

```

1. #include < stdio.h >
2. #include < conio.h >
3. #include < dos.h >
4. #include < stdlib.h >
5. #include < mem.h >
6. #include < string.h >
7. char far * vid = 0xB8000000;
8. char a[50000], * str;
9. int track[2000], fp = 1, lp = 21, cl = 1, p = 0, t = 0, eat;
10. /*This function writes a character into video memory.*/
11. writechar(char ch, int attr, int row, int col)
12. {
13.     char far * v;
14.     v = vid + row * 160 + col * 2;
15.     * v = ch;
16.     v++;
17.     * v = attr;
18. } /*End wrotechar*/
19. //-----/*This function draws a box of given
    attribute & size*/
20. drawbox(int r1, int c1, int r2, int c2, int attr)
21. {
22.     int i, j;
23.     for (i = r1; i <= r2; i++)
24.     {
25.         for (j = c1; j <= c2; j++)
26.             writechar(' ', attr, i, j);
27.     }
28.
29. } /*End drawbox*/
30. //-----/*This function draws the screen at
    starting*/
31. drawscreen()
32. {
33.     drawbox(0, 0, 0, 79, 120);
34.     drawbox(24, 0, 24, 79, 120);
35.     drawbox(1, 0, 23, 79, 16);
36.     doubleborder(1, 0, 23, 79, 31);
37. } /*End drawscreen*/
38. //-----/*This function refreshes the screen*/
39.
40. refreshscreen()
41. {
42.     int r, c;
43.     drawbox(2, 1, 22, 78, 16);
44. } /*End Refreshscreen*/
45. //-----/*This function draws the double border*/
46.

```

```

47. doubleborder(int r1, int c1, int r2, int c2, int attr)
48. {
49.     int r, c;
50.     writechar(201, attr, r1, c1);
51.     writechar(187, attr, r1, c2);
52.     writechar(200, attr, r2, c1);
53.     writechar(188, attr, r2, c2);
54.     for (c = (c1 + 1); c <= (c2 - 1); c++)
55.         writechar(205, attr, r1, c);
56.     for (c = (c1 + 1); c <= (c2 - 1); c++)
57.         writechar(205, attr, r2, c);
58.     for (r = (r1 + 1); r <= (r2 - 1); r++)
59.         writechar(186, attr, r, c1);
60.     for (r = (r1 + 1); r <= (r2 - 1); r++)
61.         writechar(186, attr, r, c2);
62. } /*End doubleborder*/
63. //-----/*This function draws border of given
    attribute & size*/
64.
65. drawborder(int r1, int c1, int r2, int c2, int attr)
66. {
67.     int r, c;
68.     writechar(218, attr, r1, c1);
69.     writechar(191, attr, r1, c2);
70.     writechar(192, attr, r2, c1);
71.     writechar(217, attr, r2, c2);
72.     r = r1;
73.     for (c = c1 + 1; c <= c2 - 1; c++)
74.         writechar(196, attr, r, c);
75.     r = r2;
76.     for (c = c1 + 1; c <= c2 - 1; c++)
77.         writechar(196, attr, r, c);
78.     c = c1;
79.     for (r = r1 + 1; r <= r2 - 1; r++)
80.         writechar(179, attr, r, c);
81.     c = c2;
82.     for (r = r1 + 1; r <= r2 - 1; r++)
83.         writechar(179, attr, r, c);
84. } /*End drawborder*/
85. //-----/*This function draws a line of given
    attribute*/
86.
87. drawline(int r, int c1, int c2, int attr)
88. {
89.     int i;
90.     writechar(195, attr, r, c1);
91.     writechar(180, attr, r, c2);
92.     for (i = c1 + 1; i <= c2 - 1; i++)
93.         writechar(196, attr, r, i);

```

```

94. } /*End drawline*/
95. //-----/*This function writes a string in given
    row & column with given attribute*/
96. writestring(char * p, int attr, int r, int c)
97. {
98.     int l, i;
99.     l = strlen(p);
100.    for (i = 0; i < l; i++)
101.    {
102.        writechar( * (p + i), attr, r, c);
103.        c++;
104.    }
105. } /*End writestring*/
106. //-----/*This function saves the content of
    videomemory from r1,c1 to r2,c2 into main memory using char buffer*/char *savemem(int r1,int
    c1,int r2,int c2,char *buff)
107. {
108.     char far * v;
109.     int i, j, k = 0, size;
110.     size = (r2 - r1 + 1) * (c2 - c1 + 1) * 2;
111.     buff = (char *) malloc(size);
112.     for (i = r1; i <= r2; i++)
113.     {
114.         for (j = c1; j <= c2; j++)
115.         {
116.             v = (vid + i * 160 + j * 2);
117.             * (buff + k) = * v;
118.             k++;
119.             v++;
120.             * (buff + k) = * v;
121.             k++;
122.         }
123.     }
124.     return (buff);
125. } /*End savemem*/
126. //-----/*This function restores the content
    of main memory into videomemoryfrom r1,c1 to r2,c2 using char buffer*/
127.
128. restoremem(int r1, int c1, int r2, int c2, char * buff)
129. {
130.     char far * v;
131.     int i, j, k = 0;
132.     for (i = r1; i <= r2; i++)
133.     {
134.         for (j = c1; j <= c2; j++)
135.         {
136.             v = (vid + i * 160 + j * 2);
137.             * v = * (buff + k);
138.             k++;

```

```
139.         v++;
140.         * v = * (buff + k);
141.         k++;
142.     }
143. }
144.     free(buff);
145. } /*End restorememory*/
```

//-----Entire code is with attachment