

```

1  //          -- THE MEMORY GAME --
2
3  /* This game puts your memory to the test with the classic 'Find the pair'
4     game.
5     -The objective of the game is to memorize the given grid in specified
6        time and later on enter the location of a pair of symbols.
7
8     # The rules and regulations for the game are as follows:
9        -locations of elements are to be written in row no.<space>column no.
10    format.
11        -correct response earns score of +1.
12        -wrong response gives upto 2 attempts and then terminates the game.
13
14    */
15
16    #include <iostream.h>
17    #include <conio.h>
18    #include <stdlib.h>           //for random function
19    #include <dos.h>             //for delay function
20    #include <process.h>
21
22    void head(void);
23    void game_code(void);
24    void load(void);
25    int check(char a[4][4],char);
26
27
28    void main()
29    { clrscr();
30      int choice;
31      do
32      {
33        head();
34        cout<<"\n\t"<<"MAIN MENU";
35        cout<<"\n\t"<<"1. Play Game";
36        cout<<"\n\t"<<"2. Credits";
37        cout<<"\n\t"<<"3. Exit"<<"\n\n\t->";
38        cin>>choice;
39
40        switch(choice)
41        { case 1: clrscr();
42            game_code();
43            cout<<"\n"<<"Press enter to return to main menu.";
44            getch();
45            clrscr();
46            break;
47
48            case 2: clrscr();
49            head();
50            cout<<"\tThis game titled 'The Memory Game' has been jointly developed by,\n ";
51            cout<<"\n\t\t"<<"- Anish Patil";
52            cout<<"\n\t\t"<<"- Shashwat Debnath";
53            cout<<"\n\t\t"<<"- S.Roshan Sameer";
54            cout<<"\n\t\t"<<"- Paras Khekre";
55
56            cout<<"\n\n\t"<<"Press enter to return to main menu";
57            getch();
58            clrscr();
59            break;
60
61            case 3: exit(0);
62
63            default:clrscr();
64            cout<<"Enter valid Input !";
65            continue;
66        }

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67
68     }while(1);
69
70 }
71
72
73
74 void head(void)
75 { cout<<"\t\t\t"<<"  -- THE MEMORY GAME -- "<<"\n\n";
76 }
77
78
79
80 void game_code(void)
81 {
82     clrscr();
83     randomize();
84
85     int i,j,m,n,p,q,score=0,attempt=0;
86     char arr[4][4],choice,rndnum;
87     int b[4][4];
88     char symbol[]={1,2,3,4,5,6,14,15};
89
90
91     for(i=0;i<4;i++)
92         for(j=0;j<4;j++)
93             { arr[i][j]=0;
94               b[i][j]=0;
95             }
96
97     load();                                     //function for introduction
98
99
100    for(i=0;i<4;i++)
101    {
102        j=0;
103        while(j<4)
104            { rndnum=symbol[random(8)];          //gets random symbol from symbol array
105              if(check(arr,rndnum))              //function call
106                  arr[i][j]=rndnum;
107              else
108                  continue;
109              j++;
110            }
111    }
112
113 }
114
115
116 head();
117 cout<<"\n\n\t"<<" _____"<<"\n";
118 for(i=0;i<4;i++)
119 { cout<<"\t| ";
120   for(j=0;j<4;j++)
121       cout<<arr[i][j]<<" | ";
122   cout<<"\n\t"<<"|_|_|_|_|"<<"\n";
123 }
124
125
126 cout<<"\n You have 15 seconds to memorize the table !";
127 delay(15000);
128 clrscr();
129
130
131 while(attempt<3)
132 {

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133 head();
134 cout<<"Enter coordinates as - rowno.<space>column no. ;"<<"\n";
135
136 cout<<"\n\n\t"<<" _____\n";
137 for(i=0;i<4;i++)
138 { cout<<"\t| ";
139     for(j=0;j<4;j++)
140     { if(b[i][j]==1)
141         cout<<arr[i][j]<<" | ";
142
143         else cout<<" | ";
144
145     }
146     cout<<"\n"<<"\t|____|____|____|____|\n";
147 }
148
149 int flag=0;
150 for(i=0;i<4;i++)
151     for(j=0;j<4;j++)
152     { if(b[i][j]==0)
153         flag=1;
154     }
155 if(flag==1);
156 else
157     break;
158
159 cout<<"\n"<<"Enter location of element:";
160 cin>>m>>n;
161 cout<<"Enter location of its pair:";
162 cin>>p>>q;
163
164 clrscr();
165
166 if((m==p)&&(n==q))
167 { head();
168     cout<<"\n\n"<<"Enter two DIFFERENT locations!\n ";
169     delay(2000);
170     clrscr();
171     continue;
172 }
173 if((m>4)|| (n>4)|| (p>4)|| (q>4))
174 { head();
175     cout<<"\n\n"<<"Enter coordinates within grid limit!\n";
176     delay(2000);
177     clrscr();
178     continue;
179 }
180
181 if((b[m-1][n-1]==1)|| (b[p-1][q-1]==1))
182 { head();
183     cout<<"\n\n"<<"You have already entered this location value.";
184     delay(2000);
185     clrscr();
186     continue;
187 }
188
189
190 head();
191 cout<<"\n";
192 cout<<"\n\n\t"<<" _____\n";
193 for(i=0;i<4;i++)
194 { cout<<"\t| ";
195     for(j=0;j<4;j++)
196     { if((((m-1)==i)&&((n-1)==j))||(((p-1)==i)&&((q-1)==j)))
197         { if((arr[m-1][n-1]==arr[p-1][q-1])&&!((m==p)&&(n==q)))
198             b[i][j]=1;

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199         cout<<arr[i][j]<<" | ";
200     }
201     else
202     { if(b[i][j]==1)
203         cout<<arr[i][j]<<" | ";
204         else cout<<" | ";
205     }
206 }
207 cout<<"\n"<<"\t|_|_|_|_|_\n";
208 }
209
210
211
212 if(arr[m-1][n-1]==arr[p-1][q-1])
213 { cout<<"\n"<<"GOOD ! Now next pair\n";
214     score++;
215 }
216 else
217 { if(attempt<2)
218     { cout<<"\nWrong Answer !! Try once more.";
219         attempt++;
220     }
221     else
222     { cout<<"\nThat was your last attempt. Terminating!";
223         attempt++;
224         delay(2000);
225     }
226 }
227 delay(2000);
228 clrscr();
229
230 }
231
232 head();
233 cout<<"\n\n"<<"Your score was : "<<score;
234 if(score==8)
235     cout<<"\nYou are the master of memory !!!";
236 cout<<"\n\n\t"<<" _____\n";
237
238 for(i=0;i<4;i++)
239 { cout<<"\t| ";
240     for(j=0;j<4;j++)
241     { if(b[i][j]==1)
242         cout<<arr[i][j]<<" | ";
243
244         else cout<<" | ";
245     }
246     cout<<"\n"<<"\t|_|_|_|_|_\n";
247 }
248 }
249
250 }
251 void load(void)
252 { head();
253     cout<<"\n\n"<<"Loading ";
254     for(int r=0;r<3;r++)
255     { delay(350);
256         cout<<" . ";
257         delay(350);
258     }
259     clrscr();
260
261     head();
262     cout<<"\n\n"<<" # The rules and regulations for the game are as follows:\n";
263     cout<<"\n -locations of elements to be written as row no.<space>column no.";
264     cout<<"\n -correct response earns score of +1.";

```

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265     cout<<"\n  -wrong response gives upto 2 attempts and then terminates the game.";
266     char ch;
267     cout<<"\n\n\nPress enter to continue.";
268     getch();
269     clrscr();
270
271     head();
272     cout<<"\n"<<"The following row and column numbers indicate element's position : ";
273     cout<<"\n\n"<<"\t (column no.) -> \n"<<"\t    1    2    3    4"<<"\n";
274     cout<<"(row no.)"<<"    _____"<<"\n";
275     for(int i=0;i<4;i++)
276     { cout<<"\t"<<i+1<<" | ";
277       for(int j=0;j<4;j++)
278         cout<<"    | ";
279       cout<<"\n\t"<<"    |__|__|__|__| "<<"\n";
280     }
281     cout<<"\n\n"<<"Press Enter to continue:";
282     getch();
283     clrscr();
284     return;
285 }
286
287
288 int check(char a[4][4],char x)
289 { int count=0;
290   for(int i=0;i<4;i++)
291     for(int j=0;j<4;j++)
292       { if(a[i][j]==x)
293         count++;
294       }
295
296   if((count==0)|| (count==1))
297     return 1;
298   else
299     return 0;
300 }

```