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COMPUTATIONAL FINANCE

Index

- ① Database
- ① C++
- ① MBS / ABS / Valuation

Why shift from spreadsheet to RDBM

Advantages
Disadvantages

Financial Engineering
Roles

Technologies

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<http://www.seguetech.com/blog/2013/02/19/upgrade-spreadsheets-vs-database>

http://ccp.arl.arizona.edu/dthompso/sql_workshop/intro/spreadshestdifferences.html

Database Concepts in Financial Engineering

Financial Engineering
Roles

Interview Prep

Technologies:

MATLAB

SQL

C++

XML

Java

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- Install MySQL database create and update data and its Integration with MATLAB
- Greeks, Securitization, Indices, etc
- Improve data management efficiency
- Capture bulk data
- Spreadsheets to relational database

Quiz:

- ❖ Relational database
- ❖ ER Diagram
- ❖ Joins
- ❖ 3NF Table

Quiz:

- Bubble sort method
- Storage classes in C
- Array of pointers
- Pass array elements to a function

Database Concepts in Financial Engineering

- ❖ Relational database
- ❖ Joins in SQL
- ❖ Entity Relation Diagram – Data from Finance world ex Securitization
- ❖ Normalization: 3NF Table – Again data from Finance?

Mortgage Backed Securities

- Securitization
- Pass through securities
- Pre payments
- Stripped MBS
- Non Agency MBS
- Contraction Risk & Extension Risk
- Call protection from CMBS
- PO and IO
- CPR SMM (monthly)
- PSA standard – up till 30 post 30 months

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CFA Level 2 Exam
Fixed Income
Bonds

Asset Backed Securities

- Securitization
- External Credit Enhancements
- Pre payments
- CDOs
- Synthetic CDOs
- Arbitrage CDO vs Synthetic CDIs
- PAC (planned amortization class)

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CFA Level 2 Exam
Fixed Income
Bonds

Valuation of ABS and MBS

- ⦿ YTM treasury
- ⦿ Zero Volatility
- ⦿ Option Adjusted Spread
- ⦿ Bond Equivalent Yield
- ⦿ Nominal Spread
- ⦿ Monte Carlo Spread

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**CFA Level 2 Exam
Fixed Income
Bonds**