University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: _____2_____

Date: _____2024/2/21_____

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

Schema:

In our schema, primary keys are underlined and foreign keys are bolded. Any candidate keys are explicitly stated beside the schema.

Financial_Market(country: varchar(40), marketDate: date, startingHour: time, endingHour: time)

Stock_Market(**country**: varchar(40), numberOfStocks: varchar(15))

Bond_Market(**country**: varchar(40), numberOfStocks: varchar(15))

In(**country**: varchar(40), **ID**: char(8))

User(ID: char(8), address: varchar(60), email: varchar(30), name: varchar(20), phoneNumber: varchar(15))

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: float, tradedQuantity: varchar(20), PEratio: float, **companyID**: varchar(10) NOT NULL)

Public_Traded_Company(companyID: varchar(10), sector: varchar(10), address: varchar(60), name: varchar(20), listingDate: date)

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))

FD:

Financial_Market:

startingHour -> endingHour

endingHour -> startingHour

country -> marketDate, startingHour, endingHour

Stock_Market:

country -> numberOfStocks

Bond_Market:

country -> numberOfBonds

In:

None

User:

ID -> phoneNumber, email, address, name

address -> phoneNumber

email -> address

Has_Account:

accountID -> ID, accountName, balance, since

ID -> accountName, since, accountID

Have_Stock:

None

Have_Bond:

None

Owns_PTC_Stock_Stock:

stockID -> price, dividend, tradedQuantity, PEratio, companyID

Public_Traded_Company:

companyID -> address, name, listingDate, sector

address -> name

Create_Watchlist:

accountID, listID -> name, since

Bond:

bondID -> faceValue, maturityDate

Issue_PTC_Bond_CorporateBond:

bondID -> issueDate, companyID

Issue_Government_Bond_GovernmentBond:

bondID -> issueDate, country

Government:

country -> president

president -> country

Operates_Stock:

accountID, stockID, type -> time

Operates_Bond:

accountID, bondID, type -> time

Includes_Stock:

None

Includes_Bond:

None

Normalization:

We have decided to normalize our tables into BCNF. The tables that violate BCNF are: Financial_Market, User, and Public_Traded_Company. Hence, we will perform the lossless-join decomposition on the tables identified.

1) Financial_Market(country: varchar(40), marketDate: date, startingHour: time, endingHour: time)
startingHour -> endingHour violates BCNF. Decomposing Financial_Market on startingHour -> endingHour:

Financial_Market1(startingHour: time, endingHour: time) (endingHour is a candidate key)
Financial_Market2(**startingHour**: Integer, country: varchar(40), marketDate: date)

2) User(ID: char(8), address: varchar(60), email: varchar(30), name: varchar(20), phoneNumber: varchar(15))
address -> phoneNumber violates BCNF. Decomposing User on address -> phoneNumber:

User1(address: varchar(60), phoneNumber: varchar(15))
User2(**address**: varchar(60), ID: char(8), email: varchar(30), name: varchar(20))

User2 violates BCNF due to FD email -> address. Decomposing User2 on email -> address:

User3(email: varchar(30), **address**: varchar(60))
User4(**email**: varchar(30), ID: char(8), name: varchar(20))

Final normalization:
User1(address: varchar(60), phoneNumber: varchar(15))
User3(email: varchar(30), **address**: varchar(60))
User4(**email**: varchar(30), ID: char(8), name: varchar(20))

3) Public_Traded_Company(companyID: varchar(10), sector: varchar(10), address: varchar(60), name: varchar(20), listingDate: date)
address -> name violates BCNF. Decomposing on Public_Traded_Company on address -> name:

Public_Traded_Company1(address: varchar(60), name: varchar(50))
Public_Traded_Company2(**address**: varchar(60), companyID: varchar(10), listingDate: date, sector: varchar(10))

With all our tables in BCNF, they are listed below. Primary keys are underlined and foreign keys are bolded. Any candidate keys are explicitly stated beside the schema.

Financial_Market1(startingHour: time, endingHour: time) (endingHour is a candidate key)

Financial_Market2(**startingHour**: Integer, country: varchar(40), marketDate: date)

Stock_Market(**country**: varchar(40), numberOfStocks: varchar(15))

Bond_Market(**country**: varchar(40), numberOfStocks: varchar(15))

In(**country**: varchar(40), **ID**: char(8))

User1(address: varchar(60), phoneNumber: varchar(15))

User3(<u>email</u>: varchar(30), **address**: varchar(60))

User4(**email**: varchar(30), <u>ID</u>: char(8), name: varchar(20))

Has_Account(<u>accountID</u>: char(10), balance: varchar(15), accountName: varchar(30), since: date, **ID**: char(8) NOT NULL, UNIQUE) (ID is a candidate key)

Have_Stock(<u>**country**</u>: varchar(40), <u>**stockID**</u>: varchar(10))

Have_Bond(<u>**country**</u>: varchar(40), <u>**bondID**</u>: char(10))

Owns_PTC_Stock_Stock(<u>stockID</u>: varchar(10), price: varchar(15), dividend: varchar(15), tradedQuantity: varchar(20), PEratio: float, **companyID**: varchar(10) NOT NULL)

Public_Traded_Company1(<u>address</u>: varchar(60), name: varchar(50))

Public_Traded_Company2(**address**: varchar(60), <u>companyID</u>: varchar(10), listingDate: date, sector: varchar(10))

Create_Watchlist(<u>listID</u>: char(4), name: varchar (20), since: date, <u>**accountID**</u>: char(10))

Bond(<u>bondID</u>: char(10), faceValue: varchar(20), maturityDate: date)

Issue_PTC_Bond_CorporateBond(<u>**bondID**</u>: char(10), issueDate: date, **companyID**: varchar(10) NOT NULL)

Issue_Government_Bond_GovernmentBond(<u>**bondID**</u>: char(10), issueDate: date, **country**: varchar(40) NOT NULL)

Government(<u>country</u>: varchar(40), president: varchar(30)) (president is a candidate key)

Operates_Stock(<u>**stockID**</u>: varchar(10), <u>**accountID**</u>: char(10), type: varchar(4), operateTime: time)

Operates_Bond(<u>**bondID**</u>: char(10), <u>**accountID**</u>: char(10), type: varchar(4), operateTime: time)

Includes_Stock(<u>**stockID**</u>: varchar(10), <u>**listID**</u>: char(4), <u>**accountID**</u>: char(10))

Includes_Bond(<u>**bondID**</u>: char(10), <u>**listID**</u>: char(4), <u>**accountID**</u>: char(10))

SQL DDL:

```
CREATE TABLE Financial_Market1(
 startingHour time,
 endingHour time,
 PRIMARY KEY (startingHour)
);

CREATE TABLE Financial_Market2(
 startingHour time,
 country varchar(40),
 marketDate date,
 PRIMARY KEY (country),
 FOREIGN KEY (startingHour) REFERENCES Financial_Market1
       ON DELETE CASCADE
       ON UPDATE CASCADE
);


CREATE TABLE Stock_Market (
 country varchar(40),
 numberOfStocks varchar(15),
 PRIMARY KEY (country),
 FOREIGN KEY (country) REFERENCES Financial_Market2
       ON DELETE CASCADE
       ON UPDATE CASCADE
);

CREATE TABLE Bond_Market(
 country varchar(40),
 numberOfBonds varchar(15),
 PRIMARY KEY (country),
 FOREIGN KEY (country) REFERENCES Financial_Market2
       ON DELETE CASCADE
       ON UPDATE CASCADE
);

CREATE TABLE User1 (
 address varchar(60),
 phoneNumber varchar(15),
 PRIMARY KEY (address)
);

CREATE TABLE User3 (
 email varchar(30),
 address varchar(60),
 PRIMARY KEY (email),
```

```
    FOREIGN KEY (address) REFERENCES User1
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE User4 (
  email varchar(30),
  ID char(8),
  name varchar(20),
  PRIMARY KEY (ID),
  FOREIGN KEY (email) REFERENCES User3
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE [In] (
  country varchar(40),
  ID char(8),
  PRIMARY KEY (country, ID),
  FOREIGN KEY (country) REFERENCES Financial_Market2
        ON DELETE CASCADE
        ON UPDATE CASCADE,
  FOREIGN KEY (ID) REFERENCES User4
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE Has_Account (
  accountID char(10),
  balance varchar(15),
  accountName varchar(30),
  since date,
  ID char(8) NOT NULL,
  UNIQUE (ID),
  PRIMARY KEY (accountID),
  FOREIGN KEY (ID) REFERENCES User4
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE Public_Traded_Company1 (
  address varchar(60),
  name varchar(50),
  PRIMARY KEY(address)
);
```

```
CREATE TABLE Public_Traded_Company2 (
 address varchar(60),
 companyID varchar(10),
 listingDate date,
 sector varchar(10),
 PRIMARY KEY (companyID),
 FOREIGN KEY (address) REFERENCES Public_Traded_Company1
      ON DELETE CASCADE
      ON UPDATE CASCADE
);

CREATE TABLE Owns_PTC_Stock_Stock (
 stockID varchar(10),
 price varchar(10),
 dividend varchar(15),
 tradedQuantity varchar(20),
 PEratio float,
 companyID varchar(10) NOT NULL,
 PRIMARY KEY (stockID),
 FOREIGN KEY (companyID) REFERENCES Public_Traded_Company2
      ON DELETE CASCADE
      ON UPDATE CASCADE
);


CREATE TABLE Have_Stock (
 country varchar(40),
 stockID varchar(10),
 PRIMARY KEY (country, stockID),
 FOREIGN KEY (country) REFERENCES Financial_Market2
      ON DELETE CASCADE
      ON UPDATE CASCADE,
 FOREIGN KEY (stockID) REFERENCES Owns_PTC_Stock_Stock
      ON DELETE CASCADE
      ON UPDATE CASCADE
);

CREATE TABLE Bond (
 bondID char(10),
 faceValue varchar(20),
 maturityDate date,
 PRIMARY KEY (bondID)
);

CREATE TABLE Have_Bond (
 country varchar(40),
```

```
 bondID char(10),
 PRIMARY KEY (country, bondID),
 FOREIGN KEY (country) REFERENCES Financial_Market2
       ON DELETE CASCADE
       ON UPDATE CASCADE,
 FOREIGN KEY (bondID) REFERENCES Bond
       ON DELETE CASCADE
       ON UPDATE CASCADE
);

CREATE TABLE Create_Watchlist (
 listID char(4),
 name varchar(20),
 since date,
 accountID char(10),
 PRIMARY KEY (accountID, listID),
 FOREIGN KEY (accountID) REFERENCES Has_Account
       ON DELETE CASCADE
       ON UPDATE CASCADE
);

CREATE TABLE Issue_PTC_Bond_CorporateBond (
 bondID char(10),
 issueDate date,
 companyID varchar(10) NOT NULL,
 PRIMARY KEY (bondID),
 FOREIGN KEY (bondID) REFERENCES Bond
       ON DELETE CASCADE
       ON UPDATE CASCADE,
 FOREIGN KEY (companyID) REFERENCES Public_Traded_Company2
       ON DELETE CASCADE
       ON UPDATE CASCADE
);

CREATE TABLE Government (
 country varchar(40),
 president varchar(30),
 PRIMARY KEY (country)
);

CREATE TABLE Issue_Government_Bond_GovernmentBond (
 bondID char(10),
 issueDate date,
 country varchar(40) NOT NULL,
 PRIMARY KEY (bondID),
 FOREIGN KEY (bondID) REFERENCES Bond
```

```
        ON DELETE CASCADE
        ON UPDATE CASCADE,
  FOREIGN KEY (country) REFERENCES Government
        ON DELETE CASCADE
        ON UPDATE CASCADE
);


CREATE TABLE Operates_Stock (
  stockID varchar(10),
  accountID char(10),
  type varchar(4),
  operateTime time,
  PRIMARY KEY (stockID, accountID),
  FOREIGN KEY (stockID) REFERENCES Owns_PTC_Stock_Stock
        ON DELETE CASCADE
        ON UPDATE CASCADE,
  FOREIGN KEY (accountID) REFERENCES Has_Account
        ON UPDATE CASCADE
);

CREATE TABLE Operates_Bond (
  bondID char(10),
  accountID char(10),
  type varchar(4),
  operateTime time,
  PRIMARY KEY (bondID, accountID),
  FOREIGN KEY (bondID) REFERENCES Bond
        ON DELETE CASCADE
        ON UPDATE CASCADE,
  FOREIGN KEY (accountID) REFERENCES Has_Account
        ON UPDATE CASCADE
);

CREATE TABLE Includes_Stock(
  stockID varchar(10),
  listID char(4),
  accountID char(10),
  PRIMARY KEY (stockID, listID, accountID),
  FOREIGN KEY (stockID) REFERENCES Owns_PTC_Stock_Stock
        ON DELETE CASCADE
        ON UPDATE CASCADE,
  FOREIGN KEY (accountID, listID) REFERENCES Create_Watchlist(accountID, listID)
        ON DELETE CASCADE
        ON UPDATE CASCADE
);
```

```
CREATE TABLE Includes_Bond(
  bondID char(10),
  listID char(4),
  accountID char(10),
  PRIMARY KEY (bondID, listID, accountID),
  FOREIGN KEY (bondID) REFERENCES Bond
        ON DELETE CASCADE
        ON UPDATE CASCADE,
  FOREIGN KEY (accountID, listID) REFERENCES Create_Watchlist
        ON DELETE CASCADE
        ON UPDATE CASCADE
);
```

INSERT:

```
INSERT INTO Financial_Market1 (startingHour, endingHour) VALUES ('8:00', '16:00');
INSERT INTO Financial_Market1 (startingHour, endingHour) VALUES ('9:00', '17:00');
INSERT INTO Financial_Market1 (startingHour, endingHour) VALUES ('7:00', '15:00');
INSERT INTO Financial_Market1 (startingHour, endingHour) VALUES ('10:00', '18:00');
INSERT INTO Financial_Market1 (startingHour, endingHour) VALUES ('6:00', '14:00');

INSERT INTO Financial_Market2 (startingHour, country, marketDate) VALUES ('8:00', 'USA',
'2020-02-25');
INSERT INTO Financial_Market2 (startingHour, country, marketDate) VALUES ('9:00',
'China', '2012-03-27');
INSERT INTO Financial_Market2 (startingHour, country, marketDate) VALUES ('7:00',
'Germany', '2013-09-18');
INSERT INTO Financial_Market2 (startingHour, country, marketDate) VALUES ('10:00',
'Japan', '2016-01-7');
INSERT INTO Financial_Market2 (startingHour, country, marketDate) VALUES ('6:00',
'Canada', '2018-08-22');

INSERT into Stock_Market (country, numberOfStocks ) VALUES ('USA','396');
INSERT into Stock_Market (country, numberOfStocks ) VALUES ('China','789');
INSERT into Stock_Market (country, numberOfStocks ) VALUES ('Germany','147');
INSERT into Stock_Market (country, numberOfStocks ) VALUES ('Japan','258');
INSERT into Stock_Market (country, numberOfStocks ) VALUES ('Canada','357');

INSERT into Bond_Market (country, numberOfBonds ) VALUES ('USA','951');
INSERT into Bond_Market (country, numberOfBonds ) VALUES ('China','725');
INSERT into Bond_Market (country, numberOfBonds ) VALUES ('Germany','345');
INSERT into Bond_Market (country, numberOfBonds ) VALUES ('Japan','943');
```

INSERT into Bond_Market (country, numberOfBonds) VALUES ('Canada','486');

INSERT INTO User1 (address, phoneNumber) VALUES ('44 Park Road', '4435792534');
INSERT INTO User1 (address, phoneNumber) VALUES ('806 E. Brown St', '7238865678');
INSERT INTO User1 (address, phoneNumber) VALUES ('789 Oak St', '5522109012');
INSERT INTO User1 (address, phoneNumber) VALUES ('99 Marine Drive', '5877972252');
INSERT INTO User1 (address, phoneNumber) VALUES ('654 Maple St', '6205477810');

INSERT INTO User3 (email, address) VALUES ('JohnKent01@yahoo.com', '44 Park Road');
INSERT INTO User3 (email, address) VALUES ('AliceG23@gmail.com', '806 E. Brown St');
INSERT INTO User3 (email, address) VALUES ('BobWayne34@gmail.com', '789 Oak St');
INSERT INTO User3 (email, address) VALUES ('KateL09@hotmail.com', '99 Marine Drive');
INSERT INTO User3 (email, address) VALUES ('MikeDo98@msn.com', '654 Maple St');

INSERT INTO User4 (email, ID, name) VALUES ('JohnKent01@yahoo.com', 'U5H9P2Z3', 'John Kent');
INSERT INTO User4 (email, ID, name) VALUES ('AliceG23@gmail.com', 'U8F4Q1W7', 'Alice Green');
INSERT INTO User4 (email, ID, name) VALUES ('BobWayne34@gmail.com', 'U2T6K9Y4', 'Bob Wayne');
INSERT INTO User4 (email, ID, name) VALUES ('KateL09@hotmail.com', 'U3V7M1X8', 'Kate Lee');
INSERT INTO User4 (email, ID, name) VALUES ('MikeDo98@msn.com', 'U6N2D5B9', 'Michael Do');

INSERT INTO [In] (country, ID) VALUES ('USA', 'U5H9P2Z3');
INSERT INTO [In] (country, ID) VALUES ('China', 'U8F4Q1W7');
INSERT INTO [In] (country, ID) VALUES ('Germany', 'U2T6K9Y4');
INSERT INTO [In] (country, ID) VALUES ('Japan', 'U3V7M1X8');
INSERT INTO [In] (country, ID) VALUES ('Canada', 'U6N2D5B9');

INSERT INTO Has_Account (accountID, balance, accountName, since, ID) VALUES ('ACCa2B3cD4', '5020', 'JohnKent01', '2020-01-15', 'U5H9P2Z3');
INSERT INTO Has_Account (accountID, balance, accountName, since, ID) VALUES ('ACC1eFg2H3', '10810', 'AliceG23', '2021-07-20', 'U8F4Q1W7');
INSERT INTO Has_Account (accountID, balance, accountName, since, ID) VALUES ('ACCiJ4k5Lm', '7500', 'BobWayne34', '2023-03-10', 'U2T6K9Y4');
INSERT INTO Has_Account (accountID, balance, accountName, since, ID) VALUES ('ACC6Nop7Qr', '124100', 'KateL09', '2022-12-05', 'U3V7M1X8');
INSERT INTO Has_Account (accountID, balance, accountName, since, ID) VALUES ('ACC8S9tUvW', '9600', 'MikeDo98', '2021-02-10', 'U6N2D5B9');

INSERT INTO Public_Traded_Company1(address, name) VALUES ('1 Apple Park Way', 'Apple');
INSERT INTO Public_Traded_Company1(address, name) VALUES ('No. 33, Haitian Second Road', 'Tencent');

INSERT INTO Public_Traded_Company1(address, name) VALUES ('Petuelring 130, 80809 München', 'Bayerische Motoren Werke AG');
INSERT INTO Public_Traded_Company1(address, name) VALUES ('1600 Amphitheatre Parkway', 'Google');
INSERT INTO Public_Traded_Company1(address, name) VALUES ('1 Toyota-Cho', 'Toyota Motor');

INSERT INTO Public_Traded_Company2(address, companyID, listingDate, sector) VALUES ('1 Apple Park Way', '12321', '1980-12-12', 'technology');
INSERT INTO Public_Traded_Company2(address, companyID, listingDate, sector) VALUES ('No. 33, Haitian Second Road', '12331', '2004-06-16', 'technology');
INSERT INTO Public_Traded_Company2(address, companyID, listingDate, sector) VALUES ('Petuelring 130, 80809 München', '12341', '1918-08-13', 'technology');
INSERT INTO Public_Traded_Company2(address, companyID, listingDate, sector) VALUES ('1600 Amphitheatre Parkway', '12351', '2004-08-19', 'technology');
INSERT INTO Public_Traded_Company2(address, companyID, listingDate, sector) VALUES ('1 Toyota-Cho', '12361', '1959-05-01', 'technology');

INSERT INTO Owns_PTC_Stock_Stock(stockID, price, dividend, tradedQuantity, PEratio, companyID) VALUES ('AAPL', '21897', '2.1', '123128', '1.2', '12321');
INSERT INTO Owns_PTC_Stock_Stock(stockID, price, dividend, tradedQuantity, PEratio, companyID) VALUES ('TCEHY', '31497', '2.0', '123128', '1.1', '12331');
INSERT INTO Owns_PTC_Stock_Stock(stockID, price, dividend, tradedQuantity, PEratio, companyID) VALUES ('BMW', '12897', '2.1', '123128', '1.3', '12341');
INSERT INTO Owns_PTC_Stock_Stock(stockID, price, dividend, tradedQuantity, PEratio, companyID) VALUES ('GOOGL', '21837', '2.4', '123128', '1.2', '12351');
INSERT INTO Owns_PTC_Stock_Stock(stockID, price, dividend, tradedQuantity, PEratio, companyID) VALUES ('TM', '22299', '1.8', '123128', '1.4', '12361');

INSERT INTO Have_Stock(country, stockID) VALUES ('USA', 'AAPL');
INSERT INTO Have_Stock(country, stockID) VALUES ('China', 'TCEHY');
INSERT INTO Have_Stock(country, stockID) VALUES ('Germany', 'BMW');
INSERT INTO Have_Stock(country, stockID) VALUES ('USA', 'GOOGL');
INSERT INTO Have_Stock(country, stockID) VALUES ('Japan', 'TM');

INSERT INTO Bond(bondID, faceValue, maturityDate) VALUES('1273809090', '1000', '2024-02-11');
INSERT INTO Bond(bondID, faceValue, maturityDate) VALUES('1284984092', '1000', '2024-02-12');
INSERT INTO Bond(bondID, faceValue, maturityDate) VALUES('8298390002', '1000', '2024-02-13');
INSERT INTO Bond(bondID, faceValue, maturityDate) VALUES('9029883888', '1000', '2024-02-14');
INSERT INTO Bond(bondID, faceValue, maturityDate) VALUES('4564729000', '1000', '2024-02-15');

```sql
INSERT INTO Have_Bond(country, bondID) VALUES ('USA', '1273809090');
INSERT INTO Have_Bond(country, bondID) VALUES ('Germany', '1284984092');
INSERT INTO Have_Bond(country, bondID) VALUES ('Japan', '8298390002');
INSERT INTO Have_Bond(country, bondID) VALUES ('China', '9029883888');
INSERT INTO Have_Bond(country, bondID) VALUES ('Canada', '4564729000');

INSERT INTO Create_Watchlist(listID, name, since, accountID) VALUES ('2345', 'a1', '2022-01-01', 'ACCa2B3cD4');
INSERT INTO Create_Watchlist(listID, name, since, accountID) VALUES ('2346', 'a2', '2022-01-02', 'ACC8S9tUvW');
INSERT INTO Create_Watchlist(listID, name, since, accountID) VALUES ('2347', 'a3', '2022-01-03', 'ACC8S9tUvW');
INSERT INTO Create_Watchlist(listID, name, since, accountID) VALUES ('2348', 'a4', '2022-01-04', 'ACC6Nop7Qr');
INSERT INTO Create_Watchlist(listID, name, since, accountID) VALUES ('2349', 'a5', '2022-01-05', 'ACC6Nop7Qr');

INSERT INTO Issue_PTC_Bond_CorporateBond(bondID, issueDate, companyID) VALUES ('1273809090', '2024-01-11', '12321');
INSERT INTO Issue_PTC_Bond_CorporateBond(bondID, issueDate, companyID) VALUES ('1284984092', '2024-01-12', '12331');
INSERT INTO Issue_PTC_Bond_CorporateBond(bondID, issueDate, companyID) VALUES ('8298390002', '2024-01-13', '12341');
INSERT INTO Issue_PTC_Bond_CorporateBond(bondID, issueDate, companyID) VALUES ('9029883888', '2024-01-14', '12351');
INSERT INTO Issue_PTC_Bond_CorporateBond(bondID, issueDate, companyID) VALUES ('4564729000', '2024-01-15', '12361');

INSERT INTO Government(country, president) VALUES ('USA', 'Joe Biden');
INSERT INTO Government(country, president) VALUES ('China', 'JinPing Xi');
INSERT INTO Government(country, president) VALUES ('Germany', 'Frank-Walter Steinmeier');
INSERT INTO Government(country, president) VALUES ('Canada', 'Justin Trudeau');
INSERT INTO Government(country, president) VALUES ('Japan', 'Fumio Kishida');

INSERT INTO Issue_Government_Bond_GovernmentBond (bondID, issueDate, country) VALUES ('1273809090', '2024-01-11', 'USA');
INSERT INTO Issue_Government_Bond_GovernmentBond (bondID, issueDate, country) VALUES ('1284984092', '2024-01-12', 'China');
INSERT INTO Issue_Government_Bond_GovernmentBond (bondID, issueDate, country) VALUES ('8298390002', '2024-01-13', 'Germany');
INSERT INTO Issue_Government_Bond_GovernmentBond (bondID, issueDate, country) VALUES ('9029883888', '2024-01-14', 'USA');
INSERT INTO Issue_Government_Bond_GovernmentBond (bondID, issueDate, country) VALUES ('4564729000', '2024-01-15', 'Japan');
```

INSERT INTO Operates_Stock(stockID, accountID, type, operateTime) VALUES ('AAPL', 'ACCa2B3cD4', 'buy', '13:00');
INSERT INTO Operates_Stock(stockID, accountID, type, operateTime) VALUES ('TCEHY', 'ACC8S9tUvW', 'sell', '13:01');
INSERT INTO Operates_Stock(stockID, accountID, type, operateTime) VALUES ('BMW', 'ACC8S9tUvW', 'buy', '13:00');
INSERT INTO Operates_Stock(stockID, accountID, type, operateTime) VALUES ('GOOGL', 'ACC6Nop7Qr', 'sell', '13:01');
INSERT INTO Operates_Stock(stockID, accountID, type, operateTime) VALUES ('TM', 'ACC6Nop7Qr', 'buy', '13:02');

INSERT INTO Operates_Bond(bondID, accountID, type, operateTime) VALUES ('1273809090', 'ACCa2B3cD4', 'buy', '14:00');
INSERT INTO Operates_Bond(bondID, accountID, type, operateTime) VALUES ('1284984092', 'ACC8S9tUvW', 'sell', '14:01');
INSERT INTO Operates_Bond(bondID, accountID, type, operateTime) VALUES ('8298390002', 'ACC8S9tUvW', 'buy', '14:00');
INSERT INTO Operates_Bond(bondID, accountID, type, operateTime) VALUES ('9029883888', 'ACC6Nop7Qr', 'sell', '14:01');
INSERT INTO Operates_Bond(bondID, accountID, type, operateTime) VALUES ('4564729000', 'ACC6Nop7Qr', 'buy', '14:02');

INSERT INTO Includes_Stock(stockID, listID, accountID) VALUES ('AAPL', '2345', 'ACCa2B3cD4');
INSERT INTO Includes_Stock(stockID, listID, accountID) VALUES ('TCEHY', '2346', 'ACC8S9tUvW');
INSERT INTO Includes_Stock(stockID, listID, accountID) VALUES ('BMW', '2347', 'ACC8S9tUvW');
INSERT INTO Includes_Stock(stockID, listID, accountID) VALUES ('GOOGL', '2348', 'ACC6Nop7Qr');
INSERT INTO Includes_Stock(stockID, listID, accountID) VALUES ('TM', '2349', 'ACC6Nop7Qr');

INSERT INTO Includes_Bond(bondID, listID, accountID) VALUES ('1273809090', '2345', 'ACCa2B3cD4');
INSERT INTO Includes_Bond(bondID, listID, accountID) VALUES ('1284984092', '2346', 'ACC8S9tUvW');
INSERT INTO Includes_Bond(bondID, listID, accountID) VALUES ('8298390002', '2347', 'ACC8S9tUvW');
INSERT INTO Includes_Bond(bondID, listID, accountID) VALUES ('9029883888', '2348', 'ACC6Nop7Qr');
INSERT INTO Includes_Bond(bondID, listID, accountID) VALUES ('4564729000', '2349', 'ACC6Nop7Qr');