

## Team: XYZ Online Trading System

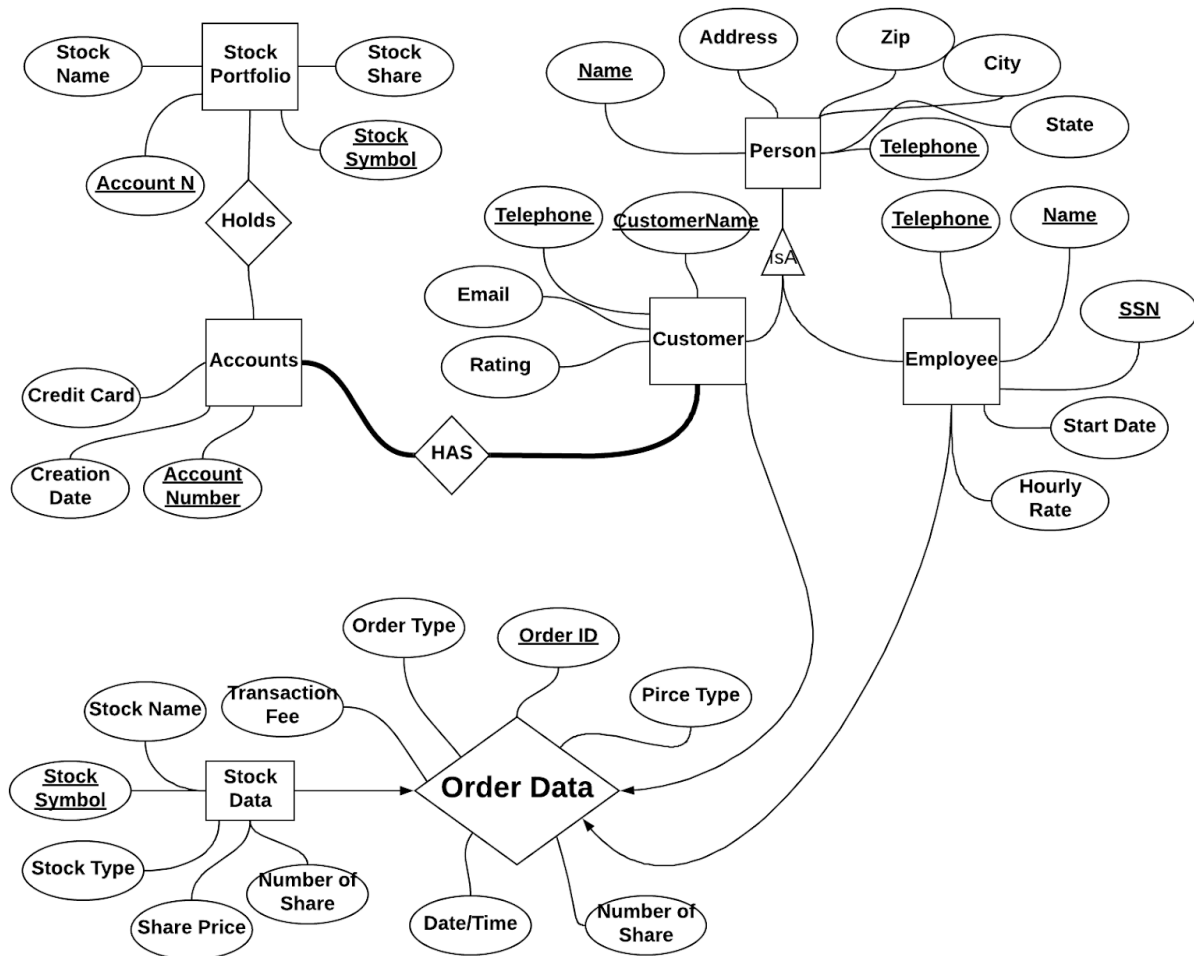
### Project Assignment 1

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### Entity Relationship Diagram:



### Entity Type:

#### ❖ Accounts

- The Accounts table only have two attributes - credit card number and account

number. The account number is the primary key.

- ❖ Customer

- This entity contains unique information about a customer such as email or rating and is subtype of Person

- ❖ Employee

- his entity contains unique information about an employee such as SSN, start date, etc. And it is subtype of Person

- ❖ Person

- This Entity contains all person information such as address, name, etc. Also it is the parent type Entity of Customer and Employee

- ❖ Stock Data

- The Stock Data holds information about the stock, and have 5 attributes, and they are Stock Name, Stock Symbol, Stock Type, Share Price, and number of share for each stock.

- ❖ Stock Portfolio

- The Stock Portfolio table has 4 attributes as shown in the diagram above. We use stock symbol and account number as the primary key. The account number is also a foreign key for account table The stock portfolio also contains stock names and stock shares that accounts held. The stock name is a foreign key linked with an attribute stock name in stock data table.

Relational Type:

- ❖ Has

- The Opens table contains three attributes - AccountNumber, CustomerName, CreationDate. The combination of AccountNumber and CustomerName is the primary key. The AccountNumber is a foreign key linked to AccountNumber in Account table, and the CustomerName is a foreign key linked to Customer table.

- ❖ Holds

- The “holds” is conceptual. There is no attribute inside. It only presents a

relationship between the accounts table and the stock portfolio table.

❖ OrderDate

- This table has 12 attributes, they are OrderType, OrderID, PriceType, NumberofShare, DateandTime, TransactionFee, StockSyb, CustomerName, CustomerTele, EmployeeSSN, EmployeeNam, EmployeeTele. This table holds the information about the order.

**Relation Model:**

**Table Person**

Attribute:	Description:
personName	The name of the person (include first and last name)
personAddress	The address of the person
personCity	The city of the person lives
personState	The state of the person lives
personZip	The zipcode of the person lives either 4 digits or 6 digits
personTel	The telephone number of the person
Primary key	personName, personTel

**Table Employee**

Attribute:	Description:
employeeName	The name of the employee (include first and last name)
employeeTel	The telephone number of the employee
employeeSSN	The SSN of the employee SSN candidate key

employeeStartDate	The start date of the employee
employeeHourlyRate	The hourly rate of the employee
Primary key	employeeName,employeeTel

**Table Customer**

<b>Attribute:</b>	<b>Description:</b>
customerName	The name of the customer (include first and last name)
customerTel	The telephone number of the customer
customerEmail	The email of the customer
customerRating	The frequency of how the customer trade
Primary key	customerName,customerTel

**Table StockPortfolio**

<b>Attribute:</b>	<b>Description:</b>
StockName	The name of stocks
StockShare	The number of shares that a stock has
AccountNumber	An unique identifier for an account with length 12
StockSymbol	An unique and upcase string with maximum length 5, used to identify a stock

**Table Accounts**

<b>Attribute:</b>	<b>Description:</b>
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CreditCard	The credit card that an account uses to trade
AccountNumber	An unique identifier for an account with length 12
CreationDate	The date this account created

#### **Table Has**

<b>Attribute:</b>	<b>Description:</b>
AccountNumber	An unique identifier for an account with length 12
CustomerName	The name of the account holder
CustomerTel	The tel of the account holder

#### **Table StockData**

<b>Attribute:</b>	<b>Description:</b>
StcokName	The name of stocks
StockSymbol	The symbol of stock, which is the primary key for this tale
StockType	The Stock Type
SharePrice	The price for per share
NumberofShare	How many share of this stock

#### **Table OrderData**

<b>Attribute:</b>	<b>Description:</b>
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OrderTYPe	The order type of the stock
OrderID	The order ID of one order, which is the primary key
PriceType	The price type for this order
NumberofShare	How many shares in this order
DateandTime	The order time happened when
TransactionFee	The cost of this order
StockSyb	The stock symbol for this order, and it reference the stock symbol in stock data
CustomerName	The name for the customer
CustomerTele	The telephone for the customer
EmployeeSSN	The SSN for the employee for this order
EmployeeName	The name for the employee for this order
EmployeeTele	The telephone for the employee for this order

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CREATE TABLE Person (
    personName char (20) NOT NULL,
    personAddress char (50),
    personCity char (20),
    personState char (20),
    personZip char (6),
    personTel char (10) NOT NULL,

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PRIMARY KEY (personName, personTel),
CHECK ((char_length(personZip) = 4 OR char_length(personZip) = 6)
AND personZip REGEXP '[0-9]+$'),
CHECK (char_length(personTel)=10 AND personTel REGEXP '[0-9]+$'),
FOREIGN KEY (personName,personTel) REFERENCES
Employee (employeeName,employeeTel)
    ON DELETE NO ACTION
    ON UPDATE CASCADE,
FOREIGN KEY (personName,personTel) REFERENCES
Customer (customerName,customerTel)
    ON DELETE NO ACTION
    ON UPDATE CASCADE
);
CREATE TABLE Employee (
    employeeName char (20) NOT NULL,
    employeeTel char (10) NOT NULL,
    employeeSSN char (8) NOT NULL,
    employeeStartDate DATETIME,
    employeeHourlyRate DOUBLE,
    PRIMARY KEY (employeeName, employeeTel),
    UNIQUE (employeeSSN),
    CHECK (
        char_length(employeeTel) = 10
        AND employeeTel REGEXP '[0-9]+$'),
    CHECK (
        char_length(employeeSSN) = 8
        AND employeeTel REGEXP '[0-9]+$'),
    FOREIGN KEY (employeeName, employeeTel) REFERENCES
    Person (personName, personTel)

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        ON DELETE CASCADE
        ON UPDATE CASCADE
    );

CREATE TABLE Customer (
    customerName CHAR (20) NOT NULL,
    customerTel CHAR (10) NOT NULL,
    customerEmail CHAR (30),
    customerRating INTEGER (10) DEFAULT 0,
    PRIMARY KEY (customerName,customerTel),
    CHECK (customerRating >=0 AND customerRating<=10),
    FOREIGN KEY (customerName,customerTel) REFERENCES
    Person (personName, personTel)
        ON DELETE CASCADE
        ON UPDATE CASCADE
);

CREATE TABLE StockPortfolio (
    StockName CHAR(20) NOT NULL,
    StockShare INT NOT NULL,
    AccountNumber CHAR NOT NULL,
    CHECK (char_length(AccountNumber) = 12
    AND AccountNumber REGEXP '^[0-9]+$'),
    StockSymbol CHAR(5) NOT NULL,
    CHECK (char_length(StockSymbol) = 5 AND StockSymbol REGEXP '^[A-Z]+$'),
    PRIMARY KEY(StockSymbol, AccountNumber),
    FOREIGN KEY(AccountNumber) REFERENCES Accounts(AccountNumber)
        ON DELETE NO ACTION
        ON UPDATE CASCADE,
    FOREIGN KEY(StockSymbol) REFERENCES StockData(StockSymbol)
        ON DELETE NO ACTION

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        ON UPDATE CASCADE
);
CREATE TABLE Accounts (
    CreditCard CHAR NOT NULL,
    CHECK (char_length(CreditCard) = 16 AND CreditCard REGEXP '^[0-9]+$'),
    AccountNumber CHAR NOT NULL,
    CHECK (char_length(AccountNumber) = 12
    AND AccountNumber REGEXP '^[0-9]+$'),
    CreationDate DATETIME,
    PRIMARY KEY(AccountNumber),
    FOREIGN KEY(AccountNumber) REFERENCES Has(AccountNumber)
        ON DELETE CASCADE
        ON UPDATE CASCADE
);
CREATE TABLE Has(
    AccountNumber CHAR NOT NULL,
    CHECK (char_length(AccountNumber) = 12 AND
    AccountNumber REGEXP '^[0-9]+$'),
    CustomerName CHAR(20) NOT NULL,
    CustomerTel CHAR(10) NOT NULL,
    PRIMARY KEY(AccountNumber),
    FOREIGN KEY(CustomerName,CustomerTel) REFERENCES
    Customer(customerName,customerTel)
        ON DELETE CASCADE
        ON UPDATE CASCADE
);
CREATE TABLE StockData(
    StockName char ,
    StockSymbol char(5),

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        StockType char,
        SharePrice double,
        NumberofShare int,
        CHECK (StockSymbol REGEXP '^[A-Z]+$'),
        primary key (StockSymbol)
    );

CREATE TABLE OrderData(
    OrderType char,
    OrderID int,
    PriceType char,
    NumberofShare int,
    DateandTime datetime,
    TransactionFee double,
    StockSyb char(5),
    CustomerName char,
    CustomerTel char(10),
    EmployeeSSN char(8),
    EmployeeName char,
    EmployeeTel char(10),
    primary key (OrderID),
    CHECK (OrderType IN ('buy', 'sell')),
    CHECK (PriceType IN ('Market','MarketonClose','TrailingStop','HiddenStop')),
    CHECK ( StockSyb REGEXP '^[A-Z]+$'),
    CHECK (char_length(EmployeeTel)=10 AND EmployeeTel REGEXP '^[0-9]+$'),
    CHECK (char_length(EmployeeSSN)=8 AND EmployeeTel REGEXP '^[0-9]+$'),
    CHECK (char_length(CustomerTel)=10 AND CustomerTel REGEXP '^[0-9]+$'),
    FOREIGN KEY (StockSyb) references StockData (StockSymbol)
        ON DELETE NO ACTION
        ON UPDATE CASCADE,

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FOREIGN KEY (CustomerName, CustomerTel) references

Customer(customerName,customerTel)

ON DELETE NO ACTION

ON UPDATE CASCADE,

FOREIGN KEY (EmployeeSSN) references Employee (employeeSSN)

ON DELETE NO ACTION

ON UPDATE CASCADE,

FOREIGN KEY (EmployeeName, EmployeeTel) references

Employee (employeeName, employeeTel)

ON DELETE NO ACTION

ON UPDATE CASCADE

);