Digital Pakistan Speed Programing Competition Online Mock Contest

Instructions

- Do not open the booklet unless you are explicitly told to do so. You can only read these instructions below.
- If you have any question regarding the problems, seek a clarification from the judges using DOMJudge.
- Before submitting a run, make sure that it is executable via command line. For Java, it must be executable via "javac" and for GNU C++ via "g++". Java programmers need to remove any "package" statements and source code's file name must be the same as of main class. C++ programmers need to remove any getch() / system("pause") like statements.
- Do not attach input files while submitting a run, only submit/attach source code files, i.e., *.java or *.cpp or *.py.
- Language supported: C/C++, Java and Python3
- Source code file name should not contain white space or special characters.
- You must take input from Console i.e.: Standard Input Stream (stdin in C, cin in C++, System.in in Java, stdin in Python)
- You must print your output to Console i.e.: Standard Output Stream (stdout in C, cout in C++, System.out in Java)
- Please, don't create/open any file for input or output.
- Please strictly meet the output format requirements as described in problem statements, because your program will be auto judged by computer. Your output will be compared with judge's output byte-by-byte and not tolerate even a difference of single byte. So, be aware! **Pay special attention to spaces, commas, dots, newlines, decimal places, case sensitivity etc.**
- All your programs must meet the time constraint specified.
- The decision of judges will be absolutely final.

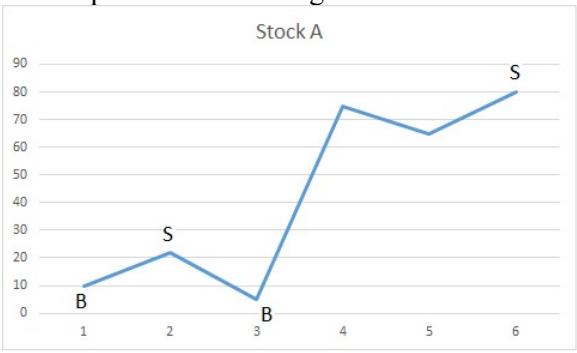
Problem 02: Stock Trader's Dilemma

Time limit: 1 second

These days' stock markets are doing amazing. Investment is very easy, and anyone can become an active trader. Upon looking at such news, CM (Capital Makers) decided to invest in the stock exchange. Having no prior experience, they are in deep trouble in timing the buy and sell signals. They are losing the money of their investors and need your help to come up with a plan to ace the stock market and make profits by buying and selling a stock.

The strategy is to buy a stock, hold it till it gives profit and then sell it. Afterwards, buy the stock once again and sell it. However, since they had already made a lot of mistakes, their shareholders do not trust them anymore. They are restricting them to deal only in one stock at a time and limit the transaction to at most '***k***'. Such that the stock can only be bought '***k***' times and sold '***k***' times. By allowing '***k***' transaction, the shareholders want to have maximum profit.

For example, given the trading data of a stock '***A***' as ***[10, 22, 5, 75, 65, 80]*** and ***k = 2***, the maximum profit can be earned when the stock is bought on day ***1***, sold on day ***2***. Then bought on day ***3*** and sold on day ***6***. Thus, the complete transaction looks like, ***(22-10) + (80-5) = 87***. In the image below, ***B*** represents the buy signal, and ***S*** represents the sale signal.



Input

The first line of the input consists of ***t, (1 ≤ t ≤ 50)*** representing the total number of test cases given. Each test case is represented in three lines. The first line of the test cases represents, ***'k' (0 ≤ k ≤ 10^3)*** allowed trades for the session. The next line contains ***'n' (1 ≤ n ≤ 10^4)*** number of days. The next line contains ***'n'*** values, space separated, representing stock prices on ***'n'*** days.

Output

Output consists of t lines, each line contains exactly one number, representing the maximum profit of the trade.

Sample Input	Sample Output
3 2 6 10 22 5 75 65 80 3 6 10 22 5 75 65 80 1 5 90 80 70 60 50	87 97 0