

# Arbitrage

Group F6

# Thinking Process

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- The problem can be decomposed into:
  - Network architecture (TCP)
  - Client - server modelling
  - Arbitrage algorithms/strategies
- Limited experience in each of these fields
- Wide to narrow approach
  - Individual solution exploration
  - Group discussion
  - Collaborative development

# Design considerations

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- Time sensitivity
- Scalability
- Feasibility (given our experience and time constraint)

# Challenges and Solutions

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- Limited experience with networks and concurrent programming
- EBS.CSV timestamp is wrong
- ASSUMPTION: from the same quote, bid is strictly  $<$  ask

**Areas to develop**

# Implementation is not concurrent

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Arbitrage is time sensitive in nature and ideally, a solution should spend its time working rather than waiting on computation or the network.

# Solution is not expandable to other currency pairs

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Our solution assumes that EURUSD is the only currency available, as per the problem statement. However, we have not built in safeguards for USDEUR (relatively trivial), nor have we accounted for different currency pairs (more complex).

# “Greedy” algorithm

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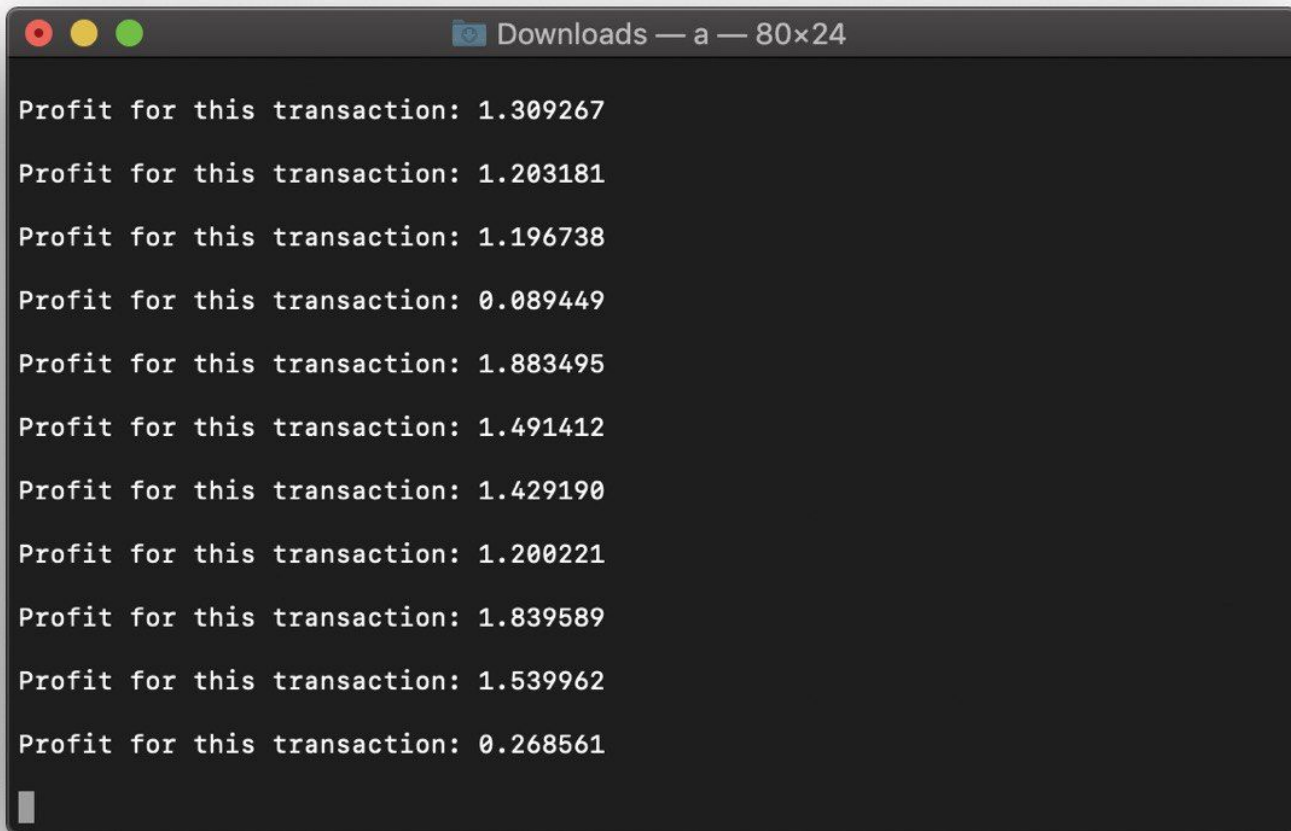
- Lost optimality, approximate best solution of pairing the cheapest bid and the most expensive ask each time



confirmation message  
ebs 59 1.439660 1.507427  
confirmation message  
reu 59 1.351443 1.651639  
confirmation message  
bbg 60 1.741207 1.885024  
confirmation message  
ebs 60 1.356048 1.529820  
confirmation message  
reu 60 1.014264 1.981777  
confirmation message  
bbg 61 1.077978 1.090457  
confirmation message  
ebs 61 1.298253 1.796024  
confirmation message  
reu 61 1.062842 1.205447  
confirmation message  
bbg 62 1.388289 1.667501  
confirmation message  
ebs 62 1.200490 1.918936  
confirmation message  
reu 62 1.256166 1.941017  
confirmation message

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A terminal window with a dark background and a title bar containing three colored window control buttons (red, yellow, green) and the text "Downloads — a — 80x24". The terminal displays ten lines of text, each representing a transaction profit. The text is in a monospaced font. At the bottom left of the terminal, there is a small vertical bar.

```
Profit for this transaction: 1.309267
Profit for this transaction: 1.203181
Profit for this transaction: 1.196738
Profit for this transaction: 0.089449
Profit for this transaction: 1.883495
Profit for this transaction: 1.491412
Profit for this transaction: 1.429190
Profit for this transaction: 1.200221
Profit for this transaction: 1.839589
Profit for this transaction: 1.539962
Profit for this transaction: 0.268561
```