In The Name of God

Fundamentals of Computer Programming

Assignment #5

Due Time: November 11, 2016, 23:55

****Note that the inputs and outputs in this assignment except q5 are input and output of the functions.

****Note that you should send us a single .py file that contains answers of all questions.

1. Nice numbers!!!!
   A number is considered nice if number of its odd divisor is even.
   Write function that takes a number as argument and returns True if the argument is nice and returns false otherwise.
   Examples:

```
Input:

>>> 6


Output:

True    #Note: 1, 2, 3, 6


Input:

>>> 9


Output:

False   #Note: 1, 3, 9
```

2. Write a function that takes numbers from input until the user enters a nice number and returns the nice number. (You have to use the function in q1)

```
Input:
>>> 8
>>> 9
>>> 12

Output:
12

Input:
>>> 7

Output:
7
```

3. For a positive integer n let's define a function f:

   f(n) = n|(- 1 + 2 - 3 + .. + ((- 1)^n)n)| (f(3) = 3|(-1 + 2 -3)| = 6)

   Write a function that takes a number as its argument and returns f(n).

```
Input:
>>> 3
Output:
6
```

4. Write a function that takes a number as its argument and returns the number of 1s in its digits.

```
Input:

>>> 1587321656131


Output:

 4
```

5. Write a program that use above functions and takes numbers from user until the user enters a nice number and prints number of 1s in f(n) digits.

```
Input:

>>> 1

>>> 8

>>> 4

>>> 6

Output:

 1        #Note: f(6) = 18

Input:

>>> 1

>>> 2

>>> 12

Output:

 0        #Note: f(12) = 72
```