

Due: Monday 10/15 before 9:15

1. **(6.3)**
2. **(6.4)**
3. **(6.6)**
4. **(6.10)**
5. **[Implementation Question]** Implement an algorithm to solve the problem stated in the Solved Exercise 2 of Chapter 5, (the same problem is stated in Exercise 6.7). Your implementation may run in  $O(n \log n)$ , as the solution of Solved Exercise 5.2, or, for extra credit, in  $O(n)$  as indicated in Exercise 6.7 (in the second case, of course, you should also describe your algorithm in detail).

The function to be called by anyone testing your code should be called `plan`, and should take a single argument which will be a list giving the stock prices over time, for example, it may be called as `plan([ 44, 46, 39, 42, 45, 49, 53 ])`. The call to `plan` should return as the only return value a pair (tuple of length 2) of integers, indicating when to buy (the first element of the pair) and when to sell (the second element) in order to earn the most per unit of stock.

You should submit the code and also the result of experiments showing the performance of your code. The largest test cases should be large enough to get an idea of the asymptotics of your implementation's running time (this may be very difficult in general for complicated algorithms, so there is no reliable rule for determining where to stop, but for this particular problem your solutions should be fairly simple, and the asymptotics should be easy to tell).