. DrawRectangle:
30. ;整体框线1-----
31. mov bx,[ds:startP]
32. mov ax,[ds:endP]
33. call DrawLineOfH
34. ;整体框线2|
35. mov bx,[ds:startP+2]
36. mov ax,[ds:endP+2]
37. call DrawLineOfV
38. ;整体框线3-----
39. mov bx,[ds:startP+4]
40. mov ax,[ds:endP+4]
41. call DrawLineOfH
42. ;整体框线4|
43. mov bx,[ds:startP+6]
44. mov ax,[ds:endP+6]
45. call DrawLineOfV
47. ret
49. ;滚动条
50. DrawGundongtiao:
51. ;滚动条丨
52. mov bx,[ds:startP+8]
53. mov ax,[ds:endP+8]
54. call DrawLineOfV
55. ;里面线条
56. mov bx,[ds:startP+10]
57. mov ax,[ds:endP+10]
58. call DrawLineOfV
60. mov bx,[ds:startP+12]
61. mov ax,[ds:endP+12]
62. call DrawLineOfV
64. mov bx,[ds:startP+14]
65. mov ax,[ds:endP+14]
66. call DrawLineOfV
68. mov bx,[ds:startP+16]
69. mov ax,[ds:endP+16]
70. call DrawLineOfV
72. mov bx,[ds:startP+18]
73. mov ax,[ds:endP+18]
74. call DrawLineOfV
76. mov bx,[ds:startP+20]
77. mov ax,[ds:endP+20]
78. call DrawLineOfV
80. mov bx,[ds:startP+22]
81. mov ax,[ds:endP+22]
82. call DrawLineOfV
84. mov bx,[ds:startP+24]
85. mov ax,[ds:endP+24]
86. call DrawLineOfV
88. mov bx,[ds:startP+26]
89. mov ax,[ds:endP+26]
90. call DrawLineOfV
92. ret
94. ;顶部菜单栏
95. DrawTopmenu:
96. mov bx,[ds:startP+28]
97. mov ax,[ds:endP+28]
98. call DrawLineOfH
100. mov bx,[ds:startP+30]
101. mov ax,[ds:endP+30]
102. call DrawLineOfV
104. mov bx,[ds:startP+32]
105. mov ax,[ds:endP+32]
106. call DrawLineOfV
108. mov bx,[ds:startP+34]
109. mov ax,[ds:endP+34]
110. call DrawLineOfV
111. ret
113. ;顶部菜单项
114. DrawTopmenuItem:
115. mov bx,[ds:startP+36]
116. mov ax,[ds:endP+36]
117. call DrawLineOfH
119. mov bx,[ds:startP+38]
120. mov ax,[ds:endP+38]
121. call DrawLineOfH
123. mov bx,[ds:startP+40]
124. mov ax,[ds:endP+40]
125. call DrawLineOfV
127. mov bx,[ds:startP+42]
128. mov ax,[ds:endP+42]
129. call DrawLineOfH
131. mov bx,[ds:startP+44]
132. mov ax,[ds:endP+44]
133. call DrawLineOfV
134. ret
136. ;顶部菜单项
137. DrawSonmenuItem:
138. mov bx,[ds:startP+46]
139. mov ax,[ds:endP+46]
140. call DrawLineOfH
142. mov bx,[ds:startP+48]
143. mov ax,[ds:endP+48]
144. call DrawLineOfH
146. mov bx,[ds:startP+50]
147. mov ax,[ds:endP+50]
148. call DrawLineOfH
150. mov bx,[ds:startP+52]
151. mov ax,[ds:endP+52]
152. call DrawLineOfH
154. mov bx,[ds:startP+54]
155. mov ax,[ds:endP+54]
156. call DrawLineOfH
158. mov bx,[ds:startP+56]
159. mov ax,[ds:endP+56]
160. call DrawLineOfH
162. mov bx,[ds:startP+58]
163. mov ax,[ds:endP+58]
164. call DrawLineOfV
166. mov bx,[ds:startP+60]
167. mov ax,[ds:endP+60]
168. call DrawLineOfV
170. mov bx,[ds:startP+62]
171. mov ax,[ds:endP+62]
172. call DrawLineOfV
174. mov bx,[ds:startP+64]
175. mov ax,[ds:endP+64]
176. call DrawLineOfV
177. ret
179. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制界面\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

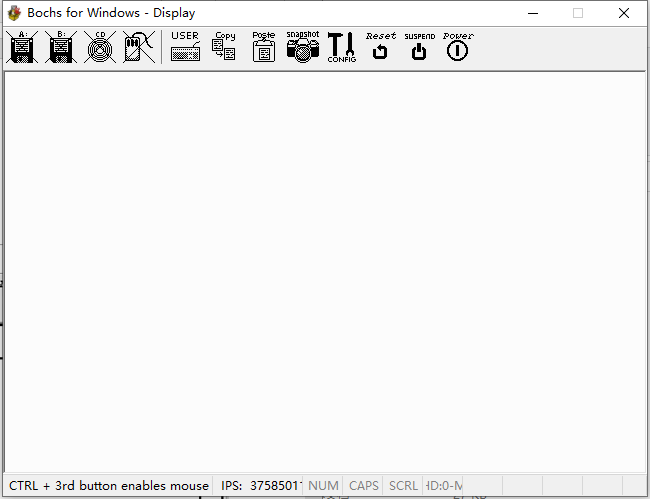


图4-3 “C”清屏的实现

代码：

1. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*还原\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
2. paint\_clear:
3. push ax                                     ;压栈
4. push bx                                     ;压栈
5. push si                                     ;压栈
7. mov bx,0
8. mov ax,64000
9. call DrawLineOfH\_White
11. ret
13. DrawLineOfH\_White:
14. cmp bx,ax
15. je DrawLineOfHExit\_White
16. mov byte [es:bx], 0
17. inc bx
18. jmp DrawLineOfH\_White
20. DrawLineOfHExit\_White:
21. pop si                                      ;出栈
22. pop bx                                      ;出栈
23. pop ax                                      ;出栈
24. jmp paint\_char
25. ret
26. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*还原\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

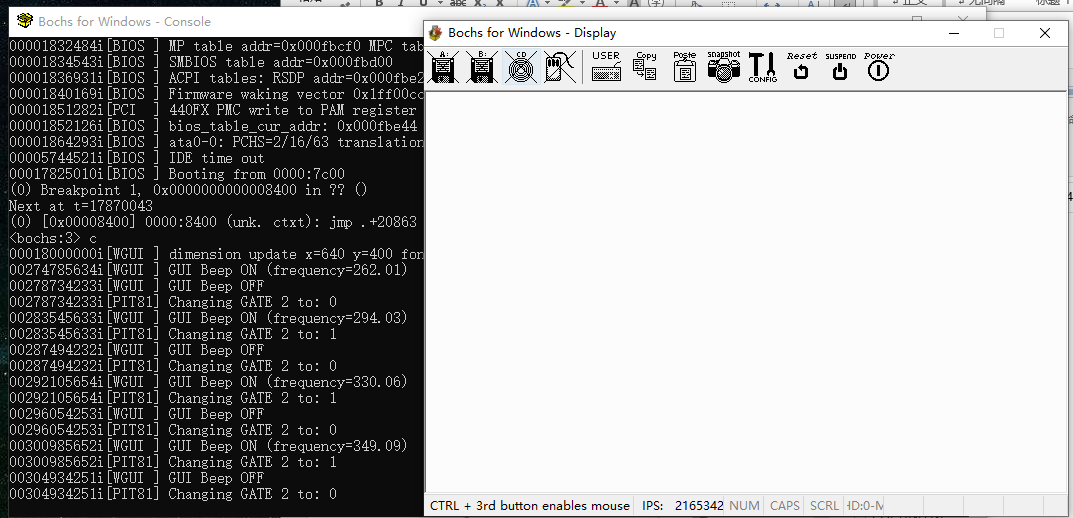


图4-4 “1~7”单击弹音阶

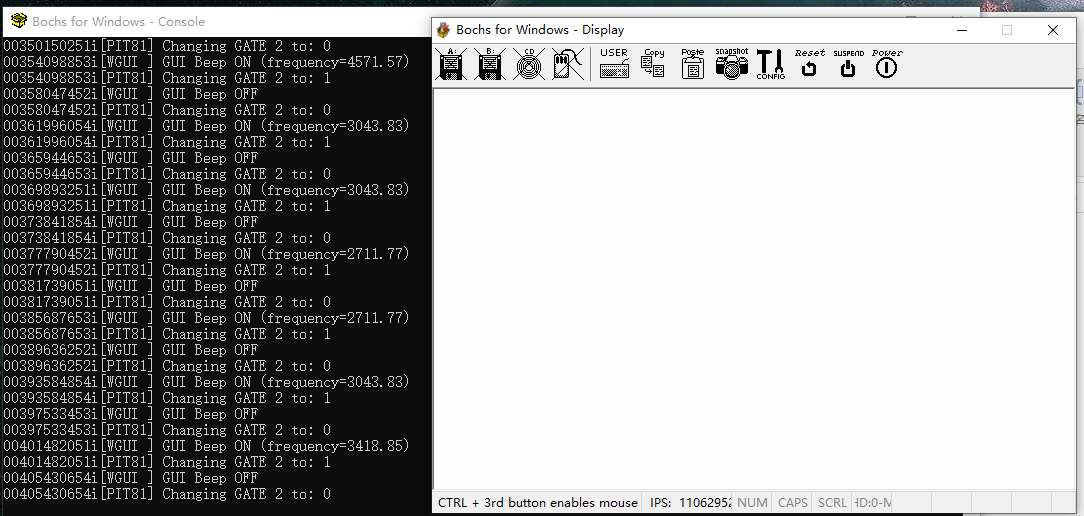


图4-5 “A、S”播放整首歌

音乐、扬声器代码：

1. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*发声主程序\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
2. make\_sound:;发声
3. call give\_f
4. call delay
5. call open\_sound
6. call delay
7. call close\_sound
8. ret
9. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*发声主程序\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


13. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*声音模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
14. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*设置频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
15. set\_f:;设置频率
16. push dx
17. push ax
19. mov dx,12H
20. mov ax,34DEH
21. mov di,[ds:sound\_f]
22. div di
23. mov [ds:sound\_hz],ax
25. pop ax
26. pop dx
27. ret
28. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*设置频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


32. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*给定时器频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
33. give\_f:;给定时器频率
34. mov  al,10110110B
35. out  43H,al
37. call set\_f
39. mov  ax,[ds:sound\_hz]
41. out  42H,al
42. mov  al,ah
43. out  42H,al
44. ret
45. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*给定时器频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


49. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口打开\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
50. open\_sound:;扬声器端口打开
51. push ax
53. in al,61H
54. or al,00000011B;或操作与11111100B
55. out 61H,al
57. pop ax
58. ret
59. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口打开\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


63. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口关闭\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
64. close\_sound:;扬声器端口关闭
65. push ax
67. in al,61H
68. and al,11111100B;与操作与00000011B
69. out 61H,al
71. pop ax
72. ret
73. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口关闭\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
74. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*声音模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

77. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*时延模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
78. delay:;时延
79. push cx
80. push dx
81. push ax
83. mov  cx,0FH
84. ;mov  dx,4240H              ;延迟
85. mov  dx,1000H               ;延迟
86. mov  ah,86H
87. **int**  15H
89. pop ax
90. pop dx
91. pop cx
92. ret
93. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*时延模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

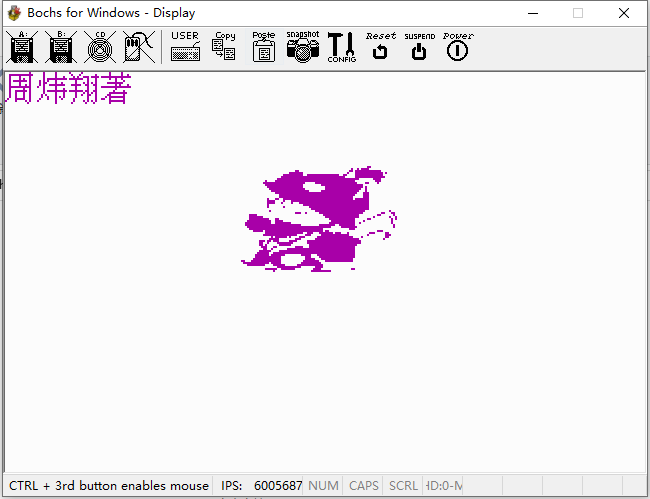


图4-6 打印“姓名”、英雄“提莫”

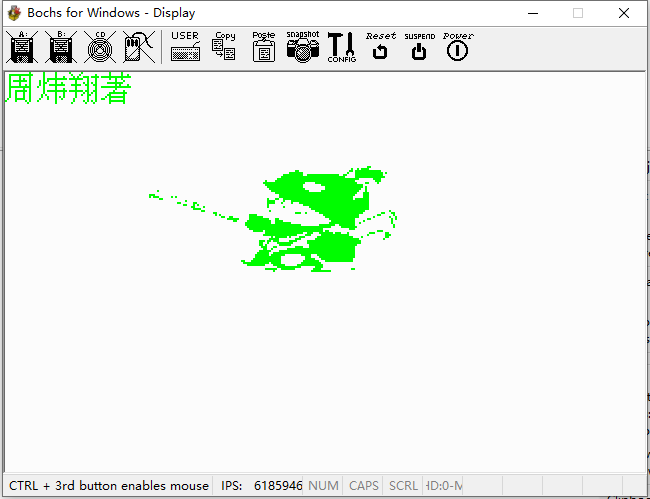


图4-7 打印“姓名”、英雄“提莫”Q技能

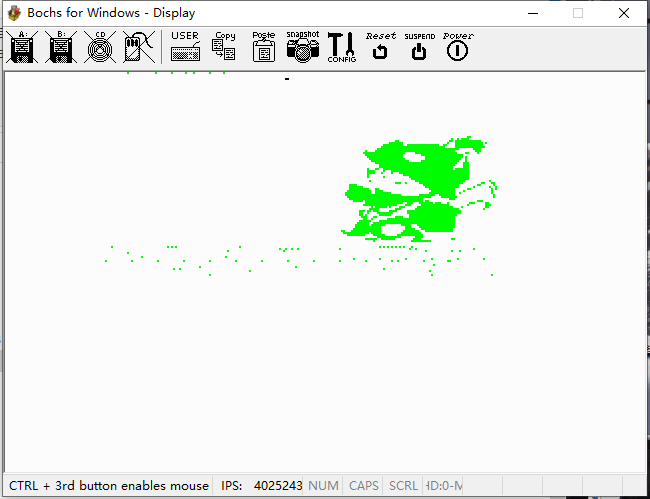


图4-8 英雄“提莫”闪现技能

打印图片代码：

1. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制画图\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
2. ;绘制一条竖线
3. paint\_vertical\_line:
4. push cx                                     ;压栈
5. push ax                                     ;压栈
6. push bx                                     ;压栈
7. push si                                     ;压栈
9. mov cx,[ds:linex]                           ;cx,起始横坐标
10. mov ax,[ds:liney]                           ;ax,起始纵坐标
11. mov bx,[ds:linelength]                      ;bx,直线长度
13. ;用乘法计算横纵坐标
14. mov si,320
15. mul si
16. add ax,cx
18. mov dx,bx                                   ;直线总长度
19. mov si,ax                                   ;绘图起始位置
20. mov bx,0                                    ;变化偏移量
21. mov ax,0                                    ;变化次数
23. loop\_paint\_vertical\_line:
24. cmp ax,dx
25. jae exitpaintvl
27. push cx
28. mov cl,byte[ds:pen]
29. mov byte [es:bx+si], cl
30. pop cx

33. add bx,320
34. inc ax
35. jmp loop\_paint\_vertical\_line
37. exitpaintvl:
38. pop si                                  ;出栈
39. pop bx                                  ;出栈
40. pop ax                                  ;出栈
41. pop cx                                  ;出栈
42. ret
44. ;字符打印
45. paint\_char:                                     ;循环初始化
46. push ax                                     ;压栈
47. push dx                                     ;压栈
48. push bx                                     ;压栈
49. push cx                                     ;压栈
51. ;mov word[ds:charSum],0                     ;防止另外程序写入，重新置偏移总量为0
52. ;mov word[ds:charVertical],0                ;防止另外程序写入，重新置竖直偏移量为0
53. ;mov word[ds:charHorizontal],0              ;防止另外程序写入，重新置水平偏移量为0
55. ;起始x
56. mov ax,[ds:charStartX]
57. mov word[ds:charX],ax
58. ;起始y
59. mov ax,[ds:charStartY]
60. mov word[ds:charY],ax
62. paint\_char\_column\_loop:                     ;列循环
63. mov dx,[ds:charHeight]                  ;字高度
64. cmp word[ds:charVertical],dx            ;与字竖直偏移量比较
65. jae exit\_char\_paint                     ;若竖直偏移量大于等于字高度，退出
67. ;行循环
68. mov word[ds:charHorizontal],0           ;行循环初始化
70. paint\_char\_row\_loop:                    ;行循环
71. ;比较判断是否跳出行循环，进入列循环
72. mov bx,word[ds:charHorizontal]      ;字水平偏移量
73. cmp bx,[ds:charLength]              ;与字长度比较
74. jae next\_column\_loop                ;若字水平偏移量大于等于字长度，退出
76. mov bx,[ds:charSum]
78. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*循环判断提莫处于什么状态\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
79. cmp word[ds:WhichJn],0
80. je Jn0
82. ;cmp word[ds:WhichJn],1
83. ;je Jn1
85. ;cmp word[ds:WhichJn],2
86. ;je Jn2
88. ;cmp word[ds:WhichJn],3
89. ;je Jn3
91. ;cmp word[ds:WhichJn],4
92. ;je Jn4
94. Jn0:
95. cmp byte[character+bx],1
96. jne next\_row\_loop
98. ;Jn1:
99. ;   cmp byte[character1+bx],1
100. ;   jne next\_row\_loop
102. ;Jn2:
103. ;   cmp byte[character2+bx],1
104. ;   jne next\_row\_loop
106. ;Jn3:
107. ;   cmp byte[character3+bx],1
108. ;   jne next\_row\_loop
110. ;Jn4:
111. ;   cmp byte[character4+bx],1
112. ;   jne next\_row\_loop
114. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*循环判断提莫处于什么状态\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
116. mov cx,[ds:charX]
117. mov word[ds:linex],cx
119. mov cx,[ds:charY]
120. mov word[ds:liney],cx
122. mov word[ds:linelength],1
124. call paint\_vertical\_line
125. ;行循环处理下一次
126. next\_row\_loop:
127. inc word[ds:charX]
128. inc word[ds:charHorizontal]
129. inc word[ds:charSum]
131. jmp paint\_char\_row\_loop
133. next\_column\_loop:
134. ;列层循环的下一次
135. inc word[ds:charVertical]               ;竖直偏移量++
136. mov word[ds:charHorizontal],0           ;水平偏移量置0
137. ;重置字符(x,y)
138. mov ax,[ds:charStartX]
139. mov word[ds:charX],ax
140. mov ax,[ds:charVertical]
141. add ax,[ds:charStartY]
142. mov word[ds:charY],ax
144. jmp paint\_char\_column\_loop
146. exit\_char\_paint:
147. pop cx                                  ;出栈
148. pop bx                                  ;出栈
149. pop dx                                  ;出栈
150. pop ax                                  ;出栈
151. ret
152. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制画图\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# 心得体会

这次的课程设计对我们来说是不一样的体验，因为老师没规定题目，也没有一个限定范围，只要是学过的东西全部用上去就行，所以导致整个课程设计的上限和下限很高，做的好的能做的很好，做的不好的能做的很不好。我的想法是做一个游戏里面的人物，听有同学说过，之前好像有同学做过，我也没有去看过他的代码。

这次课程设计碰到的几个难点，第一个就是重绘，在写绘图函数的时候，明明是去调用了，但是返回来的绘图效果总是不佳，没有达到自己的预期理想的效果，在绘图函数的时候，将相对坐标，相对内容坐标，全部都规定好了，总之在重绘这一块，做的不是很理想。

第二点就是LOCK prefix unallowed，翻译过来是不允许使用LOCK前缀，这个还不是代码的编译问题，是逻辑问题，应该是更加底层的问题，在编写过程中，这个问题我一直没有解决，问了老师，老师说要不单步调试试试，在千来行代码面前，虽然屏蔽了很多，也老是算不到中断的位置，所以这个问题我就尽量去避免它。后来在调试的过程中，我发现只要我加了两个二维数组，这里就会出现这个错误，所以我想着是不是我的数组开的太大了。

第三个是键盘中断跳转问题，在中断中我悟出了一个道理，在中断中你就别反复横跳，不然程序是什么时候返回中断以及执行到哪里去了，你都不知道，还是老老实实的在外面写一个函数调用一下，别跳出来，跳出来的话，直接卡死在当前界面。

最遗憾的一点是，技能的释放还略微欠缺了一些些火候，我想着能不能再去完善一下，争取把技能做全做对，这里要解决的就是第二个点的问题。

最后，感谢舒老师的悉心指导，可能这次的课程设计实现的功能比较单一，但是我接下去还会不断完善的，感谢老师能够让我们学到更加深层次的东西，希望以后能通过这门课对编程原理有更加深刻的理解。谢谢老师。

# 程序代码

1. org 0x8400

4. ;CS,DS,ES,SS默认的段基址为0000
5. ;利用jmp指令跳过段数据的定义部分
6. jmp start
8. ;%include '2.inc'

11. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*颜色相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
12. ;调色板，其中0号默认为背景色
13. pallete:
14. db 0,255,255,255    ;白色背景色
15. db 1,0,0,0          ;黑色
16. db 2,255,0,0        ;红色
17. db 3,0,255,0        ;绿色
18. db 4,0,0,255        ;蓝色
19. db 5,123,123,123    ;其他
21. colorchange:
22. db 1
23. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*颜色相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


27. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画图相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
28. WhichJn:
29. dw 0
30. pen:
31. db 5
32. ;直线起始(x,y)，长度len
33. linex:
34. dw 0
35. liney:
36. dw 0
37. linelength:
38. dw 1
39. Y\_yidong:
40. dw 0
41. X\_yidong:
42. dw 0
43. ;字符起始位置(x,y)
44. charStartX:             ;起始x位置
45. dw 0
46. charStartY:             ;起始y位置
47. dw 0
48. tempX:                  ;临时存储变量x
49. dw 0
50. tempY:                  ;临时存储变量y
51. dw 0
52. charLength:             ;图片202宽
53. dw 202
54. charHeight:             ;图片102高
55. dw 102
56. charSum:                ;在字符点阵中的偏移总量
57. dw 0
58. charX:                  ;图片矩阵二维数组的x
59. dw 0
60. charY:                  ;图片矩阵二维数组的y
61. dw 0
62. charVertical:
63. dw 0
64. charHorizontal:
65. dw 0
67. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画图0相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
68. character:              ;图片矩阵
69. db 0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
70. db 0,0,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,0,0,0,0,1,0,0,0,1,0,0,0,0,0,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
71. db 0,0,1,0,0,0,0,1,0,0,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,0,0,1,0,1,0,0,1,1,1,0,1,1,1,1,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
72. db 0,0,1,0,0,0,0,1,0,1,0,0,1,0,0,0,0,0,0,1,0,1,1,1,1,1,1,1,1,1,1,0,1,1,1,1,1,1,1,0,0,1,0,0,0,1,0,0,0,0,0,0,1,0,0,1,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
73. db 0,0,1,0,1,1,1,1,1,1,1,0,1,0,0,0,0,1,0,1,0,1,0,0,0,1,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,0,0,0,0,0,0,0,1,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
74. db 0,0,1,0,0,0,0,1,0,0,0,0,1,0,0,0,0,1,0,1,1,0,0,0,0,1,0,0,1,0,0,0,0,0,0,1,0,0,0,1,0,1,0,1,0,1,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
75. db 0,0,1,0,0,0,0,1,0,0,1,0,1,0,0,0,0,1,0,1,0,0,1,1,1,1,1,1,1,1,0,0,0,1,1,1,1,1,0,0,1,1,0,0,1,1,0,0,0,0,0,0,0,0,0,1,0,1,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
76. db 0,0,1,1,1,1,1,1,1,1,1,1,1,0,0,0,1,0,0,1,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
77. db 0,0,1,0,0,0,0,0,0,1,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
78. db 0,0,1,0,0,1,1,1,1,1,1,0,1,0,0,0,0,0,0,1,0,1,1,1,1,1,1,1,1,1,1,0,1,1,1,1,1,1,1,0,1,1,0,0,1,1,0,0,0,0,0,0,0,0,1,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
79. db 0,0,1,0,0,1,0,0,0,1,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,1,0,1,0,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
80. db 0,0,1,0,0,1,0,0,0,1,0,0,1,0,0,0,0,0,1,0,1,0,0,0,0,1,0,0,0,1,0,0,0,0,0,1,0,0,1,0,0,1,1,0,0,1,0,0,0,0,0,1,1,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
81. db 0,0,1,0,0,1,0,0,0,1,0,0,1,0,0,0,0,0,1,0,0,1,0,0,0,1,0,1,0,1,0,0,0,0,0,1,0,0,0,0,0,1,0,0,0,1,0,0,0,0,1,0,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
82. db 0,1,0,0,0,1,1,1,1,1,0,0,1,0,0,0,0,1,0,0,0,1,0,0,0,1,0,0,1,0,0,0,0,0,1,0,0,0,0,0,0,1,0,0,0,1,0,0,1,1,0,0,1,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
83. db 1,0,0,0,0,1,0,0,0,0,1,0,1,0,0,0,1,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,1,0,0,0,0,1,0,1,0,1,0,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
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154. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,0,1,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
155. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,1,0,0,0,0,0,0,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
156. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,0,0,0,1,1,0,0,0,0,0,0,0,0,0,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
157. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,0,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
158. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
159. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
160. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,0,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
161. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
162. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
163. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
164. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,0,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
165. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,0,0,0,0,1,1,1,1,1,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
166. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
167. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,0,0,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
168. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
169. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
170. db 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
171. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*图画0相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
173. ;bx
174. startP: dw 0
175. dw 319
176. dw 63680
177. dw 0
178. ;滚动条
179. dw 5109
180. dw 13110
181. dw 13111
182. dw 13112
183. dw 13113
184. dw 13114
185. dw 13115
186. dw 13116
187. dw 13117
188. dw 13118
189. ;顶部菜单
190. dw 4800
191. dw 274
192. dw 289
193. dw 304
194. ;顶部菜单栏
195. dw 2518
196. dw 1573
197. dw 1580
198. dw 3813
199. dw 1573
200. ;子菜单
201. dw 8000
202. dw 9600
203. dw 11200
204. dw 12800
205. dw 14400
206. dw 16020
207. dw 4815
208. dw 4830
209. dw 8020
210. dw 8040
211. ;ax
212. endP:   dw 319
213. dw 63999
214. dw 63999
215. dw 63680
216. ;滚动条
217. dw 63989
218. dw 19510
219. dw 19511
220. dw 19512
221. dw 19513
222. dw 19514
223. dw 19515
224. dw 19516
225. dw 19517
226. dw 19518
227. ;顶部菜单栏
228. dw 5119
229. dw 5074
230. dw 5089
231. dw 5104
232. ;顶部菜单栏
233. dw 2525
234. dw 1580
235. dw 3820
236. dw 3820
237. dw 3813
238. ;子菜单
239. dw 8040
240. dw 9640
241. dw 11240
242. dw 12840
243. dw 14440
244. dw 16040
245. dw 8015
246. dw 8030
247. dw 16020
248. dw 16040
249. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*界面相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

252. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*声音相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
253. sound\_f:;初始频率
254. dw 1000
255. sound\_hz:;赫兹中转
256. dw 0
257. different\_f:;不同音阶
258. dw 262
259. dw 294
260. dw 330
261. dw 349
262. dw 392
263. dw 440
264. dw 494
265. QWER\_f:
266. dw 1100
267. dw 500
268. dw 700
269. dw 1500
270. little\_start\_f:
271. dw 4571
272. dw 4571
273. dw 3043
274. dw 3043
275. dw 2711
276. dw 2711
277. dw 3043
278. dw 3418
279. dw 3418
280. dw 3615
281. dw 3615
282. dw 4058
283. dw 4058
284. dw 4571
285. dw 3043
286. dw 3043
287. dw 3418
288. dw 3418
289. dw 3615
290. dw 3615
291. dw 4058
293. two\_tiger\_f:
294. dw 4571
295. dw 4058
296. dw 3615
297. dw 4571
298. dw 4571
299. dw 4058
300. dw 3615
301. dw 4571
302. dw 3615
303. dw 3418
304. dw 3043
305. dw 3615
306. dw 3418
307. dw 3043
308. dw 3043
309. dw 2711
310. dw 3043
311. dw 3418
312. dw 3615
313. dw 4571
314. dw 3043
316. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*声音相关参数设置\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


320. ;主函数入口地址
321. start:
322. ;进入13号320\*200 256色的图形模式
323. mov ah,00h
324. mov al,13h
325. **int** 10h
327. mov si,pallete
328. call editcolor                              ;第一个颜色，背景色，白色
329. call editcolor                              ;第二个颜色
330. call editcolor                              ;第三个颜色
331. call editcolor                              ;第四个颜色
332. call editcolor                              ;第五个颜色
334. mov ax,0xa000                               ;0xb800为显存的段基址
335. mov es,ax
337. ;    mov word [ds:0x20],int\_time                    ;20十六进制:32十进制,相当于中断表的第八个位置
338. ;    mov word [ds:0x22],0                       ;

341. cli
342. mov word [ds:0x24],int\_key                  ;写入键盘中断9号服务程序地址
343. mov word [ds:0x26],0
344. sti

347. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画外框\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
348. call DrawRectangle
349. call DrawGundongtiao
350. call DrawTopmenu
351. call DrawTopmenuItem
352. call DrawSonmenuItem
353. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画外框\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
355. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫原型+版权信息\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
356. call paint\_char
357. ;jmp x
358. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫原型+版权信息\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*




364. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫1技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
365. ;call paint\_charQ
366. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫1技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*




372. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫2技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
373. ;call paint\_charW
374. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫2技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*





381. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫3技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
382. ;call paint\_charE
383. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫3技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*




389. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫4技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
390. ;call paint\_charR
391. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*画提莫4技能\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
393. x:
394. jmp x

397. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制颜色\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
398. ;编制自定义颜色
399. editcolor:
400. mov dx,0x3c8                                ;设置颜色号接口0x3c8
401. mov al,[si]
402. out dx,al
403. mov dx,0x3c9                                ;RGB分量接口0x3c9
404. mov al,[si+1]
405. out dx,al
406. mov al,[si+2]
407. out dx,al
408. mov al,[si+3]
409. out dx,al
410. add si,4
411. ret
412. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制颜色\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

415. ;int\_time:
416. ;   jmp DrawHero
418. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制画图\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
419. ;绘制一条竖线
420. paint\_vertical\_line:
421. push cx                                     ;压栈
422. push ax                                     ;压栈
423. push bx                                     ;压栈
424. push si                                     ;压栈
426. mov cx,[ds:linex]                           ;cx,起始横坐标
427. mov ax,[ds:liney]                           ;ax,起始纵坐标
428. mov bx,[ds:linelength]                      ;bx,直线长度
430. ;用乘法计算横纵坐标
431. mov si,320
432. mul si
433. add ax,cx
435. mov dx,bx                                   ;直线总长度
436. mov si,ax                                   ;绘图起始位置
437. mov bx,0                                    ;变化偏移量
438. mov ax,0                                    ;变化次数
440. loop\_paint\_vertical\_line:
441. cmp ax,dx
442. jae exitpaintvl
444. push cx
445. mov cl,byte[ds:pen]
446. mov byte [es:bx+si], cl
447. pop cx

450. add bx,320
451. inc ax
452. jmp loop\_paint\_vertical\_line
454. exitpaintvl:
455. pop si                                  ;出栈
456. pop bx                                  ;出栈
457. pop ax                                  ;出栈
458. pop cx                                  ;出栈
459. ret
461. ;字符打印
462. paint\_char:                                     ;循环初始化
463. push ax                                     ;压栈
464. push dx                                     ;压栈
465. push bx                                     ;压栈
466. push cx                                     ;压栈
468. ;mov word[ds:charSum],0                     ;防止另外程序写入，重新置偏移总量为0
469. ;mov word[ds:charVertical],0                ;防止另外程序写入，重新置竖直偏移量为0
470. ;mov word[ds:charHorizontal],0              ;防止另外程序写入，重新置水平偏移量为0
472. ;起始x
473. mov ax,[ds:charStartX]
474. mov word[ds:charX],ax
475. ;起始y
476. mov ax,[ds:charStartY]
477. mov word[ds:charY],ax
479. paint\_char\_column\_loop:                     ;列循环
480. mov dx,[ds:charHeight]                  ;字高度
481. cmp word[ds:charVertical],dx            ;与字竖直偏移量比较
482. jae exit\_char\_paint                     ;若竖直偏移量大于等于字高度，退出
484. ;行循环
485. mov word[ds:charHorizontal],0           ;行循环初始化
487. paint\_char\_row\_loop:                    ;行循环
488. ;比较判断是否跳出行循环，进入列循环
489. mov bx,word[ds:charHorizontal]      ;字水平偏移量
490. cmp bx,[ds:charLength]              ;与字长度比较
491. jae next\_column\_loop                ;若字水平偏移量大于等于字长度，退出
493. mov bx,[ds:charSum]
495. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*循环判断提莫处于什么状态\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
496. cmp word[ds:WhichJn],0
497. je Jn0
499. ;cmp word[ds:WhichJn],1
500. ;je Jn1
502. ;cmp word[ds:WhichJn],2
503. ;je Jn2
505. ;cmp word[ds:WhichJn],3
506. ;je Jn3
508. ;cmp word[ds:WhichJn],4
509. ;je Jn4
511. Jn0:
512. cmp byte[character+bx],1
513. jne next\_row\_loop
515. ;Jn1:
516. ;   cmp byte[character1+bx],1
517. ;   jne next\_row\_loop
519. ;Jn2:
520. ;   cmp byte[character2+bx],1
521. ;   jne next\_row\_loop
523. ;Jn3:
524. ;   cmp byte[character3+bx],1
525. ;   jne next\_row\_loop
527. ;Jn4:
528. ;   cmp byte[character4+bx],1
529. ;   jne next\_row\_loop
531. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*循环判断提莫处于什么状态\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
533. mov cx,[ds:charX]
534. mov word[ds:linex],cx
536. mov cx,[ds:charY]
537. mov word[ds:liney],cx
539. mov word[ds:linelength],1
541. call paint\_vertical\_line
542. ;行循环处理下一次
543. next\_row\_loop:
544. inc word[ds:charX]
545. inc word[ds:charHorizontal]
546. inc word[ds:charSum]
548. jmp paint\_char\_row\_loop
550. next\_column\_loop:
551. ;列层循环的下一次
552. inc word[ds:charVertical]               ;竖直偏移量++
553. mov word[ds:charHorizontal],0           ;水平偏移量置0
554. ;重置字符(x,y)
555. mov ax,[ds:charStartX]
556. mov word[ds:charX],ax
557. mov ax,[ds:charVertical]
558. add ax,[ds:charStartY]
559. mov word[ds:charY],ax
561. jmp paint\_char\_column\_loop
563. exit\_char\_paint:
564. pop cx                                  ;出栈
565. pop bx                                  ;出栈
566. pop dx                                  ;出栈
567. pop ax                                  ;出栈
568. ret
569. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制画图\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


573. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制界面\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
574. ;横线
575. DrawLineOfH:
576. cmp bx,ax
577. ja DrawLineOfHExit
578. mov byte [es:bx], 1
579. inc bx
580. jmp DrawLineOfH
581. DrawLineOfHExit:
582. ret
583. ;竖线
584. DrawLineOfV:
585. cmp bx,ax
586. ja DrawLineOfVExit
587. mov byte [es:bx], 1
588. add bx,320
589. jmp DrawLineOfV
590. DrawLineOfVExit:
591. ret
592. ;外方框
593. DrawRectangle:
594. ;整体框线1-----
595. mov bx,[ds:startP]
596. mov ax,[ds:endP]
597. call DrawLineOfH
598. ;整体框线2|
599. mov bx,[ds:startP+2]
600. mov ax,[ds:endP+2]
601. call DrawLineOfV
602. ;整体框线3-----
603. mov bx,[ds:startP+4]
604. mov ax,[ds:endP+4]
605. call DrawLineOfH
606. ;整体框线4|
607. mov bx,[ds:startP+6]
608. mov ax,[ds:endP+6]
609. call DrawLineOfV
611. ret
613. ;滚动条
614. DrawGundongtiao:
615. ;滚动条丨
616. mov bx,[ds:startP+8]
617. mov ax,[ds:endP+8]
618. call DrawLineOfV
619. ;里面线条
620. mov bx,[ds:startP+10]
621. mov ax,[ds:endP+10]
622. call DrawLineOfV
624. mov bx,[ds:startP+12]
625. mov ax,[ds:endP+12]
626. call DrawLineOfV
628. mov bx,[ds:startP+14]
629. mov ax,[ds:endP+14]
630. call DrawLineOfV
632. mov bx,[ds:startP+16]
633. mov ax,[ds:endP+16]
634. call DrawLineOfV
636. mov bx,[ds:startP+18]
637. mov ax,[ds:endP+18]
638. call DrawLineOfV
640. mov bx,[ds:startP+20]
641. mov ax,[ds:endP+20]
642. call DrawLineOfV
644. mov bx,[ds:startP+22]
645. mov ax,[ds:endP+22]
646. call DrawLineOfV
648. mov bx,[ds:startP+24]
649. mov ax,[ds:endP+24]
650. call DrawLineOfV
652. mov bx,[ds:startP+26]
653. mov ax,[ds:endP+26]
654. call DrawLineOfV
656. ret
658. ;顶部菜单栏
659. DrawTopmenu:
660. mov bx,[ds:startP+28]
661. mov ax,[ds:endP+28]
662. call DrawLineOfH
664. mov bx,[ds:startP+30]
665. mov ax,[ds:endP+30]
666. call DrawLineOfV
668. mov bx,[ds:startP+32]
669. mov ax,[ds:endP+32]
670. call DrawLineOfV
672. mov bx,[ds:startP+34]
673. mov ax,[ds:endP+34]
674. call DrawLineOfV
675. ret
677. ;顶部菜单项
678. DrawTopmenuItem:
679. mov bx,[ds:startP+36]
680. mov ax,[ds:endP+36]
681. call DrawLineOfH
683. mov bx,[ds:startP+38]
684. mov ax,[ds:endP+38]
685. call DrawLineOfH
687. mov bx,[ds:startP+40]
688. mov ax,[ds:endP+40]
689. call DrawLineOfV
691. mov bx,[ds:startP+42]
692. mov ax,[ds:endP+42]
693. call DrawLineOfH
695. mov bx,[ds:startP+44]
696. mov ax,[ds:endP+44]
697. call DrawLineOfV
698. ret
700. ;顶部菜单项
701. DrawSonmenuItem:
702. mov bx,[ds:startP+46]
703. mov ax,[ds:endP+46]
704. call DrawLineOfH
706. mov bx,[ds:startP+48]
707. mov ax,[ds:endP+48]
708. call DrawLineOfH
710. mov bx,[ds:startP+50]
711. mov ax,[ds:endP+50]
712. call DrawLineOfH
714. mov bx,[ds:startP+52]
715. mov ax,[ds:endP+52]
716. call DrawLineOfH
718. mov bx,[ds:startP+54]
719. mov ax,[ds:endP+54]
720. call DrawLineOfH
722. mov bx,[ds:startP+56]
723. mov ax,[ds:endP+56]
724. call DrawLineOfH
726. mov bx,[ds:startP+58]
727. mov ax,[ds:endP+58]
728. call DrawLineOfV
730. mov bx,[ds:startP+60]
731. mov ax,[ds:endP+60]
732. call DrawLineOfV
734. mov bx,[ds:startP+62]
735. mov ax,[ds:endP+62]
736. call DrawLineOfV
738. mov bx,[ds:startP+64]
739. mov ax,[ds:endP+64]
740. call DrawLineOfV
741. ret
743. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*绘制界面\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*



748. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*键盘中断\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
749. int\_key:;键盘
750. mov dx,0x60                         ;读取键盘缓冲区数据
751. in al,dx
753. ;叫1   duo
754. cmp al,0x02
755. je call\_1
757. ;叫2   rai
758. cmp al,0x03
759. je call\_2
761. ;叫3   mi
762. cmp al,0x04
763. je call\_3
765. ;叫4   fa
766. cmp al,0x05
767. je call\_4
769. ;叫5   sao
770. cmp al,0x06
771. je call\_5
773. ;叫6   la
774. cmp al,0x07
775. je call\_6
777. ;叫7   xi
778. cmp al,0x08
779. je call\_7
781. cmp al,0x1e
782. je call\_a
784. ;clear c
785. cmp al,0x2E
786. je call\_c


790. ;Q
791. cmp al,0x10
792. je call\_q
794. ;cmp al,0x90
795. ;je call\_q\_tq
797. ;W
798. cmp al,0x11
799. je call\_w
801. ;cmp al,0x91
802. ;je call\_w\_tq
804. ;E
805. cmp al,0x12
806. je call\_e
808. ;cmp al,0x92
809. ;je call\_e\_tq
811. ;R
812. cmp al,0x13
813. je call\_r
815. ;cmp al,0x93
816. ;je call\_r\_tq
818. ;P
819. cmp al,0x19
820. je call\_p

823. cmp al,0x1f
824. je call\_s


828. jmp read\_sound
830. call\_1:
831. mov bx,[ds:different\_f]         ;duo
832. mov [ds:sound\_f],bx
833. call make\_sound
834. jmp read\_sound
835. call\_2:
836. mov bx,[ds:different\_f+2]       ;rai
837. mov [ds:sound\_f],bx
838. call make\_sound
839. jmp read\_sound
840. call\_3:
841. mov bx,[ds:different\_f+4]       ;mi
842. mov [ds:sound\_f],bx
843. call make\_sound
844. jmp read\_sound
845. call\_4:
846. mov bx,[ds:different\_f+6]       ;fa
847. mov [ds:sound\_f],bx
848. call make\_sound
849. jmp read\_sound
850. call\_5:
851. mov bx,[ds:different\_f+8]       ;sao
852. mov [ds:sound\_f],bx
853. call make\_sound
854. jmp read\_sound
855. call\_6:
856. mov bx,[ds:different\_f+10]      ;la
857. mov [ds:sound\_f],bx
858. call make\_sound
859. jmp read\_sound
860. call\_7:
861. mov bx,[ds:different\_f+12]      ;xi
862. mov [ds:sound\_f],bx
863. call make\_sound
864. jmp read\_sound
865. call\_c:
866. call paint\_clear
867. jmp read\_sound
868. call\_q:
869. mov bx,[ds:QWER\_f]
870. mov [ds:sound\_f],bx
871. call make\_sound
873. call Reset
874. call paint\_clear
875. call paint\_char

878. jmp read\_sound
880. ;call\_q\_tq:
881. ;   mov word[ds:WhichJn],1
882. ;   jmp paint\_char
884. call\_w:
885. mov bx,[ds:QWER\_f+2]
886. ;mov word[ds:WhichJn],2
887. mov [ds:sound\_f],bx
889. push ax
890. mov ax,word[ds:Y\_yidong]
891. dec ax
892. mov word[ds:charVertical],ax
893. pop ax
895. call make\_sound
896. jmp read\_sound
898. ;call\_w\_tq:
899. ;   mov word[ds:WhichJn],2
900. ;   jmp paint\_char
902. call\_e:
903. mov bx,[ds:QWER\_f+4]
904. ;mov word[ds:WhichJn],3
905. mov [ds:sound\_f],bx
906. call make\_sound
907. jmp read\_sound
909. ;call\_e\_tq:
910. ;   mov word[ds:WhichJn],3
911. ;   jmp paint\_char
913. call\_r:
914. mov bx,[ds:QWER\_f+6]
915. ;mov word[ds:WhichJn],4
916. mov [ds:sound\_f],bx
917. call make\_sound
918. jmp read\_sound
920. ;call\_r\_tq:
921. ;   mov word[ds:WhichJn],4
922. ;   jmp paint\_char
924. call\_p:
925. call Reset
926. call paint\_char
927. jmp read\_sound

930. call\_a:
931. mov bx,[ds:two\_tiger\_f]
932. mov [ds:sound\_f],bx
933. call make\_sound
935. mov bx,[ds:two\_tiger\_f+2]
936. mov [ds:sound\_f],bx
937. call make\_sound
939. mov bx,[ds:two\_tiger\_f+4]
940. mov [ds:sound\_f],bx
941. call make\_sound
943. mov bx,[ds:two\_tiger\_f+6]
944. mov [ds:sound\_f],bx
945. call make\_sound
947. mov bx,[ds:two\_tiger\_f+8]
948. mov [ds:sound\_f],bx
949. call make\_sound
951. mov bx,[ds:two\_tiger\_f+10]
952. mov [ds:sound\_f],bx
953. call make\_sound
955. mov bx,[ds:two\_tiger\_f+12]
956. mov [ds:sound\_f],bx
957. call make\_sound
959. mov bx,[ds:two\_tiger\_f+14]
960. mov [ds:sound\_f],bx
961. call make\_sound
963. mov bx,[ds:two\_tiger\_f+16]
964. mov [ds:sound\_f],bx
965. call make\_sound
967. mov bx,[ds:two\_tiger\_f+18]
968. mov [ds:sound\_f],bx
969. call make\_sound
971. mov bx,[ds:two\_tiger\_f+20]
972. mov [ds:sound\_f],bx
973. call make\_sound
975. mov bx,[ds:two\_tiger\_f+22]
976. mov [ds:sound\_f],bx
977. call make\_sound
979. mov bx,[ds:two\_tiger\_f+24]
980. mov [ds:sound\_f],bx
981. call make\_sound
983. mov bx,[ds:two\_tiger\_f+26]
984. mov [ds:sound\_f],bx
985. call make\_sound
987. mov bx,[ds:two\_tiger\_f+28]
988. mov [ds:sound\_f],bx
989. call make\_sound
991. mov bx,[ds:two\_tiger\_f+30]
992. mov [ds:sound\_f],bx
993. call make\_sound
995. mov bx,[ds:two\_tiger\_f+32]
996. mov [ds:sound\_f],bx
997. call make\_sound
999. mov bx,[ds:two\_tiger\_f+34]
1000. mov [ds:sound\_f],bx
1001. call make\_sound
1003. mov bx,[ds:two\_tiger\_f+36]
1004. mov [ds:sound\_f],bx
1005. call make\_sound
1007. mov bx,[ds:two\_tiger\_f+38]
1008. mov [ds:sound\_f],bx
1009. call make\_sound
1011. mov bx,[ds:two\_tiger\_f+40]
1012. mov [ds:sound\_f],bx
1013. call make\_sound
1015. jmp read\_sound



1020. call\_s:
1021. mov bx,[ds:little\_start\_f]
1022. mov [ds:sound\_f],bx
1023. call make\_sound
1025. mov bx,[ds:little\_start\_f+2]
1026. mov [ds:sound\_f],bx
1027. call make\_sound
1029. mov bx,[ds:little\_start\_f+4]
1030. mov [ds:sound\_f],bx
1031. call make\_sound
1033. mov bx,[ds:little\_start\_f+6]
1034. mov [ds:sound\_f],bx
1035. call make\_sound
1037. mov bx,[ds:little\_start\_f+8]
1038. mov [ds:sound\_f],bx
1039. call make\_sound
1041. mov bx,[ds:little\_start\_f+10]
1042. mov [ds:sound\_f],bx
1043. call make\_sound
1045. mov bx,[ds:little\_start\_f+12]
1046. mov [ds:sound\_f],bx
1047. call make\_sound
1049. mov bx,[ds:little\_start\_f+14]
1050. mov [ds:sound\_f],bx
1051. call make\_sound
1053. mov bx,[ds:little\_start\_f+16]
1054. mov [ds:sound\_f],bx
1055. call make\_sound
1057. mov bx,[ds:little\_start\_f+18]
1058. mov [ds:sound\_f],bx
1059. call make\_sound
1061. mov bx,[ds:little\_start\_f+20]
1062. mov [ds:sound\_f],bx
1063. call make\_sound
1065. mov bx,[ds:little\_start\_f+22]
1066. mov [ds:sound\_f],bx
1067. call make\_sound
1069. mov bx,[ds:little\_start\_f+24]
1070. mov [ds:sound\_f],bx
1071. call make\_sound
1073. mov bx,[ds:little\_start\_f+26]
1074. mov [ds:sound\_f],bx
1075. call make\_sound
1077. mov bx,[ds:little\_start\_f+28]
1078. mov [ds:sound\_f],bx
1079. call make\_sound
1081. mov bx,[ds:little\_start\_f+30]
1082. mov [ds:sound\_f],bx
1083. call make\_sound
1085. mov bx,[ds:little\_start\_f+32]
1086. mov [ds:sound\_f],bx
1087. call make\_sound
1089. mov bx,[ds:little\_start\_f+34]
1090. mov [ds:sound\_f],bx
1091. call make\_sound
1093. mov bx,[ds:little\_start\_f+36]
1094. mov [ds:sound\_f],bx
1095. call make\_sound
1097. mov bx,[ds:little\_start\_f+38]
1098. mov [ds:sound\_f],bx
1099. call make\_sound
1101. mov bx,[ds:little\_start\_f+40]
1102. mov [ds:sound\_f],bx
1103. call make\_sound
1105. jmp read\_sound

1108. read\_sound:
1109. mov dx,0x20
1110. mov al,0x61
1111. out dx,al
1112. iret

1115. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*发声主程序\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1116. make\_sound:;发声
1117. call give\_f
1118. call delay
1119. call open\_sound
1120. call delay
1121. call close\_sound
1122. ret
1123. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*发声主程序\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


1127. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*声音模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1128. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*设置频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1129. set\_f:;设置频率
1130. push dx
1131. push ax
1133. mov dx,12H
1134. mov ax,34DEH
1135. mov di,[ds:sound\_f]
1136. div di
1137. mov [ds:sound\_hz],ax
1139. pop ax
1140. pop dx
1141. ret
1142. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*设置频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


1146. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*给定时器频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1147. give\_f:;给定时器频率
1148. mov  al,10110110B
1149. out  43H,al
1151. call set\_f
1153. mov  ax,[ds:sound\_hz]
1155. out  42H,al
1156. mov  al,ah
1157. out  42H,al
1158. ret
1159. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*给定时器频率\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


1163. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口打开\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1164. open\_sound:;扬声器端口打开
1165. push ax
1167. in al,61H
1168. or al,00000011B;或操作与11111100B
1169. out 61H,al
1171. pop ax
1172. ret
1173. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口打开\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*


1177. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口关闭\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1178. close\_sound:;扬声器端口关闭
1179. push ax
1181. in al,61H
1182. and al,11111100B;与操作与00000011B
1183. out 61H,al
1185. pop ax
1186. ret
1187. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*扬声器端口关闭\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1188. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*声音模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1191. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*时延模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1192. delay:;时延
1193. push cx
1194. push dx
1195. push ax
1197. mov  cx,0FH
1198. ;mov  dx,4240H              ;延迟
1199. mov  dx,1000H               ;延迟
1200. mov  ah,86H
1201. **int**  15H
1203. pop ax
1204. pop dx
1205. pop cx
1206. ret
1207. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*时延模块\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1209. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*重置参数\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1210. Reset:
1211. mov word[ds:pen],3
1212. mov word[ds:linex],0
1213. mov word[ds:liney],0
1214. ;初始化字符起始位置
1215. mov word[ds:charStartX],50
1216. mov word[ds:charStartY],0
1218. mov word[ds:charSum],3030                       ;防止另外程序写入，重新置偏移总量为0
1219. mov word[ds:linelength],1
1220. mov word[ds:charX],0
1221. mov word[ds:charY],0
1222. mov word[ds:charVertical],0
1223. mov word[ds:charHorizontal],0
1224. mov word[ds:WhichJn],0
1226. ;mov word[ds:charLength],202
1227. ;mov word[ds:charHeight],102
1229. ret
1230. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*重置参数\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1232. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*重置参数Q\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1233. ResetQ:
1234. mov word[ds:linex],0
1235. mov word[ds:liney],0
1236. ;初始化字符起始位置
1237. mov word[ds:charStartX],0
1238. mov word[ds:charStartY],102
1239. mov word[ds:charHeight],204
1241. mov word[ds:charSum],0                      ;防止另外程序写入，重新置偏移总量为0
1242. mov word[ds:linelength],1
1243. mov word[ds:charX],0
1244. mov word[ds:charY],0
1245. mov word[ds:charVertical],0
1246. mov word[ds:charHorizontal],0
1247. mov word[ds:WhichJn],0
1249. ret
1250. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*重置参数Q\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1253. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*还原\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
1254. paint\_clear:
1255. push ax                                     ;压栈
1256. push bx                                     ;压栈
1257. push si                                     ;压栈
1259. mov bx,0
1260. mov ax,64000
1261. call DrawLineOfH\_White
1263. ret
1265. DrawLineOfH\_White:
1266. cmp bx,ax
1267. je DrawLineOfHExit\_White
1268. mov byte [es:bx], 0
1269. inc bx
1270. jmp DrawLineOfH\_White
1272. DrawLineOfHExit\_White:
1273. pop si                                      ;出栈
1274. pop bx                                      ;出栈
1275. pop ax                                      ;出栈
1276. jmp paint\_char
1277. ret
1278. ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*还原\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*