Price Change Alert – II variant

Write a program that **tracks stock prices** and **gives updates** about the **significance in each price change**. Based on the significance, there are **five kinds of changes**:

- no change at all (price is equal to the previous);
- minor price up (the difference is below the threshold);
- significant price up (the difference is equal or above the threshold);
- minor price down (the difference is below the threshold);
- significant price down (the difference is equal or above the threshold).

Input

- On the first line you are given the **number of prices**
- On the second line you are given the **significance threshold**
- On the next N lines, you are given **prices**

Output

- Don't print anything for the first price
- If there is **no difference** from the previous price the output message is: "NO CHANGE: {current price}"
- In case of **price up, minor change**: "PRICE UP, MINOR CHANGE: {last price} to {current price} ({difference}%)"
- In case of **price up, significant change**: "PRICE UP, SIGNIFICANT CHANGE: {last price} to {current price} ({difference}%)"
- In case of **price down, minor change**: "PRICE DOWN, MINOR CHANGE: {last price} to {current price} ({difference}%)"
- In case of **price down, significant change**: "PRICE DOWN, SIGNIFICANT CHANGE: {last price} to {current price} ({difference}%)"

  The percentage should be rounded to the second digit after the decimal point.

Examples

Input	Output
3 0.1 10 11 12	PRICE UP: 10 to 11 (10.00%) MINOR CHANGE: 11 to 12 (9.09%)
3 0.1 10 10 12	NO CHANGE: 10 PRICE UP: 10 to 12 (20.00%)