

# CPSC 304 Project Cover Page

Milestone #: 4

Date: 2024/4/3

Group Number: 2

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

## Project Description:

Our project is an investment management system focusing on the bond market and the stock market. The final goal of this project is to allow users to create an account with several watchlists to monitor bonds and stocks. Our database focuses on stocks of public traded companies and bonds issued by publicly traded companies and governments. So far the project allows the user to input user information to the database, insert information about which financial market the user is in, update the user's information, and delete the user information from the database. The user can find accounts based on their requirements, and check the attributes from distinct tables in the database. The user can also do some queries, the user can find names of accounts that have operated on stocks with dividends greater than a certain amount, find the highest stock price of each account, find the lowest stock price of each account having accountID starts with 'A', find the account who bought the lowest average stock price, and find account has operated on every stock in its watchlist (includes the accounts has no watchlist).

Based on the TA's feedback from milestone 2, we changed some of the names of the schemas to make them more meaningful. The changes are based on the attributes of each table. The following are the changes:

Financial\_Market1 -> Financial\_Market\_Hours  
Financial\_Market2 -> Financial\_Market\_Info  
User1 -> User\_Address\_Info  
User3 -> User\_Contact\_Info  
User4 -> User\_Info  
In -> User\_In\_Financial  
Public\_Traded\_Company1 -> Public\_Traded\_Company  
Public\_Traded\_Company2 -> Public\_Traded\_Company\_Details

## Schema:

Financial\_Market\_Hours(startingHour: time, endingHour: time) (endingHour is a candidate key)

Financial\_Market\_Info(**startingHour**: Integer, country: varchar(40), marketDate: date)

Stock\_Market(country: varchar(40), numberOfStocks: varchar(15))

Bond\_Market(country: varchar(40), numberOfStocks: varchar(15))

User\_In\_Financial(country: varchar(40), **ID**: char(8))

User\_Address\_Info(address: varchar(60), phoneNumber: varchar(15))

User\_Contact\_Info(email: varchar(30), **address**: varchar(60))

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User\_Info(**email**: varchar(30), **ID**: char(8), name: varchar(20))

Has\_Account(**accountID**: char(10), balance: varchar(15), accountName: varchar(30), since: date, **ID**: char(8) NOT NULL, UNIQUE) (ID is a candidate key)

Have\_Stock(**country**: varchar(40), **stockID**: varchar(10))

Have\_Bond(**country**: varchar(40), **bondID**: char(10))

Owns\_PTC\_Stock\_Stock(**stockID**: varchar(10), price: varchar(15), dividend: varchar(15), tradedQuantity: varchar(20), PERatio: float, **companyID**: varchar(10) NOT NULL)

Public\_Traded\_Company(**address**: varchar(60), name: varchar(50))

Public\_Traded\_Company\_Details(**address**: varchar(60), **companyID**: varchar(10), listingDate: date, sector: varchar(10))

Create\_Watchlist(**listID**: char(4), name: varchar(20), since: date, **accountID**: char(10))

Bond(**bondID**: char(10), faceValue: varchar(20), maturityDate: date)

Issue\_PTC\_Bond\_CorporateBond(**bondID**: char(10), issueDate: date, **companyID**: varchar(10) NOT NULL)

Issue\_Government\_Bond\_GovernmentBond(**bondID**: char(10), issueDate: date, **country**: varchar(40) NOT NULL)

Government(**country**: varchar(40), president: varchar(30)) (president is a candidate key)

Operates\_Stock(**stockID**: varchar(10), **accountID**: char(10), type: varchar(4), operateTime: time)

Operates\_Bond(**bondID**: char(10), **accountID**: char(10), type: varchar(4), operateTime: time)

Includes\_Stock(**stockID**: varchar(10), **listID**: char(4), **accountID**: char(10))

Includes\_Bond(**bondID**: char(10), **listID**: char(4), **accountID**: char(10))

## Screenshots of Relations:

```
STARTINGHOUR
-----
ENDINGHOUR
-----
01-JAN-70 08.00.00.000000 AM
01-JAN-70 04.00.00.000000 PM

01-JAN-70 09.00.00.000000 AM
01-JAN-70 05.00.00.000000 PM

01-JAN-70 07.00.00.000000 AM
01-JAN-70 03.00.00.000000 PM

STARTINGHOUR
-----
ENDINGHOUR
-----
01-JAN-70 10.00.00.000000 AM
01-JAN-70 06.00.00.000000 PM

01-JAN-70 06.00.00.000000 AM
01-JAN-70 02.00.00.000000 PM

SQL> nd;
SELECT * FROM Issue_Government_Bond_
STARTINGHOUR
-----
COUNTRY                                MARKETDAT
-----
01-JAN-70 08.00.00.000000 AM
USA                                     25-FEB-20
```

```
SQL> nd;
SELECT * FROM Issue_Government_Bond_
STARTINGHOUR
-----
COUNTRY                                MARKETDAT
-----
01-JAN-70 08.00.00.000000 AM
USA                                     25-FEB-20

01-JAN-70 09.00.00.000000 AM
China                                  27-MAR-12

01-JAN-70 07.00.00.000000 AM
Germany                                18-SEP-13

STARTINGHOUR
-----
COUNTRY                                MARKETDAT
-----
01-JAN-70 10.00.00.000000 AM
Japan                                  07-JAN-16

01-JAN-70 06.00.00.000000 AM
Canada                                 22-AUG-18

SQL>
COUNTRY                                NUMBEROFSTOCKS
-----
USA                                     396
China                                  789
Germany                                147
Japan                                  258
Canada                                 357

SQL>
COUNTRY                                NUMBEROFBONDS
-----
USA                                     951
China                                  725
Germany                                345
Japan                                  943
Canada                                 486
```

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```
SQL> GovernmentBond;
```

```
SEL
```

```
COUNTRY
```

```
ID
```

```
-----
```

```
Canada
```

```
U6N2D5B9
```

```
China
```

```
U8F4Q1W7
```

```
Germany
```

```
U2T6K9Y4
```

```
Japan
```

```
U3V7M1X8
```

```
USA
```

```
U5H9P2Z3
```

```
SQL> ECT * FROM Government;
```

```
SELECT * FROM Operates_Stock;
```

```
SELECT * FROM Operates_Bond;
```

```
SELECT * FROM Includes_Stock;
```

```
SELECT * FROM Includes_Bond;
```

```
ADDRESS
```

```
PHONENUMBER
```

```
-----
```

```
44 Park Road
```

```
4435792534
```

```
806 E. Brown St
```

```
7238865678
```

```
789 Oak St
```

```
5522109012
```

```
99 Marine Drive
```

```
5877972252
```

```
654 Maple St
```

```
6205477810
```

```
SQL>
```

```
EMAIL
```

```
-----
```

```
ADDRESS
```

```
-----
```

```
JohnKent01@yahoo.com
```

```
44 Park Road
```

```
AliceG23@gmail.com
```

```
806 E. Brown St
```

```
BobWayne34@gmail.com
```

```
789 Oak St
```

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EMAIL

ADDRESS

KateL09@hotmail.com  
99 Marine Drive

MikeDo98@msn.com  
654 Maple St

SQL>

EMAIL

ID

NAME

JohnKent01@yahoo.com	U5H9P2Z3	John Kent
AliceG23@gmail.com	U8F4Q1W7	Alice Green
BobWayne34@gmail.com	U2T6K9Y4	Bob Wayne
KateL09@hotmail.com	U3V7M1X8	Kate Lee
MikeDo98@msn.com	U6N2D5B9	Michael Do

SQL>

ACCOUNTID

BALANCE

ACCOUNTNAME

SINCE

ID

ACCa2B3cD4	5020	JohnKent01	15-JAN-20	U5H9P2Z3
ACC1eFg2H3	10810	AliceG23	20-JUL-21	U8F4Q1W7
ACCiJ4k5Lm	7500	BobWayne34	10-MAR-23	U2T6K9Y4
ACC6Nop7Qr	124100	KateL09	05-DEC-22	U3V7M1X8
ACC8S9tUvW	9600	MikeDo98	10-FEB-21	U6N2D5B9

SQL>

COUNTRY

STOCKID

China	TCEHY
Germany	BMW
Japan	TM
USA	AAPL
USA	GOOGL

SQL>

COUNTRY

BONDID

Canada	4564729000
China	9029883888
Germany	1284984092
Japan	8298390002
USA	1273809090

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```
SQL>
STOCKID      PRICE      DIVIDEND      TRADEDQUANTITY      PERATIO  COMPANYI
-----
AAPL         21897        2.1           123128              1.2 12321
TCEHY        31497        2.0           123128              1.1 12331
BMW          12897        2.1           123128              1.3 12341
GOOGL        21837        2.4           123128              1.2 12351
TM           22299        1.8           123128              1.4 12361
```

```
SQL>
ADDRESS
-----
```

```
NAME
-----
```

```
1 Apple Park Way
Apple
```

```
No. 33, Haitian Second Road
Tencent
```

```
Petuelring 130, 80809 M??nchen
Bayerische Motoren Werke AG
```

```
ADDRESS
-----
```

```
NAME
-----
```

```
1600 Amphitheatre Parkway
Google
```

```
1 Toyota-Cho
Toyota Motor
```

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```
SQL>
ADDRESS                                                    COMPANYID
-----
LISTINGDA SECTOR
-----
1 Apple Park Way                                           12321
12-DEC-80 technology

No. 33, Haitian Second Road                                12331
16-JUN-04 technology

Petuelring 130, 80809 M??nchen                             12341
13-AUG-18 technology

ADDRESS                                                    COMPANYID
-----
LISTINGDA SECTOR
-----
1600 Amphitheatre Parkway                                  12351
19-AUG-04 technology

1 Toyota-Cho                                                12361
01-MAY-59 technology

SQL>
LIST  NAME          SINCE      ACCOUNTID
-----
2345 a1             01-JAN-22 ACCa2B3cD4
2346 a2             02-JAN-22 ACC8S9tUvW
2347 a3             03-JAN-22 ACC8S9tUvW
2348 a4             04-JAN-22 ACC6Nop7Qr
2349 a5             05-JAN-22 ACC6Nop7Qr
```



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```
SQL>
BONDID      FACEVALUE      MATURITYD
-----
1273809090  1000           11-FEB-24
1284984092  1000           12-FEB-24
8298390002  1000           13-FEB-24
9029883888  1000           14-FEB-24
4564729000  1000           15-FEB-24
```

```
SQL>
BONDID      ISSUEDATE      COMPANYID
-----
1273809090  11-JAN-24     12321
1284984092  12-JAN-24     12331
8298390002  13-JAN-24     12341
9029883888  14-JAN-24     12351
4564729000  15-JAN-24     12361
```

```
SQL>
BONDID      ISSUEDATE      COUNTRY
-----
1273809090  11-JAN-24     USA
1284984092  12-JAN-24     China
8298390002  13-JAN-24     Germany
9029883888  14-JAN-24     USA
4564729000  15-JAN-24     Japan
```

```
SQL>
COUNTRY      PRESIDENT
-----
USA          Joe Biden
China        JinPing Xi
Germany      Frank-Walter Steinmeier
Canada       Justin Trudeau
Japan        Fumio Kishida
```

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```
STOCKID      ACCOUNTID  TYPE
-----
OPERATETIME
-----
AAPL          ACCa2B3cD4  buy
01-JAN-70 01.00.00.000000 PM
```

```
TCEHY          ACC8S9tUvW  sell
01-JAN-70 01.01.00.000000 PM
```

```
BMW           ACC8S9tUvW  buy
01-JAN-70 01.00.00.000000 PM
```

```
STOCKID      ACCOUNTID  TYPE
-----
OPERATETIME
-----
GOOGL          ACC6Nop7Qr  sell
01-JAN-70 01.01.00.000000 PM
```

```
TM            ACC6Nop7Qr  buy
01-JAN-70 01.02.00.000000 PM
```

```
SQL>
BONDID        ACCOUNTID  TYPE
-----
OPERATETIME
-----
1273809090 ACCa2B3cD4  buy
01-JAN-70 02.00.00.000000 PM
```

```
1284984092 ACC8S9tUvW  sell
01-JAN-70 02.01.00.000000 PM
```

```
8298390002 ACC8S9tUvW  buy
01-JAN-70 02.00.00.000000 PM
```

```
BONDID        ACCOUNTID  TYPE
-----
OPERATETIME
-----
9029883888 ACC6Nop7Qr  sell
01-JAN-70 02.01.00.000000 PM
```

```
4564729000 ACC6Nop7Qr  buy
01-JAN-70 02.02.00.000000 PM
```

```
SQL>
STOCKID      LIST  ACCOUNTID
-----
AAPL         2345  ACCa2B3cD4
BMW          2347  ACC8S9tUvW
GOOGL        2348  ACC6Nop7Qr
TCEHY        2346  ACC8S9tUvW
TM           2349  ACC6Nop7Qr
```

```
BONDID      LIST  ACCOUNTID
-----
1273809090  2345  ACCa2B3cD4
1284984092  2346  ACC8S9tUvW
4564729000  2349  ACC6Nop7Qr
8298390002  2347  ACC8S9tUvW
9029883888  2348  ACC6Nop7Qr
```

## Function And ScreenShot:

### Reset:

project.php / Line: 490 / handleResetRequest()

Before:

### Reset

If you wish to reset the table press on the reset button. If this is the first time you're running this page, you MUST use reset

Reset

After:

## Reset

If you wish to reset the table press on the reset button. If this is the first time you're running this page, you MUST use reset

Reset Done!

## Insert:

project.php / Line: 525 / handleInsertUserRequest()

project.php / Line: 592 / handleInsertUserInFinancialRequest()

before:

### Create New User

ID(Must be 8 Digits):

Email:

Name:

Address:

Phone Number:

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St

during:

### Create New User

ID(Must be 8 Digits):

Email:

Name:

Address:

Phone Number:

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St

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After:

### Create New User

ID(Must be 8 Digits):

Email:

Name:

Address:

Phone Number:

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com
12345678	ZA	aa@gmail.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St
aa@gmail.com	UBC

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Before:

### Add User to Financial Market

User ID (Must be 8 Digits):

Country:

Add to Market

Display Market Data

User In Financial Data:

User ID	Country
U6N2D5B9	Canada
U8F4Q1W7	China
U2T6K9Y4	Germany
U3V7M1X8	Japan
U5H9P2Z3	USA

Financial Market Info Data:

Country	Market Date	Starting Hour
USA	25-FEB-20	01-JAN-70 08.00.00.000000 AM
China	27-MAR-12	01-JAN-70 09.00.00.000000 AM
Germany	18-SEP-13	01-JAN-70 07.00.00.000000 AM
Japan	07-JAN-16	01-JAN-70 10.00.00.000000 AM
Canada	22-AUG-18	01-JAN-70 06.00.00.000000 AM

During:

### Add User to Financial Market

User ID (Must be 8 Digits):

Country:

Add to Market

Display Market Data

User In Financial Data:

User ID	Country
U6N2D5B9	Canada
U8F4Q1W7	China
U2T6K9Y4	Germany
U3V7M1X8	Japan
U5H9P2Z3	USA

Financial Market Info Data:

Country	Market Date	Starting Hour
USA	25-FEB-20	01-JAN-70 08.00.00.000000 AM
China	27-MAR-12	01-JAN-70 09.00.00.000000 AM
Germany	18-SEP-13	01-JAN-70 07.00.00.000000 AM
Japan	07-JAN-16	01-JAN-70 10.00.00.000000 AM
Canada	22-AUG-18	01-JAN-70 06.00.00.000000 AM

After:

### Add User to Financial Market

User ID (Must be 8 Digits):

Country:

Add to Market

Display Market Data

User In Financial Data:

User ID	Country
12345678	Canada
U6N2D5B9	Canada
U8F4Q1W7	China
U2T6K9Y4	Germany
U3V7M1X8	Japan
U5H9P2Z3	USA

Financial Market Info Data:

Country	Market Date	Starting Hour
USA	25-FEB-20	01-JAN-70 08.00.00.000000 AM
China	27-MAR-12	01-JAN-70 09.00.00.000000 AM
Germany	18-SEP-13	01-JAN-70 07.00.00.000000 AM
Japan	07-JAN-16	01-JAN-70 10.00.00.000000 AM
Canada	22-AUG-18	01-JAN-70 06.00.00.000000 AM

## Update:

project.php / Line: 660 / handleUpdateRequest()

Before:

During:

### Change User's Info

Enter the user's ID and the new name you wish to change

ID (to Update):

New Name:

New Email:

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com
12345678	ZA	aa@gmail.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St
aa@gmail.com	UBC

### Change User's Info

Enter the user's ID and the new name you wish to change.

ID (to Update):

New Name:

New Email:

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com
12345678	ZA	aa@gmail.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St
aa@gmail.com	UBC

After:

Change User's Info

Enter the user's ID and the new name you wish to change.

ID (to Update):

New Name:

New Email:

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com
12345678	AZ	abc@gmail.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St
abc@gmail.com	UBC



## Delete:

project.php / Line: 721 / handleDeleteRequest()

before:

during:

### Delete User

Enter the ID of the user you wish to delete.

ID (to Delete):

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com
12345678	AZ	abc@gmail.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St
abc@gmail.com	UBC

### Delete User

Enter the ID of the user you wish to delete.

ID (to Delete):

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com
12345678	AZ	abc@gmail.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St
abc@gmail.com	UBC

after:

## Delete User

Enter the ID of the user you wish to delete.

ID (to Delete):

User Info Data:

User ID	Name	Email
U5H9P2Z3	John Kent	JohnKent01@yahoo.com
U8F4Q1W7	Alice Green	AliceG23@gmail.com
U2T6K9Y4	Bob Wayne	BobWayne34@gmail.com
U3V7M1X8	Kate Lee	KateL09@hotmail.com
U6N2D5B9	Michael Do	MikeDo98@msn.com

User Contact Info Data:

Email	Address
JohnKent01@yahoo.com	44 Park Road
AliceG23@gmail.com	806 E. Brown St
BobWayne34@gmail.com	789 Oak St
KateL09@hotmail.com	99 Marine Drive
MikeDo98@msn.com	654 Maple St

## Selection:

project.php / Line: 839 / handleSelectionRequest()

before:

## Find accounts

Filter (example: balance > 900):

after:

## Find accounts

Filter (example: balance > 900):

AccountID  
ACC1eFg2H3  
ACCiJ4k5Lm  
ACC6Nop7Qr  
ACC8S9tUvW

## Projection:

project.php / Line: 871 / handleProjectionRequest()

before:

---

**Choose attributes from any table**

Select Table:

- ☒ ACCOUNTID
- ☒ BALANCE
- ☒ ACCOUNTNAME
- ☒ SINCE
- ☒ ID

after:

**Choose attributes from any table**

Select Table:

- ☐ ACCOUNTID
- ☐ BALANCE
- ☐ ACCOUNTNAME
- ☐ SINCE
- ☐ ID

ACCOUNTID	BALANCE	ACCOUNTNAME	SINCE	ID
ACCa2B3cD4	5020	JohnKent01	15-JAN-20	U5H9P2Z3
ACC1eFg2H3	10810	AliceG23	20-JUL-21	U8F4Q1W7
ACCiJ4k5Lm	7500	BobWayne34	10-MAR-23	U2T6K9Y4
ACC6Nop7Qr	124100	KateL09	05-DEC-22	U3V7M1X8
ACC8S9tUvW	9600	MikeDo98	10-FEB-21	U6N2D5B9

## Join:

project.php / Line: 900 / handleJoinRequest()

before:

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**Find names of accounts that have operated on stocks with dividend greater than a certain amount**

Dividend:

After:

**Find names of accounts that have operated on stocks with dividend greater than a certain amount**

Dividend:

accountName  
JohnKent01  
MikeDo98  
KateL09

## Aggregation with Group By:

project.php / Line: 919 / handleGroupByRequest()

## Find the highest stock price of each account

Find

AccountID | Highest Price  
ACCa2B3cD4 | 21897  
ACC6Nop7Qr | 22299  
ACC8S9tUvW | 31497

### Aggregation with Having:

project.php / Line: 939 / handleHavingRequest()

**Find the lowest stock price of each account having accountID starts with 'A'**

Find

AccountID | Lowest Price  
ACCa2B3cD4 | 21897  
ACC6Nop7Qr | 21837  
ACC8S9tUvW | 12897

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### Nested Aggregation with Group By:

project.php / Line: 960 / handleNestedAggregationRequest()

## Find the account who bought the lowest average stock price

Find

AccountID | Lowest Average

ACCa2B3cD4 | 21897

### Division:

project.php / Line: 985 / handleDivisionRequest()

**Find account has operated on every stock in its watchlist (includes the accounts has no watchlist)**

Find

AccountID

ACC1eFg2H3

ACC6Nop7Qr

ACC8S9tUvW

ACCa2B3cD4

ACCiJ4k5Lm