

**NANYANG  
TECHNOLOGICAL  
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**SINGAPORE**

## **SC2207 Lab 3**

### **Tutorial Group SCS5, Group 5**

Group members:





Liang Qiaoyun (U2322330D)

Lim Li Ping Joey (U2321331C)

Roger Kwek (U2320447G)

Matz Chan (U2321258E)

### INDIVIDUAL CONTRIBUTION FORM





Full Name	Individual Contribution to Lab 3 Submission	Percentage of Contribution	Signature
Lim Li Ping Joey	Worked and discussed on the Normalized Relational Schema	25%	
Liang Qiaoyun	Worked and discussed on the Normalized Relational Schema	25%	
Matz Chan	Worked and discussed on the Normalized Relational Schema	25%	
Roger Kwek	Worked and discussed on the Normalized Relational Schema	25%	

## USE OF AI TOOL(S) IN LAB WORK

Each team member should indicate either A or B:

A. I affirm that my contribution(s) to the lab work is my own, produced without help from any AI tool(s).

B. I affirm that my contribution(s) to the lab work has been produced with the use of AI tool(s).

Team member (full name)	Signature	Date	A or B
Lim Li Ping Joey		1/2/25	A
Liang Qiaoyun		1/2/25	A
Matz Chan		1/2/25	A
Roger Kwek		1/2/25	A

By signing this form, you declare that the above affirmation made is true and that you have read and understood NTU's policy on the use of AI tools.

If any team member answered B, the team member(s) must indicate and replicate the table below for every instance that AI tool(s) is used:

Name of AI tool	< For example, ChatGPT >
Input prompt	< Insert the question that you asked ChatGPT >
Date generated	
Output generated	< Insert the response verbatim from ChatGPT >
Output screenshots	
Impact on submission	< Briefly explain which part of your submitted work was ChatGPT's response applied >

## **Normalized Relational Schema**

Investor(Phone, Name, Gender, DOB, Annual Income, Company)

Key(s): Phone

Primary Key: Phone

FDs: Phone  $\rightarrow$  Name, Gender, DOB, Annual Income, Company

The relation is in 3NF

Risk\_Tolerance(Risk\_Level, Phone, Q1\_answer, Q2\_answer, Q3\_answer, Q4\_answer, Q5\_answer)

Key(s): {Risk\_Level, Phone}, {Q1\_answer, Q2\_answer, Q3\_answer, Q4\_answer, Q5\_answer, Phone}

Primary Key: {Risk\_Level, Phone}

FDs: Risk\_Level, Phone  $\rightarrow$  Q1\_answer, Q2\_answer, Q3\_answer, Q4\_answer, Q5\_answer

Q1\_answer, Q2\_answer, Q3\_answer, Q4\_answer, Q5\_answer  $\rightarrow$  Risk\_Level

The relation is in 3NF

Note: The 2nd FD is in 3NF because Risk\_Level is a key-attribute

Financial\_Goal(Goal, Phone, Timeline, Amount)

Key(s): {Goal, Phone}

Primary Key: {Goal, Phone}

FDs: Goal, Phone  $\rightarrow$  Timeline, Amount

The relation is in 3NF

Portfolio(PID, Phone, Annualized\_Return, Inception\_Date, Market\_Value, Fee)

Key(s): {PID, Phone}

Primary Key: {PID, Phone}

FDs: PID, Phone → Annualized\_Return, Inception\_Date, Market\_Value, Fee

The relation is in 3NF

Invested\_Value(Date, PID, Phone, Amount)

Key(s): {Date, PID, Phone}

Primary Key: {Date, PID, Phone}

FDs: Date, PID, Phone → Amount

The relation is in 3NF

Unrealized\_Gain/Loss(Date, PID, Phone, Amount)

Key(s): {Date, PID, Phone}

Primary Key: {Date, PID, Phone}

FDs: Date, PID, Phone → Amount

The relation is in 3NF

Stock\_In\_Portfolio(ID, PID, Phone, Start Date, Allocation Ratio, Post-trade CO, Asset-ID)

Key(s): ID

Primary Key: ID

FDs: ID → PID, Phone, Start Date, Allocation Ratio, Post-trade CO, Asset-ID

The relation is in 3NF

Stock(Asset-ID, P/E ratio, EPS, EBITDA)

Key(s): Asset-ID

Primary Key: Asset-ID

FDs: Asset-ID → P/E ratio, EPS, EBITDA

The relation is in 3NF

Stock\_Transaction(Date, Stock\_In\_Portfolio\_ID, Type, Fee)

Key(s): {Date, Stock\_In\_Portfolio\_ID}

Primary Key: {Date, Stock\_In\_Portfolio\_ID}

FDs: Date, Stock\_In\_Portfolio\_ID → Type, Fee

The relation is in 3NF

Bond\_In\_Portfolio(ID, PID, Phone, Start Date, Allocation Ratio, Post-trade CO, Asset-ID)

Key(s): ID

Primary Key: ID

FDs: ID → PID, Phone, Start Date, Allocation Ratio, Post-trade CO, Asset-ID

The relation is in 3NF

Bond(Asset-ID, Interest Rate, Maturity Date)

Key(s): Asset-ID

Primary Key: Asset-ID

FDs: Asset-ID → Interest Rate, Maturity Date

The relation is in 3NF

Bond\_Transaction(Date, Bond\_In\_Portfolio\_ID, Type, Fee)

Key(s): {Date, Bond\_In\_Portfolio\_ID}

Primary Key: {Date, Bond\_In\_Portfolio\_ID}

FDs: Date, Bond\_In\_Portfolio\_ID → Type, Fee

The relation is in 3NF

Fund\_In\_Portfolio(ID, PID, Phone, Start Date, Allocation Ratio, Post-trade CO, Asset-ID)

Key(s): ID

Primary Key: ID

FDs: ID → PID, Phone, Start Date, Allocation Ratio, Post-trade CO, Asset-ID

The relation is in 3NF

Fund(Asset-ID, Expense\_Ratio, Divident\_Yield)

Key(s): Asset-ID

Primary Key: Asset-ID

FDs: Asset-ID → Expense\_Ratio, Divident\_Yield

The relation is in 3NF

Fund\_Transaction(Date, Fund\_In\_Portfolio\_ID, Type, Fee)

Key(s): {Date, Fund\_In\_Portfolio\_ID}

Primary Key: {Date, Fund\_In\_Portfolio\_ID}

FDs: Date, Fund\_In\_Portfolio\_ID → Type, Fee

The relation is in 3NF



Asset(ID,Name,Price)

Key(s): ID

Primary Key: ID

FDs: ID  $\rightarrow$  Name, Price

The relation is in 3NF