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Greater New York
Programming Contest
Kean University
Union, NJ

IBM AdaCore
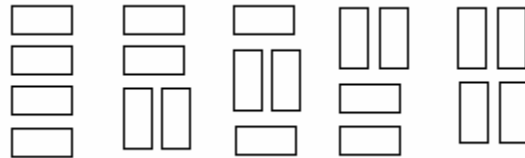The GNAT Pro Company

Google TWO SIGMA
INVESTMENTS

H • Tiling a Grid With Dominoes

We wish to tile a grid 4 units high and **N** units long with rectangles (dominoes) 2 units by one unit (in either orientation). For example, the figure shows the five different ways that a grid 4 units high and 2 units wide may be tiled.

Write a program that takes as input the width, **W**, of the grid and outputs the number of different ways to tile a 4-by-**W** grid.

Input

The first line of input contains a single integer **N**, ($1 \leq N \leq 1000$) which is the number of datasets that follow.

Each dataset contains a single decimal integer, the width, **W**, of the grid for this problem instance.

Output

For each problem instance, there is one line of output: The problem instance number as a decimal integer (start counting at one), a single space and the number of tilings of a 4-by-**W** grid. The values of **W** will be chosen so the count will fit in a 32-bit integer.

Sample Input	Sample Output
3	1 5
2	2 11
3	3 781
7	