**Overview:-**

Bloomberg receives different market data for different asset class like Foreign Exchange, Commodities etc from various banks.

                Each price received by Bloomberg is called a "tick" and contains

a. Time stamp of the price.

b. Ticker (also known as "Security") that the price for (like EUR,GOLD, OIL etc).

c. Asset class identifier ( like FX,COMMODITTTY etc.).

d. Bank Id of the Bank from which the price is coming.

e. BID price (Price at which bank is willing to buy).

f. ASK price (Price at which bank is willing to sell.).

**Design and coding Requirements:-**

For the purpose of this assignment assume that the tick come in the format as specified in "Sample Input" section given in below of this page.

a. Design and Implement a system that will read the input in the given format(example:"TICK:13:14:50|EUR|FX|ABANK|2.132|2.145")

B. Design and implement efficient solution for handling Queries that will be in the format as specified in "Sample Queries".

Each of the query type are explained below.

1. allTickersForAsset():-Print a comma separated list of all unique tickers that belongs to an asset class.

Example:query input of 'QUERY:allTickersForAsset("FX") should print "EUR,GBP,AUD".

2. allBanksForTicker():-Print a comma separated list of all unique banks that price a given ticker.

Example: query input of 'QUERY: allBanksForTicker("EUR")' will print "BANK1,BANK5,BANK4".

3.bestReturnForTickerInTimeRange():-Given a ticker and time range,find the best price to buy low and best price to sell high for maximum returns.

NOTE:-

i> Buy is performed as ASK price and sell is performed at bid price.

ii> Time stamp of buy price CANNOT be greater than the time stamp of sell price.

Example: query input of 'QUERY:maxProfitForTicker("GOLD","13:14:50","13:16:50")  will print

"BUY | 11:15:01 | 1191.59 |;SELL:11:45:01:1207:19 | BANK6 "

C. [Bonus Question ]:- In a separate comment section of the code, provide a short text explaining design changes you may need for handling large volume of ticks,and for providing a distributed solution for capacity planing.

Additional Note:-

1. Implementaion should be in c++.

2.All inputs should be assumed to be coming on STDIN.

3. All output should be assumed to be going out on STDOUT.

Sample Input:

 [ FORMAT TICK: <TIME> | TICKER | ASSET | BANK | BID-PRICE | ASK-PRICE ]

TICK:09:03:50 | EUR | FX | BANK1| 1.2622 | 1.2623

TICK:09:03:59|GOLD|COMMODITY|BANK3|1213.63|1214.01

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QUERY: allTickersForAsset("FX")

QUERY:allBankForTicker("EUR")

QUERY:bestReturnForTickerInTimeRange("GOLD","11:00:00","14:00:00")

Sample output:-

RESULT:allTickersForAsset("FX")- EUR,GBP,AUD

RESULT:allBankForTicker("EUR")- BANK1,BANK5,BANK4

RESULT:bestReturnForTickerInTimeRange("GOLD","11:00:00","14:00:00")-

BUY | 11:15:01 | 1191.59 |; SELL:11:45:01:1207:19 | BANK6