Measurement

Problem Description

Given a group of people with different heights and weights, determine the shortest and tallest people in the group, and calculate their body mass index (BMI).

The formula for BMI is

$$\text{BMI} = \frac{weight\ in\ kilograms}{height\ in\ meters^2}$$

Input

The first line of the input contains an integer **N** (1 <= **N** <= 100) denoting the number of people in the group. The next **N** lines contain the information (name, height in centimeters, and weight in kilograms) of the people in the group.

Output

Output the name of the shortest and tallest people in the group with format:
Suppose A is the shortest and B is the tallest person in the group, then the output will be:

A is the shortest with BMI equals to C.
B is the tallest with BMI equals to D.

where C is the BMI for A and D is the BMI for B. Output the BMI with 2 digit after the decimal point rounded to the nearest integer.

Please refer to sample output for more details.

Sample Input

4
Diamond 178 55
Jarod 160 80
Douglas 180 60
Rod 151 48

Sample Output

Rod is the shortest with BMI equals to 21.05.
Douglas is the tallest with BMI equals to 18.52.

Explanation

BMI for Rod = $\frac{48}{1.51^2} \approx 21.05$
BMI for Douglas = $\frac{60}{1.8^2} \approx 18.52$

Note

Your solution must be in the source file Measurement.cpp.