### SIENA COLLEGE

**24th Annual**

### High School Programming Contest

##### April 8, 2011

###### **Problem #5: Unit Fractions**

Background Information: A unit fraction has a numerator of 1 and a denominator that is a positive integer.

Unit fractions 1/N can always be expressed in at least one way as the sum of two unit fractions.

For example, 1/3 can be expressed as the sum of two unit fractions two different ways.



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###### Programming Problem:

Input: N a positive integer less than 1,000,000

Output: The number of pairs of unit fractions that sum to 1/N and

the pair(s) of denominators X and Y for each sum, one pair per line.

The X, Y pairs must be in ascending order by X.

###### Example 1: Input: 4

###### Output: 3

5 20

6 12

8 8

###### Example 2: Input: 5

###### Output: 2

6 30

10 10