STA Online Computer Programming Contest (DWITE)
February 2003

Problem 3

NICHOLAS LOVES TOBOGGANING

Nicholas is at the bottom of a 10 metre snow-covered hill and wants to climb to the top. He can climb 4 metres before he falls and slides down 1 metre. Nicholas has a fatigue factor of 10%, which means that on each successive try, he climbs 10% X 4 = 0.4 metres less than he did on the previous attempt. The distance lost to fatigue is always 10% of the first attempt's climbing distance. On which attempt does Nicholas reach the top of the hill, i.e., on which attempt does Nicholas exceed the distance up the hill? As you can see from the following table, Nicholas would reach the top of the hill on his fourth attempt.

Attempt	Initial Distance	Distance Climbed	Distance After Climbing	Distance After Sliding
1	0 metres	4 metres	4 metres	3 metres
2	3 metres	3.6 metres	6.6 metres	5.6 metres
3	5.6 metres	3.2 metres	8.8 metres	7.8 metres
4	7.8 metres	2.8 metres	10.6 metres	-

Your job is to solve this problem in general. Depending on the parameters of the problem, Nicholas will eventually either reach the top of the hill or slide back to the bottom of the hill. (In other words, Nicholas' distance climbed will exceed the distance of the hill or it will become negative.) You must find out which happens first and on which attempt.

The input file (DATA3) will contain five cases, each on a line by itself. Each line contains four integers *D, C, S,* and *F*, separated by a single space. All four numbers will be between 1 and 100, inclusive. *D* is the distance to the top of the hill in metres, *C* is the distance in metres that Nicholas can climb during his first attempt, *S* is the distance in metres that he slides down after he falls, and *F* is the fatigue factor expressed as a percentage.

Notes:

- Nicholas *never* climbs a negative distance. If the fatigue factor drops Nicholas' climbing distance to below zero, he does not climb at all on that attempt.
- Regardless of how far he has climbed, he always slides *D* feet after a fall.
- It is possible for Nicholas to slide back to the bottom of the hill (zero), but not "below" the hill (negative) (failure)

For each case, the output file (OUT3) will contain a line indicating whether Nicholas succeeded (reached the top of the hill) or failed (slid back to the bottom) and on which attempt. Format the output ***exactly*** as shown in the sample.

Sample Input (only three cases given)

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10 4 1 10
25 10 1 50
45 5 3 14
```

Sample Output

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SUCCESS ON ATTEMPT 4
FAILURE ON ATTEMPT 16
FAILURE ON ATTEMPT 7
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