

## Problem Statement

A number is called a 'fancy' number if it can be expressed as the sum of numbers generated by breaking the digits of its square.

For example:  $99^2 = 9801$  and  $99 = 98 + 0 + 1$ .

For any given  $n$ , write a program to find the number of 'fancy' numbers in the range  $[1, n]$ .

The sample submission csv contains the output for the following test cases

1. Input : 10  
Output: 5
2. Input : 100  
Output: 12
3. Input : 1000  
Output: 20

The language of submission for code is python. You can use any of the eligible libraries as mentioned in the rules and regulations.

## Submission Format

Three files are expected from you put together in a .zip file, for it to be qualified as a valid submission. See details for the files and their extensions. Please ensure that these files are actually zipped directly, and not any folder which contain these files.

You shall submit the following files as a zip file for this submission:

- Q4\_Explanation.docx
- Q4.py.
- The updated SampleSubmission.csv which was provided with this problem with your predictions in the format mentioned below renamed as Q4.csv. The sample file contains results for the three given input test cases in the first column as below

5
12
20

A sample python file with the format has been provided to you as Q4.py, you need to fill your logic in the function `generate_result`.

## Evaluation Criteria

We shall measure submissions on the criteria:

Accuracy metric as the evaluation criteria.

The given test cases form the minimum cutoff for the problem below which you will be scored a 0.

There are extra out-of-sample input test cases not provided to you for final scoring.