

**DWITE Online Computer Programming Contest
November 2006**

Problem 5

Goldbach's Weak Conjecture

In number theory, Goldbach's weak conjecture, states that: Every odd number greater than 7 can be expressed as the sum of three odd primes. A prime may be used more than once in the same sum.

In this problem, you will need to find the three odd primes that sum to a given odd number. If there is more than one possibility, then list the possibility with the largest prime. If there is more than one possibility, with the largest prime, list the possibility with the largest prime with the second largest prime.

The input file (**DATA51.txt** for the first submission and **DATA52.txt** for the second submission) will contain five lines of data. Each line will contain, N, an odd number. $7 < N \leq 999999$.

The output file (**OUT51.txt** for the first submission and **OUT52.txt** for the second submission) will output for each set of data the sum of the odd number written with three primes from highest to lowest.

Sample Input (Only three lines given)

```
9
31
999999
```

Sample Output (Only three lines given)

```
9=3+3+3
31=23+5+3
999999=999983+13+3
```

http://en.wikipedia.org/wiki/Goldbach's_weak_conjecture