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The purpose of this short test is to assess your ability to solve elementary programming problems in a language of your choice. Write your solutions in Java if you are familiar with that language; otherwise use one of these languages: C, C++, or C#. If you do not have access to a compiler for your language, write your answers in a text editor such as notepad and mention in a comment that you did not use a compiler.

For each of the problems below, write the simplest, clearest solution you can, in the form of a short program. Answer as much as you can for a problem, even if you do not have the complete answer.

If you are using C or C++ and the function you are writing requires an array parameter then you will also have to have a parameter that is the length of the array. This is not necessary in C# or Java since an array is an object in those languages and has a length method that returns the length of the array.

You do not need to do any I/O, i.e., you can hard-code your input data and do not have to write out anything to the console. Keep it simple! We are primarily interested in what you write in the body of the function. However, please be sure that your solution will work for all valid input data.

The clock is ticking now, so you don't have time to ask for clarifications on any of the questions. If something is not clear to you, resolve it yourself and state in a comment in the program what was unclear and how you resolved it.

When you have finished an answer, copy and paste it into the text box associated with the question and click the submit button to save it in our database. If you change an answer and submit it again, the previous version of the answer will be overwritten with the new version.

```
Public static int isGoalPost (int n)

{

 If(
```

1. A **goalpost number** is defined as follows

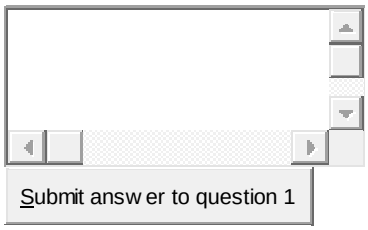
- it is greater than 0
- it has five digits
- the first and last digits are the same

So 11111 and 93229 are goal post numbers but 15432, 121, 132323231 and -23452 are not.

Write a function named *isGoalPost* that returns 1 if its argument is a goal post number. Otherwise it returns 0.

The function signature is
  int isGoalPost (int n)

Copy and paste your answer here and click the "Submit answer" button



You should see a confirmation popup after hitting the submit button above. If you do not see a confirmation popup, please email your answer.

```
public  static int isGoalPost (int n)
      {
         if (n <9999 || n>=100000)
           {
            return 0;
           }
         if (n / 10000 == n % 10)
           {
            return 1;
           }
       return 0;
      }
```

2. A **Daphne array** is defined to be an array where every 1 is immediately followed by an odd number.

So {1, 5, 2, 4, 1, -7, 6} is a Daphne array because both 1s are immediately followed by an odd number. Some other examples of Daphne arrays are {1, 1, 1, 1, 3} and {3, 2, 4, 6}.

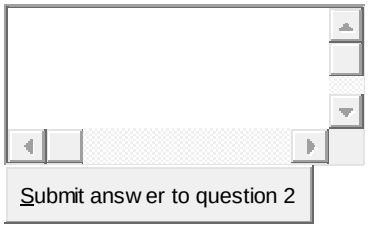
The array {1, 5, 2, 1, 4, 7} is **not** a Daphne array because the second 1 is immediately followed by a 4 which is not odd. The array {1, 1, 1, 1} is not a Daphne array because the last 1 is not followed by any number.

Write a function name *isDaphneArray* that returns 1 if its array argument is a Daphne array, otherwise it returns 0.

If you are programming in Java or C#, the function signature is
int isDaphneArray(int[ ] a)

If you are programming in C or C++, the function signature is
int isDaphneArray(int a[ ], int len) where len is the number of elements in a.

Copy and paste your answer here and click the "Submit answer" button



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```
 public static int isDaphneArray(int[] a)
     {
        for (int i = 0; i < a.Length; i++)
        {
           if (a[i] == 1)
           {
              //if (a.Length - 1 == i) return 0; Abdu's
Mine//if (a[a.Length -1] == 1) return 0;
              if (a[i + 1] % 2 == 0) return 0;

           }
```

```
    }
    return 1;
}
```

3. An array is defined to be **digit complete** if it contains exactly one of each of the numbers 0 through 9. So {0, 1, 2, 3, 4, 5, 6, 7, 8, 9} and {3, 2, 1, 0, 4, 5, 6, 9, 7, 8} are digit complete.

The array {3, 2, 1, 0, 4, 5, 9, 7, 8} is not digit complete because it is missing the number 6.

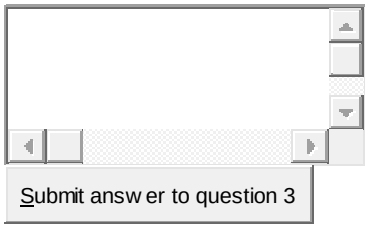
The array {3, 2, 1, 0, 4, 5, 6, 9, 7, 8, 4} is not digit complete because 4 occurs twice in it.

Write a function named *isDigitComplete* that returns 1 if its array argument is digit complete. Otherwise it returns 0.

If you are programming in Java or C#, the function signature is
int isDigitComplete (int[ ] a)

If you are programming in C or C#, the function signature is
int isDigitComplete (int a[ ], int len) where len is the number of elements in a.

Copy and paste your answer here and click the "Submit answer" button



You should see a confirmation popup after hitting the submit button above. If you do not see a confirmation popup, please email your answer.

```
public  static int  isDigitComplete (int[ ] a)
                    {
                if(a.Length!=10)
                    return 0;

            for (int i = 0; i < 10; i++)
                    {
                bool isfound = false;
            for (int j = 0; j < a.Length; j++)
```

```
        {
  if(a[j] == i)
 isfound = true;
        }
if(!isfound)
    return 0;
      }
return 1;
     }
```