**שיעורי בית יסודות בול פגיעה – אופיר הופמן י3**

class BulHit

{

private string[] options;

private bool[] valid;

private string guess;

private int guessIndex;

public BulHit()

{

this.options = new string[5040];

int indexCnt = 0;

for (int i = 0; i < 10000; i++)

{

if (IsRepeatingDigits(i.ToString("D4")) == false)

{

this.options[indexCnt] = i.ToString("D4");

indexCnt++;

}

}

this.valid = new bool[5040];

for (int i = 0; i < valid.Length; i++)

{

this.valid[i] = true;

}

}

public void RandomOption()

{

Random rnd = new Random();

guessIndex = rnd.Next(0, 5040);

// find a valid guess option

while(valid[guessIndex] == false)

{

guessIndex = rnd.Next(0, 5040);

}

this.guess = options[guessIndex];

}

// This method return true if there is a repeating digit in a number

private bool IsRepeatingDigits(string num)

{

// Go over the 4 digits of the number

for (int i = 0; i < num.Length; i++)

{

// for each digits check how many times is in the number

char digit = num[i];

int cnt = 0;

for (int j = 0; j < num.Length; j++)

{

if (num[j] == digit)

cnt++;

}

if (cnt > 1)

return true;

}

return false;

}

public string GetGuess()

{

return this.guess;

}

// Minimize the valid options

public bool LessOptions(int hit, int bul)

{

if (bul == 4)

return true;

valid[guessIndex] = false;

int findHit=0;

int findBul=0;

for (int i = 0; i < this.options.Length; i++)

{

if (valid[i] == true)

{

string option = this.options[i];

for (int j = 0; j < 4; j++)

{

char digit = this.guess[j];

// Check Bul

if (digit == option[j])

findBul++;

// Check Pgia

else if (option.Contains(guess[j]))

findHit++;

}

this.valid[i] = (findBul >= bul && findHit >= hit);

findBul = 0;

findHit = 0;

}

}

return false;

}

}

class Program

{

public static bool IsRepeatingDigits(string num)

{

// Go over the 4 digits of the number

for (int i = 0; i < num.Length; i++)

{

// for each digits check how many times is in the number

char digit = num[i];

int cnt = 0;

for (int j = 0; j < num.Length; j++)

{

if (num[j] == digit)

cnt++;

}

if (cnt > 1)

return true;

}

return false;

}

// Print the number of Bul and number of Pgia of users guess

public static bool PlayerGuessValue(string num, string guess)

{

int bul = 0;

int hit = 0;

for (int j = 0; j < guess.Length; j++)

{

// Check Bul

if (guess[j] == num[j])

bul++;

// Check Pgia

else if (guess.Contains(num[j]))

hit++;

}

if (bul == 4)

{

Console.WriteLine("Exactly! Yeepee yay! You won!");

return true;

}

else

{

Console.WriteLine("Bul: " + bul + ", " + "Hit: " + hit + ". Now my try!");

return false;

}

}

static void Main(string[] args)

{

BulHit game = new BulHit();

Random rnd = new Random();

Console.WriteLine("------- Let's play Bul Pgia! -------");

Console.WriteLine("Choose a 4 digit number, and I'll too");

Console.WriteLine("You start!");

string PcNum = rnd.Next(10000).ToString("D4");

while (IsRepeatingDigits(PcNum) == true)

PcNum = rnd.Next(10000).ToString("D4");

bool guessed = false;

while (!guessed)

{

Console.Write("Your Guess (4 digit number): ");

string playerGuess = Console.ReadLine();

guessed = PlayerGuessValue(PcNum, playerGuess);

Console.WriteLine();

if (!guessed)

{

game.RandomOption();

Console.WriteLine("Computer's guess: " + game.GetGuess());

// Get users response

Console.WriteLine("Enter Number of bul:");

int bul = int.Parse(Console.ReadLine());

Console.WriteLine("Enter Number of hit:");

int hit = int.Parse(Console.ReadLine());

if (game.LessOptions(hit, bul) == true)

{

Console.WriteLine("Whoohoo! I won! Bad for you...");

guessed = true;

}

}

Console.WriteLine();

}

}

}