Algorithms and Analysis

Divide-and-Conquer – participation

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In divide-and-conquer, we solve a problem recursively by applying three steps:

Divide the problem into a number of subproblems that are smaller instances of the same problem.

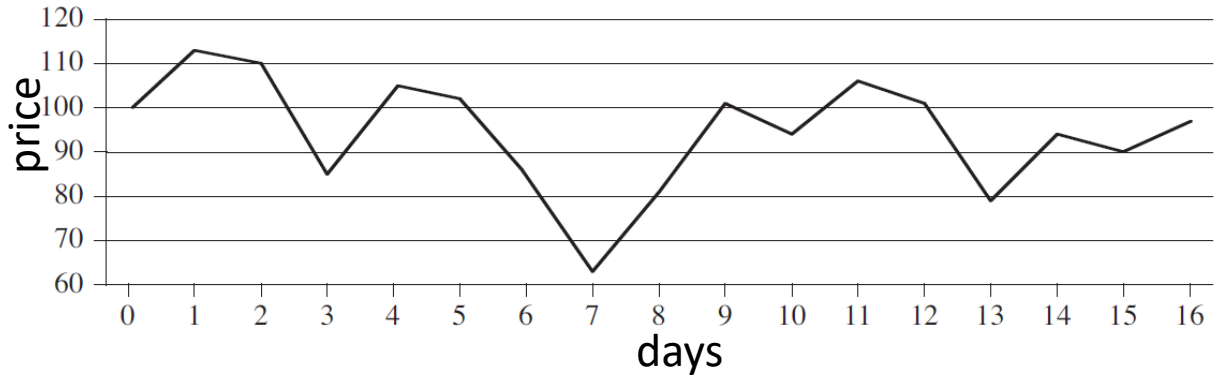
Conquer the subproblems by solving them recursively. If the subproblem sizes are small enough, however, just solve the subproblems in a straightforward manner.

Combine the solutions to the subproblems into the solution for the original problem.

When the subproblems are large enough to solve recursively, we call that the recursive case (general case). Once the subproblems become small enough that we no longer recurse, we call it the base case.

Participation problem

Suppose that you are to write a program that can help people decide when is the best time to buy and sell a stock. For any stock, people are allowed to buy one unit of stock only one time and then sell it at a later date. Assume that the price of the stock in the future is known and given below:



Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Price	100	113	110	85	105	102	86	63	81	101	94	106	101	79	94	90	97

1. Your program needs to display which dates to buy and to sell to make the max profit
2. You can use a internal array to store the data, i.e., day and price
3. Try to keep output or display in format, i.e., using “$” sign for price, descriptive information
4. Submit and demonstrate me your program for credits

Sample program output

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Price	100	113	110	85	105	102	86	63	81	101	94	106	101	79	94	90	97