# Problem 4 – Gambling

Do you think you can use your newly acquired coding skills to decide whether a game is worth playing?

You’ll be provided with some **amount of cash C** you may use to bet on a single hand of a card game called Vokan. You will be shown the **house’s hand** consisting of **four** **cards** (drawn from a standard deck of 52 cards). The hand’s strength is determined solely by the face values of the cards (suits are ignored). Cards with faces **2 to 10** increase the hand’s strength with their numeric value. **J, Q, K** and **A** add **11, 12, 13** and **14** points respectively. Then, the four cards are shuffled back into the deck. At this point you’ll have to decide whether you want to play or not. Continuing the game means you’ll draw four cards from the deck, **one at a time**, **shuffling back each card before drawing the next**; you will then calculate your cards’ combined strength and compare it to the house’s result.

You’ll need to figure out the **ratio** between the number of **winning** **hands** (hands that are **stronger** than the house’s) and the **total** **number** of all **possible** **hands** in order to find **the probability** of you beating the house. If the probability is **< 50%** you should quit, otherwise the game is worth the risk.

Assume you bet your entire cash deposit **C** and the bank matches your bet **1:1**; thus the pot’s value will be **2\*C**. Your **expected winnings** are calculated as **(% probability of winning) \* (pot amount).**

The output should consist of two lines. On the first line, **print your decision** - “FOLD” if the game isn’t worth the risk, or “DRAW” otherwise. On the second line, print your **expected winnings** rounded to two digits after the decimal point (you should use “.” as the decimal separator).

### Input

The input data should be read from the console.

* At the **first line** you’ll be given some amount of **cash C.**
* At the **second line** you’ll be given **the house’s hand** as a sequence of four cards (faces only), each separated by a single whitespace.

The input data will always be valid and in the format described. There is no need to check it explicitly.

### Output

The output should be printed on the console. It should consist of **exactly 2 lines**:

* The **first line** should hold a string – one of the two: “FOLD” or “DRAW”.
* The **second line** should hold your expected winnings of the game, rounded to two decimal points.

### Constraints

* The **number C** will be in the range [1.00 … 1 000 000.00].
* The **house’s hand** will have exactly four cards (faces only) taken from a standard 52-card deck.
* Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 100  2 7 9 A | FOLD  94.86 | House strength = 2 + 7 + 9 + 14 = 32.  Under the game’s rules, the probability of drawing a winning hand (strength > 32) is ~47.428% (< 50% => FOLD); expected winnings: ~ 200\*47.428% = 94.856… |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| 203.03  A A K 3 | FOLD  19.41 |  | 5  8 4 Q 10 | FOLD  3.74 |  | 150000.37  10 4 4 J | DRAW  187924.56 |