



CITADEL | Securities

Quantitative Trader Interview Question

Box Game

There are four sealed boxes. There is 100 pounds in one box and the others are empty. A player can pay X to open a box and take the contents as many times as they like.

Assuming this is a fair game, what is the value of X ?



Jump Trading

Quantitative Researcher Interview Question

Basketball

There are only a few seconds left before the end of the game, your team is down two points and you have the ball.

You can take a shot from three-point land or move up and take one from two-point land. Historically, you have a 40% probability of getting the shot in from three-point land and a 70% probability of getting the shot in from two-point land.

Should you try for the three-point shot (a certain win if you make it), or should you try for the two-point shot? Note that a two-pointer produces a tie and puts you into overtime, where the chance of your team winning is 50%.



Options Trader Interview Question

Infinite Volatility

What happens to the price of a vanilla call option as volatility tends to infinity?

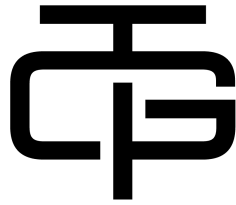


Quantitative Trader Interview Question

Water Level

A small boat is floating in a swimming pool. The boat contains a very small but very heavy rock. The rock is tossed out of the boat into the pool.

What happens to the water level in the pool?



GENEVA TRADING

Quantitative Researcher Interview Question

Best Time to Buy and Sell Stock (Leetcode 121)

You are given an array prices where prices[i] is the price of a given stock on the ith day.

You want to maximize your profit by choosing a **single day** to buy one stock and choosing a **different day in the future** to sell that stock.

Return *the maximum profit you can achieve from this transaction*. If you cannot achieve any profit, return 0.

Example 1

Input: prices = [7,1,5,3,6,4]

Output: 5

Explanation: Buy on day 2 (price = 1) and sell on day 5 (price = 6), profit = 6-1 = 5. Note that buying on day 2 and selling on day 1 is not allowed because you must buy before you sell.

Example 2:

Input: prices = [7,6,4,3,1]

Output: 0

Explanation: In this case, no transactions are done and the max profit = 0.