```
//             -- THE MEMORY GAME --

/*  This game puts your memory to the test with the classic 'Find the pair'
    game.
    -The objective of the game is to memorize the given grid in specified
     time and later on enter the location of a pair of symbols.

    # The rules and regulations for the game are as follows:
      -locations of elements are to be written in row no.<space>column no.
    format.
      -correct response earns score of +1.
      -wrong response gives upto 2 attempts and then terminates the game.

*/

#include <iostream.h>
#include <conio.h>
#include <stdlib.h>              //for random function
#include <dos.h>                 //for delay function
#include <process.h>

void head(void);
void game_code(void);
void load(void);
int check(char a[4][4],char);


void main()
{ clrscr();
  int choice;
  do
  {
   head();
   cout<<"\n\t"<<"MAIN MENU";
   cout<<"\n\t"<<"1. Play Game";
   cout<<"\n\t"<<"2. Credits";
   cout<<"\n\t"<<"3. Exit"<<"\n\n\t->";
   cin>>choice;

   switch(choice)
    {  case 1: clrscr();
           game_code();
           cout<<"\n"<<"Press enter to return to main menu.";
           getch();
           clrscr();
           break;

       case 2: clrscr();
           head();
           cout<<"\tThis game titled 'The Memory Game' has been jointly developed by,\n ";
           cout<<"\n\t\t"<<"- Anish Patil";
           cout<<"\n\t\t"<<"- Shashwat Debnath";
           cout<<"\n\t\t"<<"- S.Roshan Sameer";
           cout<<"\n\t\t"<<"- Paras Khekre";

           cout<<"\n\n\t"<<"Press enter to return to main menu";
           getch();
           clrscr();
           break;

       case 3: exit(0);

       default:clrscr();
           cout<<"Enter valid Input !";
           continue;
    }
```

```
 }while(1);

}



 void head(void)
 { cout<<"\t\t\t"<<"  -- THE MEMORY GAME -- "<<"\n\n";
 }



 void game_code(void)
 {
  clrscr();
  randomize();

  int i,j,m,n,p,q,score=0,attempt=0;
  char arr[4][4],choice,rndnum;
  int b[4][4];
  char symbol[]={1,2,3,4,5,6,14,15};


  for(i=0;i<4;i++)
   for(j=0;j<4;j++)
    { arr[i][j]=0;
      b[i][j]=0;
    }

  load();                                        //function for introduction


  for(i=0;i<4;i++)
   {
     j=0;
     while(j<4)
      { rndnum=symbol[random(8)];      //gets random symbol from symbol array
    if(check(arr,rndnum))          //function call
       arr[i][j]=rndnum;
    else
       continue;
    j++;

      }

   }


  head();
  cout<<"\n\n\t"<<" _________________"<<"\n";
  for(i=0;i<4;i++)
  { cout<<"\t| ";
    for(j=0;j<4;j++)
      cout<<arr[i][j]<<" | ";
    cout<<"\n\t"<<"|___|___|___|___|"<<"\n";
  }


  cout<<"\n You have 15 seconds to memorize the table !";
  delay(15000);
  clrscr();


  while(attempt<3)
    {
```

```
    head();
    cout<<"Enter coordinates as - rowno.<space>column no. ;"<<"\n";

    cout<<"\n\n\t"<<" _________________\n";
    for(i=0;i<4;i++)
    { cout<<"\t| ";
      for(j=0;j<4;j++)
      { if(b[i][j]==1)
           cout<<arr[i][j]<<" | ";

        else cout<<"  | ";

      }
      cout<<"\n"<<"\t|___|___|___|___|\n";
    }

    int flag=0;
    for(i=0;i<4;i++)
     for(j=0;j<4;j++)
      { if(b[i][j]==0)
          flag=1;
      }
    if(flag==1);
    else
      break;

    cout<<"\n"<<"Enter location of element:";
    cin>>m>>n;
    cout<<"Enter location of its pair:";
    cin>>p>>q;

    clrscr();

    if((m==p)&&(n==q))
      {  head();
         cout<<"\n\n"<<"Enter two DIFFERENT locations!\n ";
         delay(2000);
         clrscr();
         continue;
      }
    if((m>4)||(n>4)||(p>4)||(q>4))
      { head();
        cout<<"\n\n"<<"Enter coordinates within grid limit!\n";
        delay(2000);
        clrscr();
        continue;
      }

    if((b[m-1][n-1]==1)||(b[p-1][q-1]==1))
      { head();
        cout<<"\n\n"<<"You have already entered this location value.";
        delay(2000);
        clrscr();
        continue;
      }


    head();
    cout<<"\n";
    cout<<"\n\n\t"<<" _________________\n";
    for(i=0;i<4;i++)
    { cout<<"\t| ";
      for(j=0;j<4;j++)
      { if((((m-1)==i)&&((n-1)==j))||(((p-1)==i)&&((q-1)==j)))
         { if((arr[m-1][n-1]==arr[p-1][q-1])&&!((m==p)&&(n==q)))
          b[i][j]=1;
```

```
            cout<<arr[i][j]<<" | ";
          }
         else
          { if(b[i][j]==1)
          cout<<arr[i][j]<<" | ";
            else cout<<"  | ";
          }
       }
         cout<<"\n"<<"\t|___|___|___|___|\n";
     }



     if(arr[m-1][n-1]==arr[p-1][q-1])
       { cout<<"\n"<<"GOOD ! Now next pair\n";
         score++;
       }
     else
       {  if(attempt<2)
           { cout<<"\nWrong Answer !! Try once more.";
         attempt++;
           }
          else
           { cout<<"\nThat was your last attempt. Terminating!";
         attempt++;
         delay(2000);
           }
       }
     delay(2000);
     clrscr();

      }

     head();
     cout<<"\n\n"<<"Your score was : "<<score;
     if(score==8)
       cout<<"\nYou are the master of memory ! ! !";
     cout<<"\n\n\t"<<" _________________\n";

     for(i=0;i<4;i++)
     { cout<<"\t| ";
       for(j=0;j<4;j++)
       { if(b[i][j]==1)
            cout<<arr[i][j]<<" | ";

         else cout<<"  | ";

       }
       cout<<"\n"<<"\t|___|___|___|___|\n";
     }

}
 void load(void)
 { head();
   cout<<"\n\n"<<"Loading  ";
   for(int r=0;r<3;r++)
   { delay(350);
     cout<<". ";
     delay(350);
   }
   clrscr();

   head();
   cout<<"\n\n"<<" # The rules and regulations for the game are as follows:\n";
   cout<<"\n  -locations of elements to be written as row no.<space>column no.";
   cout<<"\n  -correct response earns score of +1.";
```

```
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    }
```