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|  | **BAHRIA UNIVERSITY, (Karachi Campus)**  *Department of Software Engineering*  **Open Ended Lab -2**  **Semester Fall 2020** |  |

**Course Title:**  Computer Programming **Course Code**:

**Course Instructor:** Engr. Adnan ur Rehman **Class**: BSE-1(B)

**Lab Instructor:** Engr. Ramsha Mashood **Name: M MUAZ SHAHZAD**

**Max. Marks:** 30 Marks **Reg no: 02-131202-081**

**Time:**  3 hours **Date:** 14-1-2021

**TASK # 01:** Write an efficient program that, given a color board (provided below), user has to fill up the color board with red ‘r’, green ‘g’ or blue ‘b’. you have to make sure that no color is repeated on connected positions. Ask user for the positions one by one for color filling. If the color filling is appropriate then increase the score, if it conflicts then decrease the score.

Your program should ask the user to enter his or her name before starting the game and show the score at the end. There should be a list of top 10 highest scorer and should be updated after every game. You have to:

* Show the top scorer list on start of the game
* Show the score and remaining tries after each try
* Show the color board, total score and the rank of the user at the end of the game

In the following color board, a ‘0’ indicates not included position, an empty position indicates the place you have to fill colors on.

**Color Board**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 |  | r |  | 0 |  |  |  |
| 0 |  | b | g | 0 |  | 0 |  |
| 0 |  | g | r | 0 | g |  |  |
|  |  |  |  |  | b | 0 |  |
| 0 | 0 | 0 |  |  |  | 0 |  |
|  |  |  |  |  |  | 0 |  |
|  |  | 0 |  |  |  |  |  |
|  |  |  |  |  | 0 | 0 | 0 |

**SOLUTION:** class Program

{

static int score = 0;

static int chances = 5;

public static void add(char[,] colors, char color, int i, int j)

{

if (i == 0)

{

if (color == colors[(i + 1) % 8, j] ||

color == colors[i, (j + 1) % 8] ||

color == colors[i, (j - 1) % 8])

{

Console.WriteLine("\n\t\tScore Minus");

Console.ReadKey();

score--;

colors[i, j] = '?';

chances--;

}

else

{

colors[i, j] = color;

Console.WriteLine("\n\t\tScore Increased");

Console.ReadKey();

score++;

}

return;

}

if (j == 0)

{

if (color == colors[(i + 1) % 8, j] ||

color == colors[(i - 1) % 8, j] ||

color == colors[i, (j + 1) % 8])

{

Console.WriteLine("\n\t\tScore Minus");

colors[i, j] = '?';

Console.ReadKey();

score--;

chances--;

}

else

{

colors[i, j] = color;

Console.WriteLine("\n\t\tScore Increased");

Console.ReadKey();

score++;

}

return;

}

if (color == colors[(i + 1) % 8, j] ||

color == colors[(i - 1) % 8, j] ||

color == colors[i, (j + 1) % 8] ||

color == colors[i, (j - 1) % 8])

{

Console.WriteLine("\n\t\tScore Minus");

Console.ReadKey();

colors[i, j] = '?';

score--;

chances--;

}

else

{

colors[i, j] = color;

Console.WriteLine("\n\t\tScore Increased");

Console.ReadKey();

score++;

}

}

public static void displayBoard(char[,] a)

{

for (int i = 0; i < 8; i++)

{

for (int j = 0; j < 8; j++)

{

Console.Write(a[i, j] + "\t");

}

Console.WriteLine();

}

}

static void Main(string[] args)

{

Console.WriteLine("\n\t\t================");

Console.WriteLine("\t\t M MUAZ SHAHZAD");

Console.WriteLine("\t\t 02 -131202-081");

Console.WriteLine("\t\t BSE 1-B");

Console.WriteLine("\t\t================");

char[,] array = {

{'0',' ','r',' ',' ','0',' ',' ',' '},

{'0',' ','b','g',' ','0',' ','0',' '},

{'0',' ','g',' ',' ','0','g',' ',' '},

{' ',' ',' ',' ',' ',' ','b','0',' '},

{'0','0','0',' ',' ',' ',' ','0',' '},

{' ',' ',' ',' ',' ',' ',' ','0',' '},

{' ',' ','0',' ',' ',' ',' ',' ',' '},

{' ',' ',' ',' ',' ',' ','0','0','0'}

};

int[] top = { 10, 09, 08, 07, 06, 05, 04, 03, 02, 01 };

int rank = 11;

Console.ReadKey();

for (int i = 0; i < 8 && chances > 0; i++)

{

for (int j = 0; j < 8 && chances > 0; j++)

{

if (array[i, j] == ' ')

{

Console.Clear();

array[i, j] = '\*';

displayBoard(array);

Console.WriteLine("\n\t\t===========================");

Console.WriteLine("\t\t Your Current Score Is: " + score);

Console.WriteLine("\t\t Remaining Chances: " + chances);

Console.Write("\t\t Enter value for " + i + ", " + j + "(\*):");

char color = Convert.ToChar(Console.ReadLine());

Console.WriteLine("\t\t===========================");

if (color == 'r' || color == 'g' || color == 'b') add(array, color, i, j);

else

{

array[i, j] = '?';

Console.WriteLine("\n\t\tScore Minus");

Console.ReadKey();

score--;

chances--;

}

}

}

}

Console.WriteLine("\n\t\t==================");

Console.WriteLine("\t\tNow Game Over");

Console.WriteLine("\t\t===================");

Console.WriteLine("\n\t\t==================");

Console.WriteLine("\t\tYour score is: " + score);

Console.WriteLine("\t\t==================");

for (int i = 9; i > -1; i--)

{

if (top[i] > score)

{

rank = i + 1;

break;

}

}

for (int i = 0; i < 10; i++)

{

Console.WriteLine();

Console.WriteLine("\t\tIf Your Score " + top[i] + " Rank is " + (i + 1));

}

Console.WriteLine("\n\t\t==========================");

Console.WriteLine("\t\t Your current Rank is: " + rank);

Console.WriteLine("\t\t==========================");

Console.WriteLine("\n\t\t======================");

Console.WriteLine("\t\t BETTER LUCK NEXT TIME");

Console.WriteLine("\t\t=======================");

Console.ReadLine();

}  
  
  
  
  
  
  
  
**OUTPUT:**  
