Requirements

Overview

Build a command-line application that calculates capital gains tax for stock trading operations based on a defined set of rules.

Input

1. Read from standard input (stdin)
2. Each line contains a JSON array of stock operations
3. Each operation includes:
   - operation: buy or sell
   - unit-cost: price per stock (two decimal places)
   - quantity: number of stocks
4. Operations are processed in chronological order
5. Each line is an independent simulation
6. Final input line is empty

```
Example input:
[
  {"operation": "buy", "unit-cost": 10.00, "quantity": 10000},
  {"operation": "sell", "unit-cost": 20.00, "quantity": 5000}
]
```

Output

1. Write results to standard output (stdout)
2. Output a JSON array per input line
3. Each element contains a tax field
4. Output size must match input size

```
Example output:
[
  {"tax": 0.0},
  {"tax": 10000.0}
]
```

Tax Rules

1. Tax rate is 20% of net profit
2. Buy operations never generate tax
3. Sell operations:
4. Use weighted average purchase price
5. No tax if total sell amount ≤ 20,000
6. Losses accumulate and offset future profits
7. Tax applies only to remaining profit

Weighted Average Price

$$new_{average} = \frac{\left(current_{quantity} \times current_{average} + buy_{quantity} \times buy_{price}\right)}{current_{quantity} + buy_{quantity}}$$

```
Example:
Buy 10 @ 20.00
Buy 5 @ 10.00

Weighted average = (10×20 + 5×10) ÷ 15 = 16.67
```

State Management

1. Use in-memory state only
2. No external databases
3. Reset state per input line

Precision and Formatting

1. Round monetary values to two decimal places
2. JSON values must be numeric

Error Handling

Assume all inputs are valid

Execution

./app < input.txt