

**DWITE Online Computer Programming Contest  
January 2007**

**Problem 5**

**Dutch Solitaire**

Dutch Solitaire is played with  $N$  candies, divided into  $P$  piles. Each pile need not have the same number of candies. For example, if Johan had 26 candies, he might choose to put them in 5 piles, with 2, 3, 5, 7, and 9 candies in each pile.

Each ‘round’ consists of taking one candy from each pile, and using these candies to create a new pile. The first round with the example above would yield 6 piles, with 1, 2, 4, 6, 8, and 5 candies in each pile. After the second round the piles would contain 7, 6, 5, 4, 3, and 1 candy. Note that one pile has disappeared, but it has been replaced by the new pile formed in the round. After the 9th round, there will be six piles that again have 7, 6, 5, 4, 3, and 1 candy. This is called a “losing position” because the contents of the piles repeated a configuration other than that of the round that immediately preceded it. The game is then over.

A “winning position” in this game is achieved when a round produces piles that will be repeated in any immediately subsequent round. The game is over at this time. For example, if round 15 of a game produced piles of 5, 4, 3, 2, and 1 candy, this would be called a “winning position” since every subsequent round will also produce piles of 5, 4, 3, 2, and 1 candy.

Notes:

- The order of the piles is not important; that is piles of 1, 3, 4, and 6 are the same as piles of 4, 1, 6 and 3.
- The original pile configuration will be such that the game will not end after the first round.
- There will never be more than 100 rounds in a game.

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  $N$ , the number of candies, ( $0 < N \leq 100$ ),  $P$  the number of piles at the start of the game ( $0 < P \leq 15$ ), and then  $P$  positive integers that represent the number of candies in each pile. Each of these values will be separated by a single space.

The output file (**OUT51.txt** for the first submission and **OUT52.txt** for the second submission) will contain five lines of data. Each line will contain the word WIN or LOSS depending on the outcome of the game and the number of rounds in the game. The word is separated from the number of rounds with a hyphen.

<u>Sample Input (Only three lines given)</u>	<u>Sample Output</u>
26 5 3 5 2 7 9	LOSS-9
28 5 2 8 4 5 9	WIN-17
10 4 5 1 1 3	WIN-6