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++)
        {
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        // 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;
        }
    }
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```
        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;
```

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        }
    }



    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();
        }

    }
}
```