Sherlock and The Beast

by amititkgp

Sherlock Holmes suspects his archenemy, Professor Moriarty, is once again plotting something diabolical. Sherlock's companion, Dr. Watson, suggests Moriarty may be responsible for MI6's recent issues with their supercomputer, *The Beast*.

Shortly after resolving to investigate, Sherlock receives a note from Moriarty boasting about infecting *The Beast* with a virus; however, he also gives him a clue—a number, N. Sherlock determines the key to removing the virus is to find the largest *Decent Number* having N digits.

A *Decent Number* has the following properties:

1. Its digits can only be *3*'s and/or *5*'s.
2. The number of *3*'s it contains is divisible by *5*.
3. The number of *5*'s it contains is divisible by *3*.
4. If there are more than one such number, we pick the largest one.

Moriarty's virus shows a clock counting down to *The Beast*'s destruction, and time is running out fast. Your task is to help Sherlock find the key before *The Beast* is destroyed!

Constraints

$1 \leq T \leq 20$
$1 \leq N \leq 100000$

Input Format

The first line is an integer, T, denoting the number of test cases.

The T subsequent lines each contain an integer, N, detailing the number of digits in the number.

Output Format

Print the largest Decent Number having N digits; if no such number exists, tell Sherlock by printing **-1**.

Sample Input

```
4
1
3
5
11
```

Sample Output

```
-1
555
33333
55555533333
```

Explanation

For $N = 1$, there is no decent number having 1 digit (so we print -1).
For $N = 3$, 555 is the only possible number. The number 5 appears three times in this number, so our count of 5's is evenly divisible by 3 (*Decent Number Property 3*).
For $N = 5$, 33333 is the only possible number. The number 3 appears five times in this number, so our count of 3's is evenly divisible by 5 (*Decent Number Property 2*).
For $N = 11$, 55555533333 and all permutations of these digits are valid numbers; among them, the given number is the largest one.

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Submissions: 61126
Max Score: 30
Difficulty: Easy

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Current Buffer (saved locally, editable) C#

```
using System;
using System.Collections.Generic;
using System.IO;
using System.Linq;
class Solution {

    static void Main(String[] args) {

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

            while (t-- > 0)
            {

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

                int cant_5 = n, cant_3 = 0;

                int i = cant_5;
                for (i = cant_5; i >= 0; i--)
                {
                    if (cant_5 % 3 == 0 && cant_3 % 5 == 0)
                    {
                        break;
                    }
                    cant_5--;
                    cant_3++;
                }

                if (i <= 0 && cant_5 <=0 && cant_3>n)
                {
                    Console.WriteLine(-1);
                }
                else
                {
                   // Console.WriteLine(cant_5 + " " + cant_3);
                    Console.WriteLine(new string('5', cant_5) +
                                      new string('3', cant_3));
                }

            }


    }
}

```

Line: 41 Col: 9

Upload Code as File Test against custom input Run Code Submit Code

Congrats, you solved this challenge!

✔ Test Case #0 ✔ Test Case #1 ✔ Test Case #2

- ✔ Test Case #3
- ✔ Test Case #4
- ✔ Test Case #5
- ✔ Test Case #6
- ✔ Test Case #7
- ✔ Test Case #8
- ✔ Test Case #9
- ✔ Test Case #10
- ✔ Test Case #11
- ✔ Test Case #12
- ✔ Test Case #13
- ✔ Test Case #14
- ✔ Test Case #15

Next Challenge