Quant Finance Interviews

Financial Engineering Interview Prep

COURSE BY WWW.QCFINANCE.IN

HTTP://QCFINANCE.IN/FINANCIAL-ENGINEERING-INTERVIEW-PREP/

SESSION BY SHIVGAN JOSHI
Interview Formats

FORMATS ARE NEARLY SAME

INTERVIEW PASSING IS A TECHNICAL PROCESS – SCIENTIFIC DEALING WITH IT IS VERY IMPORTANT

MAKING STRATEGY IS ALL THAT MATTERS THE MOST

YOU CANNOT GO WITHOUT PREP
<table>
<thead>
<tr>
<th>Class No</th>
<th>Topic (50% taken by subject experts)</th>
<th>Assignment</th>
<th>Feedback &amp; Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course structure – Making changes to the plan</td>
<td>Places you target and syllabus</td>
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<tr>
<td>2</td>
<td>Soft Quantitative Aspects in Finance and News</td>
<td>Quant CFA L1 L2</td>
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<td>FRM L1 L2</td>
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<tr>
<td>3</td>
<td>Excel VBA MATLAB R SAS SQL Revision</td>
<td>Respective books</td>
<td></td>
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<tr>
<td>4</td>
<td>Calculus and C++</td>
<td>Different Level of Exercise</td>
<td></td>
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<tr>
<td>5</td>
<td>Puzzles and Qualitative Aspects</td>
<td>List of answers to modify</td>
<td></td>
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</table>
• What do you know about Our Company?

• What can you do for Our Company?

• Why do you want to work for Our Company?

• Example Goldman - Henry Paulson – Treasury secretary
Interview Quant Hedge Fund

Three rounds
1 hours per round

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- Three Parts:
  1. Excel Questions – Rank adjustment, MC vs Normal Distributions; implied volatility; creating checks using data validation
  2. Pricing – Fixed Income, from Bloomberg screenshot, convertible bonds
  3. Probability Questions - person retiring (were from actuarial exam); age of people;
Insurance Inv Analyst Interview

45 min Telephonic round

- Probability questions
- Factor Analysis
- Mathematical language
- Yield curve
- Policy of central bank
- Dice questions
- R-square on flipping X and Y
- Non stationary series – CFA L2 – if they are behaving in same way we can use the time series – using the returns not the number

* study this
Three Dimensions of Interview

- Programming: Asked me about encapsulation and polymorphism – OOPS – C++ recepies?
- Probability: If I toss a fair coin 400 times and biased coin 80/100 heads chances, what is the probability that I got a biased coin I get 220 heads?
- Finance Questions – BS Derivatives Greeks Exotic options
- Fixed income is 80% of their investment so interest rate become most imp
Based on your profile
Earlier roles are most important

- Problems in regression
- Examples of Monte Carlo
- VBA Codes
- C++
- MATLAB Interest rate models – Derivative toolboxes
Book Reviews – 5 books for Quant Fin interviews

**LEVEL 0-3**

NONE OF THEM HAS C++
SOME HAS MORE QUIZ OTHER HAS CALCULUS
Vault Guide to Advanced Finance and Quantitative Interviews

- Level 0
- Easy book
Paul & Dominic’s Guide

Getting a Job in Quantitative Finance FAQ

- Level 0
- Small book 70 pages
- Small paragraphs for each topic
- No maths but only words to get you acquainted with things
Starting Your Career as a Wall Street Quant: A Practical, No-BS Guide to Getting a Job in Quantitative Finance - Brett Jiu

- Level 0
- Not much of Calculus or C++
- 100% Qualitative book
Heard on the Wall Street
Timothy Falcon Crack

Book review

Shivgan Joshi

- Level 1 book

- C++ is important – dedicated class for non programmer to answer some questions on C++. This book doesn’t have C++ questions.

- Yes / No / Let me try?
- Non quant market question – where the markets are
- Purely Quant and Logical Questions – Taken ay Arpit
- Derivatives – no maths – pure finance
- My comments – overall an easy book – not upto the level of Quant or C++ - A round one book
Frequently Asked Questions in Quantitative Finance

Paul Wilmott

433 pages

Book Review

• Level 2 book

• One of the longer books

• Stochastic Calculus, Geometric Brownian Motion, Black-Scholes as well as Volatility Modelling and the CAPM

• Question and answer format - 50 questions

• Answers are over simplified
FAQ

- What is Brownian Motion and what are its uses in finance?
- Ten Different Ways to Derive Black–Scholes
- What is Ito’s lemma?
- What is Maximum Likelihood Estimation?
- What is cointegration?
- What is closed-form solutions?
- What is a jump-diffusion model and how does it affect option values?
- What is the finite-difference method?
- What are copulas?
- What is the asymptotic analysis?
A Practical Guide To Quant Fin Interviews

Book by Xinfeng Zhou

Review

- Level 3 book
- Starts with brain teasers
- Many pages of basic maths and series summation
- Lots of calculus – engineering calculus revision
- Is there some way to get back to this using a course; may be a certificate of diploma in maths?
- Lots of stochastic calculus again and lots of probability
- A good book to revise maths in just 50 pages; although no C++
- Level 3 book
- Contains C++ as well
- Explanations are not that good and questions are few
- Good book to do at the end
- Lots of mathematical terminology
- Having idea of derivation of BS helps
<table>
<thead>
<tr>
<th>Level</th>
<th>Book Name</th>
<th>Page Numbers / Chapters</th>
<th>C++/Stochastic Calculus/ Quiz &amp; Puzzles</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Three books</td>
<td></td>
<td>Not much talked about – lots of Quiz</td>
</tr>
<tr>
<td>2</td>
<td>Heard on the Wall Street - Timothy Falcon Crack</td>
<td>400 / Finance Chapters</td>
<td>More into Finance</td>
</tr>
<tr>
<td>3</td>
<td>Frequently Asked Questions in Quantitative Finance - Paul Wilmott</td>
<td>440</td>
<td>Everything but no C++</td>
</tr>
<tr>
<td>3</td>
<td>A Practical Guide To Quant Fin Interviews - Xinfeng Zhou</td>
<td>300-400</td>
<td>Everything</td>
</tr>
<tr>
<td>3</td>
<td>Quant Job Interview Questions And Answers – Mark Joshi</td>
<td>329 /</td>
<td>More on maths programming</td>
</tr>
</tbody>
</table>

- Pricing and Hedging of Derivative Securities, Lars Tyge Nielsen (ISBN 0198776195)
- A First Course in Probability (International Edition), Sheldon Ross (ISBN 0131218026) - Don’t be offended by the title !!! – packed with good ‘applied’ problems to solve of the type asked in interviews
- Effective C++: 50 Specific Ways to Improve Your Programs and Design (2nd Edition), Scott Meyers (ISBN 0201924889)
The 25 Best-Selling Books For Quants
1- A Primer for the Mathematics of Financial Engineering, 2nd Ed - Dan Stefanica
2- Solutions, Primer For The Mathematics Of Financial Engineering, 2nd Ed - Dan Stefanica
3- Quant Job Interview Questions And Answers – Mark Joshi
4- Fifty Challenging Problems in Probability with Solutions – Frederick Mosteller
5- The Complete Guide to Capital Markets for Quantitative Professionals
6- My Life as a Quant: Reflections on Physics and Finance – Emanuel Derman
7- Heard on The Street: Quantitative Questions from Wall Street Job Interviews - Timothy Crack
8- Frequently Asked Questions in Quantitative Finance - Paul Wilmott
9- A Practical Guide To Quantitative Finance Interviews – Xinfeng Zhou
10- Liar's Poker - Michael Lewis
11- Cracking the Coding Interview: 150 Programming Questions and Solutions - Gayle Laakmann McDowell
12- How I Became a Quant: Insights from 25 of Wall Street's Elite - Richard R. Lindsey
13- Problem Solving with C++, 8th Edition - Walter Savitch
14- Options, Futures and Other Derivatives (8th Edition) - John Hull
15- Stochastic Calculus for Finance I: The Binomial Asset Pricing Model - Steven Shreve
16- Paul Wilmott on Quantitative Finance 3 Volume Set (2nd Edition) - Paul Wilmott
17- Stochastic Calculus for Finance II: Continuous-Time Models - Steven Shreve
19- C++ Design Patterns and Derivatives Pricing - Mark Joshi
20- C++ Primer Plus - Stephen Prata
21- The Big Short: Inside the Doomsday Machine - Michael Lewis
22- When Genius Failed: The Rise and Fall of Long-Term Capital Management - Roger Lowenstein
23- Starting Your Career as a Wall Street Quant - Brett Jiu
24- Reminiscences of a Stock Operator - Edwin Lefevre
25- The Quants: How a New Breed of Math Whizzes Conquered Wall Street and Nearly Destroyed It - Scott Patterson
Paul Wilmott on Quantitative Finance

- 1400 pages on quant finance
Quant Questions

- Maths
- Probability distribution – Coin, Dice
- Brain teasers
Programming Topics

- C++ and data structures, finance, brainteasers, and stochastic calculus
References

- http://www.wikijob.co.uk/wiki/goldman-sachs-interview-questions
- http://www.assessmentday.co.uk/WJ/index.html?wikijob-link-type=a-link
- http://goldmansachsinterviewquestions.blogspot.com/
- 103 questions:
  - http://interviewquestionsandanswers.biz/interview-questions-list-and-answers/
- **Data structures and algorithms:**
  - https://www.quantnet.com/threads/goldman-interview.3496/
  - http://www.entrepreneur.com/article/230931
- **Quant focused:**
  - www.wilmott.com/messageview.cfm?catid=16&threadid=12806