guys dont share this with anyone i dont wanna get in trouble lol

Virtu Women's Winternship Interviews

Phone Interview (with HR)

1. What is the angle between the hands of a clock at 5:15?
2. At what time will the hands first meet after 5:15?
3. (Standard three dice game) You have a die. You can roll it at most three times. However, you can decide to stop after any of the rolls. Your score is the face value of the last die you roll before you decide to stop. What is the expected value of this game?

In-person interview (one with trader and one with SWE)

Estimation questions:

1. Estimate the number of light bulbs of <insert city> (you can choose which city)
2. Estimate the height of the tallest building you've been to in NYC
3. Estimate the number of people that are in LaGuardia Airport (NYC airport) in one day (people that pass through as well as employees)

Probability:

1. Two players. Both are observing the same sequence of coin flips. The other person's sequence is HT. You can choose a length-two sequence (not equal to HT). Whichever person sees their sequence first wins and gets $25 (loser gets $0). How much would you pay to play this game?
2. Same as above, but both players now have to pay $3 for each toss until the game ends. Would you play this game?
3. If you play the above game but can choose how much you have to pay for each toss, what would you choose?
4. Assuming the games in 1 and 3 have the same EV, which version of the game would you prefer to play?

Misc:

1. How does arbitrage work and why does the gap between the two prices always go to 0?
2. Uses for tuples vs. lists in Python

Reject

Belvedere Winternship

OA (15 questions in 25 minutes):

1. to be updated

Zoom Interview (two traders):

1. Behavioral
    a. Proudest accomplishment

    b. Why MIT? (bruh)
    c. Why do you want to be a quant, and why Belvedere
    d. What qualities make a good trader?
    e. In which work environment are you most productive?
2. Mental math
    a. Give 3/32 in decimal
    b. 62 times 77
    c. sqrt(32) to one decimal place
    d. 25 cubed
3. Probability
    a. Five sided dice, can roll up to two times. Your score is the face value of the die after you decide to stop rolling. Expected value of game?
        i. If you roll a 3 on the first die, do you continue to roll or stop?
    b. You have 100 coins, but one of them is a double-sided head. You randomly choose one. You flip it 6 times and you get all heads. Is the coin more likely to be the double-sided coin or a normal coin?
        i. What happens if you change the 6 to 7
        ii. Some followup questions about odds I didn't understand
    c. Lottery where 1 person wins 100k, 5 people win 12.5k, and 10 people win 2.25k. What is the value of a ticket?
    d. Have the following game with two people. They alternate rolling a die. If they roll a 1, they roll again. If they roll a 2,3, or 4, it goes to the next person. If they roll a 5 or 6, they lose. What is the probability the first person to go wins (i.e. the other person loses)?
        i. Give a confidence interval for your answer

Reject

DRW Trading

Online Assessment

1. (to be updated) jk i forgot

Optiver Trading

Online Assessment

1. some interesting probability questions

Reject

Citadel QR

Zoom interview with quant researcher (who recently joined):

1. Behavioral (career plans, why quant research, other specific stuff)
2. Given an array, return a tuple of ranges ([1,1,2,3,5,6,11,13,14] should return [(1,3),(5,6),(11,11),(13,14))])
3. Given n, return an array of squares such that those squares sum to n and you have used the minimum number of squares needed to sum to n

Zoom interview with quant researcher (very senior):

1. Behavioral (asked about technical details of research, other specific stuff)
2. You have 100 noodles in a bowl. At each step you pick two ends from the bowl and tie them together (if they are from different noodles, you just get one longer noodle. If they are from the same noodle, you get a loop). You keep doing this until no ends are left. EV of number of loops you have at the end?
    a. Followup (answer turns out to be a sum): estimate this sum
3. (More open-ended) Given some data (X,y), how do you create a model for this?

Reject

IMC Trading

Zoom interview with trader:

Battleship setup with 4x4 grid, a 3x1 ship and 2x1 ship

1. How many ways can you place the 3x1 ship on the grid?
2. How many ways are there to place both ships on the grid?
3. B3 is a hit. What is the probability the 3x1 ship was hit? (ans is ⅗)
4. Is ⅗ a coincidence? Or will it always be the ratios of the areas? What if it's an infinite grid and what happens when you keep shrinking this infinite grid
5. What's your strategy for placing the 2x1 and 3x1 ships (they are your ships)
6. What if you play 100 times, what is your strategy now
    a. Follow up on this because he saw I took stats

Final interviews/superday

1. (Update) shit was dumb af

Akuna Quant Trading

1. Online Assessment
    a. 80 in 8 and then 30 in 15 (next number in the pattern)
    b. sample pattern 590490, -98304, 491520, -65610, -12288, -61440, -7290, -1536, -7680, -810, -192, -960, -90, -24, -120, -10, -3

    c. actually dumb
2. Coding assessment
    a. did not do

Reject

SIG Trading

1. Online Assessment
    a. random math questions
    b. just be fast and skip questions if they look time consuming (u cant go back)
2. Phone interview
    a. You and opponent play a game, on a $10 bet. At some point during the game, the opponent can propose to "double" stakes. If you accept the proposal, you each put in $10 more. If you reject, the game stops immediately and you forfeit the $10. Now assume you are playing the game and your opponent proposes to double. What is the minimum probability you need to have of winning the game for you to accept?
    b. Jar with 10 coins, 9 coins are fair and one is double-sided heads. You choose a coin from the jar and flip it 5 times, all times come up heads. If you were to flip this coin for the sixth time, what is the probability it comes up heads?
    c. You own a piece of land. With 10% chance, it has oil and is worth $1 mil. With 30% chance, it has coal and is worth $500,000. Otherwise, it has no natural resources and you can sell the land for $200,000. Someone is interested in buying this land, not knowing what is in it. What price would you sell it to them for?
        i. Now, there is a contract (right to exercise but not obligation) to buy the land for $300,000 which they can exercise after they see what is in the land. What is the fair value of this contract?
3. Second round
    a. Playing a game with opponent. You start with $2, opponent starts with $1. In each round you both bet $1, and you win each round with probability ⅔. Keep playing until someone runs out of money. If the other person runs out of money, you win. What is the probability you win?
        i. Now what if you started with $1 and opponent started with $2.
    b. There is a stock that either goes up 60% or goes to 0. There is also a casino where you can bet whether the stock goes up or down. What is your strategy.

Jane Street

1st round:

1. Observe sequence of flips, but coin biased ⅔ head. Sequence of length 2
    a. For what bias level would you play this game
2. Parking meter (3 parts)

2nd round:

1. There is a race track where 2 people can race at a time. There are three people, A, B and C. A beats B 60% of the time, B beats C 60% of the time. What percent of the time will A beat C? (There is not an exact answer)
    a. Now how will you model this problem (like if you have a computer), and now calculate exact answer
2. So there is a game with three people where each person can write down any number, and they all reveal their numbers at the same time. The person who writes down the highest has to pay the other two people the values they wrote down (so if 8,9,10 then 10 person has to pay 8 to one and 9 to other)
    a. We play this game with me, interviewer, and robot who always chooses on uniform(0,100). What is your strat?
    b. Now if you had a computer, how would you use it to find a strategy?
    c. Interviewer had wrote down a number at the beginning. (So actually play this game) what number do you choose

you and cas have a game where you have a fixed starting health and an intial attack of 10 (edited)
there are 3 moves u can do
1. attack, makes the other person loses ur attack value
2. heal, which makes ur health back to ur fixed starting health

3. raise, which raises ur inital attack by 5
u play a move and she plays a moves at the same time, ie, u don't know the other person's card and vice versa
cas is tipsy and thinks she can win with a handicap, so u have 40 and she has 25 health (edited)
whats ur strat to win
you win if you bring the other opponent to 0
attacks happen first, then heal
and if you both die at the same time, or if the game stalls cas wins (edited)

DE Shaw

1. Teach me something I probably don't know
2. A favorite class you took outside your major

3. An incorrect assumption you made
4. Steepest learning curve you've had to go through
5. If I gave you $10000 to fund your math circle how would you precisely spend

Arrowstreet

1. What is a p-value
2. Formula for linear regression
3. If you double the data how does linear regression change
4. Name two equity indexes
5. What is efficient market hypothesis?

Tower

1. Needs to be updated

QuantCo

1. Needs to be updated

Summary

Virtu Women Winternship

1. Reject after in-person final

Belvedere Winternship

1. Reject after trader interview

Five Rings Winternship

1. Resume ghost

DRW (QT Intern)

1. Reject after OA

Optiver (QT Intern)

1. Reject after OA

Citadel (QR Intern)

1. Reject after researcher interview

IMC (QT Intern)

1. Reject after superday/finals

SIG (QT Intern)

1. Reject after second round

Arrowstreet Capital (QR Intern)

1. First round

Bridgewater (Investment Associate Intern?)

1. Reject after first round

Citadel (Trading Intern)

1. Resume reject

DE Shaw (Prop Trading Intern)

1. Reject after first round

Five Rings (QT Intern)

1. Apply 9/13

HRT (Algo Dev Intern)

1. Reject after OA

IMC (QR Intern)

1. Apply 9/13

Jane Street (QT Intern)

1. Reject after second round

Jump (QR Intern)

1. Apply 9/13 (11/1?)

Optiver (QR Intern)

1. Resume reject

Two Sigma (QR Intern)

1. Resume reject

G-Research France thing

1. Accept

Jane Street HK (QT Intern)

1. Apply 11/1

Jane Street (QR Intern)

1. Apply 11/1

Virtu (QT Intern)

1. Apply 11/1

HRT (QT Intern)

1. Apply 11/1

Jump (QT Intern)

1. Apply 11/1

Tower

QuantCo