

Quoting an ETF

If an ETF called Code@Flow composed by:

1. 50% Flow Traders
2. 25% Google
3. 25% Apple

if we buy 4 Code@Flow we will own:

1. 2 Flow Traders Stock
2. 1 Google Stock
3. 1 Apple Stock

Our goal is to provide a fair price for the ETF. You receive price from the Stock exchange, the ETF exchange and the Currency exchange.

The theoretical price (theo) is calculated as follow:

$$theo = \sum_{i=0}^n (P_i * W_i)$$

where P_i is the price of the i th stock in the ETF, W_i is the weight for the i th stock in ETF and N is the total number of stocks in the ETF.

Base rules:

1. If we do not have a theo we do not send anything.
2. If we are not able to provide the best quote we are not on the market.
3. When we need to send out multiple orders and the orders belongs to the same ETF the bid side goes first
4. When we need to send out multiple orders for multiple ETF the orders must be sent in the same order used to define the ETF

Input Format

YOU DO NOT NEED TO IMPLEMENT THE PARSER FOR THE INPUT, IT IS PROVIDED BY HACKERRANK

As soon your application starts it receives the configuration for the day. The configuration contains

- The ETF/s definition
- The prices

ETF/s definitions

Format:

```

<ETF Symbol>
<ETF Currency>
N
<Symbol1> <Weight1> <Currency1>
<Symbol2> <Weight2> <Currency2>
...
<SymbolN> <WeightN> <Currency3>

```

Where:

- ETF Symbol: ETF name, it is used to trade the ETF, e.g. "CODE_AT_FLOW ETF"
- Symbol: Instrument name, e.g. FLOW.AMS (Flow Traders), GOOG (Google), AAPL(Apple)
- Weight: Percentage in the ETF
- Currency: listing currency currency, e.g. EUR(Euro), USD(US Dollar)

E.g.

```

CODE_AT_FLOW ETF
EUR
3
FLOW.AMS 0.50 EUR
GOOG 0.25 USD
AAPL 0.25 USD

```

The prices

```

N
<Type> <Symbol> <Exchange name> <Price> <Qty>

```

Where:

- Type, is the type of received message, it can be:
 - A, current ask best price
 - B, current bid best price
 - X, Cross currency rate
- Symbol, is the Symbol/CurrencySymbol/EtfSymbol associated to the message
- Exchange name, is the exchange name where the message is coming from, the values are Stock, ETF and currency
- Price, is the price associated with the message
- Qty, is the quantity associated with the message

E.g.

Example of cross currency rate. In this example 1 euro is equals to 2 dollars

```

X EURUSD Currency 2 0

```

```
B FLOW.AMS Stock 10.0 5
```

Constraints

```
Maximum number of ETF <= 1000
Maximum number of stocks <= 100000
Maximum number of currencies <= 10
Price min increment = 0.01 in instrument currency
```

Output Format

```
<Type> <Symbol> <Price> <Qty>
```

Where:

- Type, is the type of sent message, it can be:
 - AO, sell order
 - BO, buy order
- Symbol, is the ETFSymbol associated to the message
- Price, is the price associated with the message, 2 decimal digits, when we want to cancel an order we must use the same price used to create it.
- Qty, 10 when we want to send an order, 0 when we want to cancel it.

A quote is a combination of orders:

- 1 buy order
- 1 sell order

Sample Input 0

```
1
Flow_ETF
EUR
2
FLOW.AMS 0.5 EUR
GOOGL 0.5 EUR
4
B FLOW.AMS Stock 10.0 5
A FLOW.AMS Stock 10.5 5
B GOOGL Stock 10.0 5
A GOOGL Stock 10.5 5
```

Sample Output 0

```
BO Flow_ETF 10.00 10
AO Flow_ETF 10.50 10
```

Sample Input 1

```
1
Flow ETF
EUR
2
FLOW.AMS 0.5 EUR
GOOGL 0.5 EUR
6
B FLOW.AMS Stock 10.0 5
A FLOW.AMS Stock 10.5 5
B GOOGL Stock 10.0 5
A GOOGL Stock 10.5 5
B Flow ETF ETF 9.0 5
A Flow ETF ETF 11.0 5
```

Sample Output 1

```
BO Flow ETF 10.00 10
AO Flow ETF 10.50 10
BO Flow ETF 9.01 10
AO Flow ETF 10.99 10
```

Sample Input 2

```
1
Flow ETF
EUR
2
FLOW.AMS 0.5 EUR
GOOGL 0.5 USD
7
X EURUSD Currency 2 0
B FLOW.AMS Stock 10.0 5
A FLOW.AMS Stock 10.5 5
B GOOGL Stock 20.0 5
A GOOGL Stock 21.0 5
B Flow ETF ETF 9.0 5
A Flow ETF ETF 11.0 5
```

Sample Output 2

```
BO Flow ETF 10.00 10
AO Flow ETF 10.50 10
BO Flow ETF 9.01 10
AO Flow ETF 10.99 10
```