

**2006/2007 SOUTHERN CALIFORNIA REGIONAL
ACM INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST**

**Problem 2
Grade Dropping 101**

Welcome to Discrete Math I. Forty percent of your final grade will be based on your homework assignments. Now everyone can have a bad day from time to time, so you will be allowed to drop the scores of up to three of these assignments, but you have to choose which assignment scores to drop. Each assignment may have a different maximum score. Choose carefully, as the final homework grade will be the percentage ratio of your total score to the maximum possible score for the retained assignments.

Your team is to write a program that, given a list of assignment results, will calculate the best homework percentage grade that can be obtained by dropping zero, one, two, and three of the assignments. For example:

<i>Assignment</i>	<i>Score</i>	<i>Possible</i>
1	41	42
2	22	64
3	2	26
4	11	44
5	24	27
6	26	70
7	4	30

The homework grade without dropping any assignments is:

$$\frac{41 + 22 + 2 + 11 + 24 + 26 + 4}{42 + 64 + 26 + 44 + 27 + 70 + 30} = 42.9\% \quad (1)$$

The best result that can be obtained by dropping one assignment comes from dropping assignment 3:

$$\frac{41 + 22 + 11 + 24 + 26 + 4}{42 + 64 + 44 + 27 + 70 + 30} = 46.2\% \quad (2)$$

Similarly, one can choose the two and three assignments to drop that yield the best possible final percentage.

Input to your program will be a series of test cases terminated by end-of-file. Each test case will be a series of integers on one or more lines and will be terminated by a line that contains only an end-of-line character (an empty line) or by the end-of-file. The numbers are separated by whitespace and may be preceded and followed by white space. No input line will be longer than 80 characters. The integers are in pairs—the first integer is the student's score for an assignment, the second integer is the maximum possible score for that assignment. There will be at least 4 and at most 30 assignment score pairs per test case. For each pair, the maximum score will range from 1 to 100, and the student score will range from 0 to the maximum score (no extra credit is offered).

For each test case, your program is to print a single line containing the best possible final homework grade as a percentage after dropping zero, one, two, and three assignments respectively. Each percentage is to be rounded and printed with one digit after the decimal point. Percentages should be printed starting in the first column and are to be separated from each other by single spaces. No trailing spaces should appear on the line. Do not print excess leading or trailing zeroes, but do print single zeroes adjacent to the decimal point (such as 42.0 or 0.7).

Problem 2
Grade Dropping 101 (continued)

Sample Input

```
7 48 0
83 59 76 13
100

41 47 42 56 20 63 35 45 30 98 41 73 30 59 25 31 40 48 41 99
31 39 12 97 20 53 32 56 55 95 49 61 58 74 41 70 36 36 0 49
56 84 37 65 52 74 15 51 87 95 11 51 24 88 10 46 90 96 80 93

0 30 19 99 44 74 24 46 19 21 71 77 34 49 43 59 16 39 25 33
22 82 19 85 11 88 32 65 1 88 48 51 9 43 48 60 14 25 23 65
42 48 43 97 14 33 9 48 81 93 3 85 9 98 19 86 9 98 57 60

18 56 25 68 84 88 2 12 35 83 8 16 6 74

30 78 92 99 11 42 40 96 28 74 10 41 32 74

41 42 22 64 2 26 11 44 24 27 26 70 4 30
```

Output for the Sample Input

```
25.7 35.3 53.2 77.6
57.3 59.6 61.2 62.9
42.0 43.9 45.9 48.1
44.8 53.3 57.7 65.1
48.2 50.3 52.7 56.6
42.9 46.2 50.2 56.8
```