Exercise 3 – Collections/Data Structures

Objective

The objective of this exercise is to demonstrate your understanding of control flow statement, functions, arrays/collections

Overview

A stock exchange receives buy orders and sell orders from clients. It charges a fee to match buyers with sellers.

Most stock exchanges have periods where they collect orders for a few minutes and then match buyers with sellers at the end of these periods. This is what we are modelling in the coursework. An extension to the above questions would be to add networking and logic to process a single new order at a time, and either match it to an existing order on the opposite side(buyer with seller), or add it to the list of unmatched orders that might be fulfilled by a subsequent new order being received.

Either new .py file or Jupyter Notebook to complete this exercise

Tasks

1. Construct a list of 100 randomly generated share prices.
2. Create 3 functions that return the average/minimum/maximum share price
3. Model a stock exchange
    a. For 30 different stocks
        i. create a list of 50 buy orders
        ii. create a list of 50 sell orders
    b. Create a class that has methods to:
        i. match buyers with sellers
        ii. return the minimum order price per stock
        iii. return the maximum order price per stock
        iv. return the average order price per stock
        v. closestOrders method
            1. Search through each stocks orders
                a. determines and prints the two orders which were submitted closest together. minimum(X.time-Y.time)