



IST 659

Database Implementation Report - Stock Trading System




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Problem Summary

The Stock Trading System is an automated system for trading stocks of publicly traded companies and it has the following data requirements:

A company is uniquely determined by its name, while also having a headquarters address and an established date. Address is a composite attribute, with components street number, apartment number, city, street and zip Code. Some companies have publicly traded common stocks, and are named public companies. Each public company has only one such stock. Each stock has a unique stock code and specified number of shares. Every stock trades on one or more exchanges, but the number of trading exchanges cannot exceed 9. An exchange is uniquely determined by its name. There is a stock symbol associated with a stock, which is used to track trades on an exchange. The same stock may have different symbols on different exchanges. The last trading price and current daily volume for every symbol should be recorded.

Stocks are owned and traded by traders. A trader has a name and a trader id. The trader id uniquely determines the trader. Traders do not trade directly, but via brokers. A broker is uniquely determined by its name and state. Each broker deals with one or more exchanges and pays a fixed yearly fee to every exchange it deals with. The fee could be different for every broker/exchange pair. A trader owns at least one account with at least one broker. She/he may hold more than one account with the same broker and deal with more than one broker. An account is uniquely determined by the broker and account number. A broker may have no accounts. Each account has exactly one owner. Accounts hold securities and cash. Note that a stock bought on one exchange could be sold on another, so it is stocks, not symbols, which are held.

Traders place trading orders via their brokerages. Every transaction contains the following information: number of shares, price, commissions paid by the buyer and the seller to their brokerages and the timestamp. Exchange and transaction number uniquely determine the transaction. Note that an order could be filled by several transactions. The stocks are traded if their orders are fulfilled by some transactions.

Business Rules

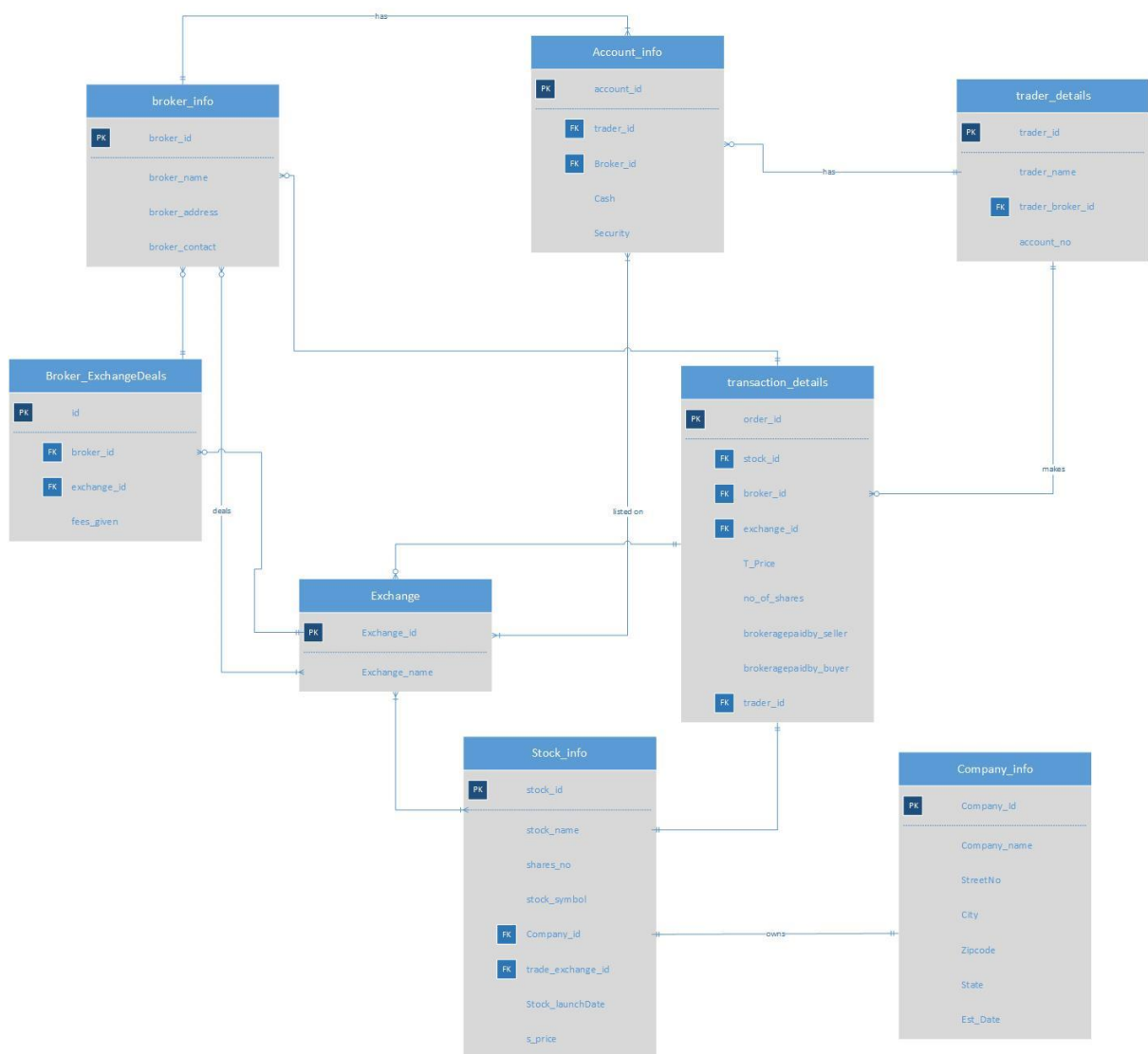
- Each public company has only one such stock, each stock has a unique stock code and specified number of shares.
- Every stock trades on one or more exchanges, but the number of trading exchanges cannot exceed 9.
- A trader owns at least one account with at least one brokerage.
- Each account has exactly one owner.
- The stocks are traded if their orders are fulfilled by some transactions.

Entities and Attributes

1. Account_info	
a. account_no	Unique id of each account
b. trader_id	Contains Trader id
c. broker_id	Contains Broker id
d. cash	Contains cash
e. Security	Contains security
2. Exchange	
a. Exchange_id	Unique id of each Exchange
b. Exchange_name	Name of exchange
3. Company_info	
a. Company_id	Unique id of each company
b. Company_name	Name of Company
c. Street_no	Street number of the company
d. City	City in which company resides
e. Zipcode	Zipcode of the company's location
f. State	State in which company lies
g. Est_date	Date of establishment
4. Broker_Info	
a. Broker_id	Unique id of each broker
b. Broker_name	Name of broker
c. Broker_address	Broker's address
d. Contact_no	Broker's contact number
5. BrokerExchangeDeals	
a. ID	Unique id of each deal completed
b. Broker_id	Unique id of each broker
c. Exchange_id	Unique id of each exchange
d. Fees_given	Value of brokerage
6. Stock_info	
a. Stock_id	Unique id of each stock
b. Stock_name	Name of each stock
c. Shares_no	Number of shares
d. S_price	Price of a unit stock
e. Stock_symbol	Tracks trades on an Exchange
f. Company_id	Unique id of each company
g. Trader_exchange_id	Same as exchange_id in
h. Stock_launch_date	Date the stock was launched in the IPO
7. Trader_details	

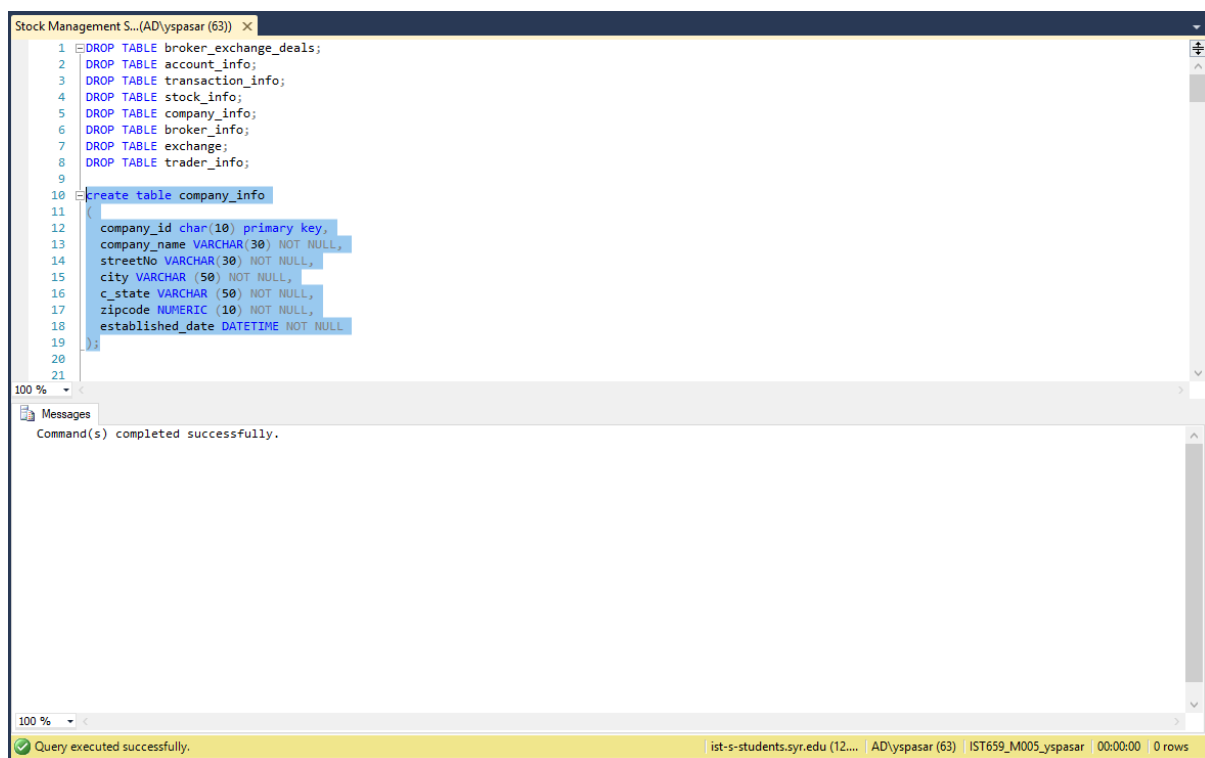
a. Trader_id	Unique id of each trader
b. Trader_broker_id	
c. Account_no	Unique id of each account
8. Transaction_details	
a. Order_id	Unique id of each order
b. Stock_id	Unique id of each stock
c. Broker_id	Unique id of each broker
d. Trader_id	Unique id of each trader
e. Exchange_id	Unique id of each exchange
f. No_of_shares	Number of Shares
g. T_Price	Total amount of stocks purchased/sold
h. Brokeragepaidby_seller	Brokerage paid by seller
i. Brokeragepaidby_buyer	Brokerage paid by buyer

ERD



Creation of Tables

```
create table company_info
(
company_id char(10) primary key,
company_name VARCHAR(30) NOT NULL,
streetNo VARCHAR(30) NOT NULL,
city VARCHAR (50) NOT NULL,
c_state VARCHAR (50) NOT NULL,
zipcode NUMERIC (10) NOT NULL,
established_date DATETIME NOT NULL
);
```



```
create table exchange
(
exchange_id char(10) primary key,
exchange_name varchar(10) NOT NULL
);
```

```
13 company_name VARCHAR(30) NOT NULL,  
14 streetNo VARCHAR(30) NOT NULL,  
15 city VARCHAR(50) NOT NULL,  
16 c_state VARCHAR(50) NOT NULL,  
17 zipcode NUMERIC(10) NOT NULL,  
18 established_date DATETIME NOT NULL  
19 );  
20  
21  
22 create table exchange  
23 (  
24 exchange_id char(10) primary key,  
25 exchange_name varchar(10) NOT NULL  
26 );  
27  
28  
29 CREATE TABLE broker_info(  
30 broker_id char(10) primary key,  
31 broker_fname varchar(30) NOT NULL,  
32 broker_lname varchar(30) NOT NULL,  
33 broker_contact varchar(12) NOT NULL,  
34  
35 );
```

100 %

Messages
Command(s) completed successfully.

100 %

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 0 rows

```
CREATE TABLE broker_info(  
broker_id char(10) primary key,  
broker_fname varchar(30) NOT NULL,  
broker_lname varchar(30) NOT NULL,  
broker_contact varchar(12) NOT NULL,  
broker_streetno numeric(10) NOT NULL,  
broker_streetname varchar(50) NOT NULL,  
broker_city varchar(30) NOT NULL,  
broker_state varchar(30) NOT NULL,  
broker_zip numeric(10) NOT NULL  
);
```

The screenshot shows a SQL Server Enterprise Manager window titled "Stock Management S...(AD\yspasar (63))". The main pane displays the following SQL code:

```
22 create table exchange
23 (
24     exchange_id char(10) primary key,
25     exchange_name varchar(10) NOT NULL
26 );
27
28
29 CREATE TABLE broker_info(
30     broker_id char(10) primary key,
31     broker_fname varchar(30) NOT NULL,
32     broker_lname varchar(30) NOT NULL,
33     broker_contact varchar(12) NOT NULL,
34     broker_streetno numeric(10) NOT NULL,
35     broker_streetname varchar(50) NOT NULL,
36     broker_city varchar(30) NOT NULL,
37     broker_state varchar(30) NOT NULL,
38     broker_zip numeric(10) NOT NULL
39 );
40
41
42 CREATE TABLE trader_info(
```

Below the code pane, a "Messages" pane shows the message: "Command(s) completed successfully." The status bar at the bottom indicates "Query executed successfully." and provides session information: "ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 0 rows".

```
CREATE TABLE trader_info(
trader_id char(10) primary key NOT NULL,
trader_fname varchar(30) NOT NULL,
trader_lname varchar(30) NOT NULL,
account_no numeric(9) NOT NULL,
trader_contact varchar(12) NOT NULL,
trader_streetno numeric(10) NOT NULL,
trader_streetname varchar(50) NOT NULL,
trader_city varchar(30) NOT NULL,
trader_state varchar(30) NOT NULL,
trader_zip numeric(10) NOT NULL
);
```


The screenshot shows a SQL Developer window titled "Stock Management S... (AD\yspasar (55))". The SQL editor contains the following code:

```
37 broker_state varchar(30) NOT NULL,  
38 broker_zip numeric(10) NOT NULL  
39 );  
40  
41  
42 CREATE TABLE trader_info(  
43   trader_id char(10) primary key NOT NULL,  
44   trader_fname varchar(30) NOT NULL,  
45   trader_lname varchar(30) NOT NULL,  
46   account_no numeric(9) NOT NULL,  
47   trader_contact varchar(12) NOT NULL,  
48   trader_streetno numeric(10) NOT NULL,  
49   trader_streetname varchar(50) NOT NULL,  
50   trader_city varchar(30) NOT NULL,  
51   trader_state varchar(30) NOT NULL,  
52   trader_zip numeric(10) NOT NULL  
53 );  
54  
55  
56 CREATE TABLE Account_info(  
57   account_id char(10) primary key NOT NULL,
```

The Messages pane shows "Command(s) completed successfully." The status bar at the bottom indicates "Query executed successfully." and the session information is "ist-s-students.syr.edu (12.... AD\yspasar (55) IST659_M005_yspasar 00:00:00 0 rows".

```
CREATE TABLE Account_info(  
  account_id char(10) primary key NOT NULL,  
  cash numeric(10) NOT NULL,  
  security numeric(10) NOT NULL,  
  trader_id char(10) FOREIGN KEY (trader_id) REFERENCES trader_info(trader_id),  
  broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id)  
);
```

The screenshot shows a SQL Developer window titled "Stock Management S... (AD\yspasar (63))". The SQL editor contains the following code:

```
46 account_no numeric(9) NOT NULL,  
47 trader_contact varchar(12) NOT NULL,  
48 trader_streetno numeric(10) NOT NULL,  
49 trader_streetname varchar(50) NOT NULL,  
50 trader_city varchar(30) NOT NULL,  
51 trader_state varchar(30) NOT NULL,  
52 trader_zip numeric(10) NOT NULL  
53 );  
54  
55  
56 CREATE TABLE Account_info(  
57   account_id char(10) primary key NOT NULL,  
58   cash numeric(10) NOT NULL,  
59   security numeric(10) NOT NULL,  
60   trader_id char(10) FOREIGN KEY (trader_id) REFERENCES trader_info(trader_id),  
61   broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id)  
62 );  
63  
64  
65 CREATE TABLE broker_exchange_deals(  
66   id char(10) primary key,
```

The Messages pane shows "Command(s) completed successfully." The status bar at the bottom indicates "Query executed successfully." and the session information is "ist-s-students.syr.edu (12.... AD\yspasar (63) IST659_M005_yspasar 00:00:00 0 rows".

```

CREATE TABLE broker_exchange_deals(
id char(10) primary key,
fees_given char(5),
broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id),
exchange_id char(10) FOREIGN KEY (exchange_id) REFERENCES exchange(exchange_id)
);

```

The screenshot shows a SQL Server Enterprise Manager window titled 'Stock Management S... (AD\yspasar (63))'. The main pane displays SQL code for creating three tables: Account_info, broker_exchange_deals, and stock_info. The code is as follows:

```

55
56 CREATE TABLE Account_info(
57     account_id char(10) primary key NOT NULL,
58     cash numeric(10) NOT NULL,
59     security numeric(10) NOT NULL,
60     trader_id char(10) FOREIGN KEY (trader_id) REFERENCES trader_info(trader_id),
61     broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id)
62 );
63
64
65 CREATE TABLE broker_exchange_deals(
66     id char(10) primary key,
67     fees_given char(5),
68     broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id),
69     exchange_id char(10) FOREIGN KEY (exchange_id) REFERENCES exchange(exchange_id)
70 );
71
72 create table stock_info
73 (
74     stock_id char(10) primary key,
75     stock name VARCHAR(20) NOT NULL,

```

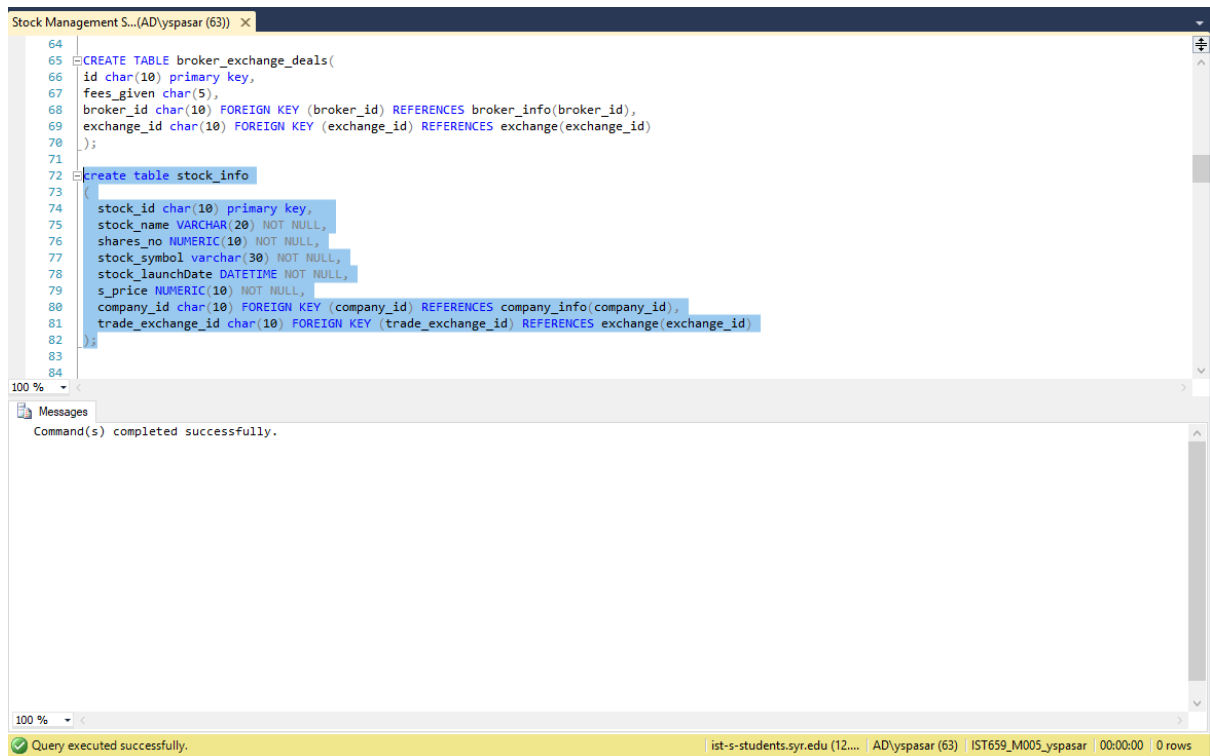
The 'Messages' pane at the bottom shows the message: 'Command(s) completed successfully.'

The status bar at the bottom indicates: 'Query executed successfully. | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 0 rows

```

create table stock_info
(
stock_id char(10) primary key,
stock_name VARCHAR(20) NOT NULL,
shares_no NUMERIC(10) NOT NULL,
stock_symbol varchar(30) NOT NULL,
stock_launchDate DATETIME NOT NULL,
s_price NUMERIC(10) NOT NULL,
company_id char(10) FOREIGN KEY (company_id) REFERENCES company_info(company_id),
trade_exchange_id char(10) FOREIGN KEY (trade_exchange_id) REFERENCES
exchange(exchange_id)
);

```



```
64
65 CREATE TABLE broker_exchange_deals(
66   id char(10) primary key,
67   fees_given char(5),
68   broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id),
69   exchange_id char(10) FOREIGN KEY (exchange_id) REFERENCES exchange(exchange_id)
70 );
71
72 create table stock_info
73
74   stock_id char(10) primary key,
75   stock_name VARCHAR(20) NOT NULL,
76   shares_no NUMERIC(10) NOT NULL,
77   stock_symbol varchar(30) NOT NULL,
78   stock_launchDate DATETIME NOT NULL,
79   s_price NUMERIC(10) NOT NULL,
80   company_id char(10) FOREIGN KEY (company_id) REFERENCES company_info(company_id),
81   trade_exchange_id char(10) FOREIGN KEY (trade_exchange_id) REFERENCES exchange(exchange_id)
82 );
83
84
```

100 %

Messages

Command(s) completed successfully.

100 %

Query executed successfully. | ist-s-students.syr.edu (12,... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 0 rows

```
create table transaction_info
(
order_id char(10) primary key,
T_Price NUMERIC(10) NOT NULL,
No_Of_Shares NUMERIC(10) NOT NULL,
brokeragepaidby_seller NUMERIC(10) NOT NULL,
brokeragepaidby_buyer NUMERIC(10) NOT NULL,
id char(10) FOREIGN KEY (id) REFERENCES broker_exchange_deals(id),
stock_id char(10) FOREIGN KEY (stock_id) REFERENCES Stock_info(stock_id),
broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id),
exchange_id char(10) FOREIGN KEY (exchange_id) REFERENCES exchange(exchange_id),
trader_id char(10) FOREIGN KEY (trader_id) REFERENCES trader_info(trader_id)
);
```

```
ALTER TABLE transaction_info
ADD account_id char(10) FOREIGN KEY (ACCOUNT_ID) REFERENCES
Account_info(account_id);
```

```

Stock Management S... (AD\yspasar (63))
79 s_price NUMERIC(10) NOT NULL,
80 company_id char(10) FOREIGN KEY (company_id) REFERENCES company_info(company_id),
81 trade_exchange_id char(10) FOREIGN KEY (trade_exchange_id) REFERENCES exchange(exchange_id)
82 );
83
84
85 create table transaction_info
86 (
87 order_id char(10) primary key,
88 T_Price NUMERIC(10) NOT NULL,
89 No_Of_Shares NUMERIC(10) NOT NULL,
90 brokeragepaidby_seller NUMERIC(10) NOT NULL,
91 brokeragepaidby_buyer NUMERIC(10) NOT NULL,
92 id char(10) FOREIGN KEY (id) REFERENCES broker_exchange_deals(id),
93 stock_id char(10) FOREIGN KEY (stock_id) REFERENCES Stock_info(stock_id),
94 broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id),
95 exchange_id char(10) FOREIGN KEY (exchange_id) REFERENCES exchange(exchange_id),
96 trader_id char(10) FOREIGN KEY (trader_id) REFERENCES trader_info(trader_id)
97 );
98
99 insert into company_info values(1, 'Apple', '1', 'Cupertino', 'California', '95014', '1976-04-01');
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```

Messages

Command(s) completed successfully.

100 %

Query executed successfully. ist-s-students.syr.edu (12... AD\yspasar (63) IST659_M005_yspasar 00:00:00 0 rows

Insertion of Tables

```

insert into company_info values(1, 'Apple', '1', 'Cupertino', 'California', '95014', '1976-04-01');
insert into company_info values(2, 'Google', '1600', 'Menlo Park', 'California', '94043', '1998-09-04');
insert into company_info values(3, 'Amazon', '410', 'Seattle', 'Washington', '98109', '1994-07-05');

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Stock Management S... (AD\yspasar (63))
88 T_Price NUMERIC(10) NOT NULL,
89 No_Of_Shares NUMERIC(10) NOT NULL,
90 brokeragepaidby_seller NUMERIC(10) NOT NULL,
91 brokeragepaidby_buyer NUMERIC(10) NOT NULL,
92 id char(10) FOREIGN KEY (id) REFERENCES broker_exchange_deals(id),
93 stock_id char(10) FOREIGN KEY (stock_id) REFERENCES Stock_info(stock_id),
94 broker_id char(10) FOREIGN KEY (broker_id) REFERENCES broker_info(broker_id),
95 exchange_id char(10) FOREIGN KEY (exchange_id) REFERENCES exchange(exchange_id),
96 trader_id char(10) FOREIGN KEY (trader_id) REFERENCES trader_info(trader_id)
97 );
98
99 insert into company_info values(1, 'Apple', '1', 'Cupertino', 'California', '95014', '1976-04-01');
100 insert into company_info values(2, 'Google', '1600', 'Menlo Park', 'California', '94043', '1998-09-04');
101 insert into company_info values(3, 'Amazon', '410', 'Seattle', 'Washington', '98109', '1994-07-05');
102
103 insert into broker_info values(1, 'Johnny', 'Walker', '315-555-5555', '45', 'Tiemann Place', 'Manhattan', 'New York', '10027');
104 insert into broker_info values(2, 'Paul', 'Smith', '315-545-6655', '7906', '5th Avenue', 'Brooklyn', 'New York', '11209');
105 insert into broker_info values(3, 'Marc', 'New York', '315-343-5566', '4322', 'Queens Street', 'Long Island City', 'New York', '11101');
106 insert into broker_info values(4, 'John', 'Hopkins', '315-343-7666', '4322', 'Queens Street', 'Long Island City', 'New York', '11101');
107
108 insert into exchange values(1, 'NYSE');
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Messages

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100 %

Query executed successfully. ist-s-students.syr.edu (12... AD\yspasar (63) IST659_M005_yspasar 00:00:00 0 rows

```

insert into broker_info values(1, 'Johnny', 'Walker', '315-555-5555', '45', 'Tiemann Place',
'Manhattan', 'New York', '10027');
insert into broker_info values(2, 'Paul', 'Smith', '315-545-6655', '7906', '5th Avenue',
'Brooklyn', 'New York', '11209');
insert into broker_info values(3, 'Marc', 'New York', '315-343-5566', '4322', 'Queens Street',
'Long Island City', 'New York', '11101');
insert into broker_info values(4, 'John', 'Hopkins', '315-343-7666', '4322', 'Queens Street',
'Long Island City', 'New York', '11101');

```

The screenshot shows a SQL IDE window titled "Stock Management S... (AD\yspasar (63))". The script contains several INSERT statements for stock_info, transaction_info, and broker_info tables, followed by SELECT statements for various tables. A comment at the bottom of the script reads: "/* 1. For each public company list the number of exchanges which its stock trades on */". The results pane shows a table with 9 columns: broker_id, broker_fname, broker_lname, broker_contact, broker_streetno, broker_streetname, broker_city, broker_state, and broker_zip. The table contains 4 rows of data for brokers 1 through 4.

broker_id	broker_fname	broker_lname	broker_contact	broker_streetno	broker_streetname	broker_city	broker_state	broker_zip
1	Johnny	Walker	315-555-5555	45	Tiemann Place	Manhattan	New York	10027
2	Paul	Smith	315-545-6655	7906	5th Avenue	Brooklyn	New York	11209
3	Marc	New York	315-343-5566	4322	Queens Street	Long Island City	New York	11101
4	John	Hopkins	315-343-7666	4322	Queens Street	Long Island City	New York	11101

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 4 rows

```

insert into exchange values(1, 'NYSE');
insert into exchange values(2, 'NASDAQ');
insert into exchange values(3, 'CSE');
insert into exchange values(4, 'ASE');

```

```

Stock Management S...(AD\yspasar (63))
140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
148 insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3 );
149 insert into transaction_info values(6,1320,51,42,30,1,3,2,1,3 );
150
151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

100 %

Results Messages

	exchange_id	exchange_name
1	1	NYSE
2	2	NASDAQ
3	3	CSE
4	4	ASE

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 4 rows

```

insert into trader_info values(1, 'Yash', 'Pasar', '987651819', '315-450-1430', '212', 'Westcott
Street', 'Syracuse', 'New York', '13210');
insert into trader_info values(2, 'Amit', 'Jadhav', '984321819', '315-395-7948', '141',
'Avondale Place', 'Syracuse', 'New York', '13210');
insert into trader_info values(3, 'Devansh', 'Khakkar', '787673219', '315-378-9014', '716',
'South Beech Street', 'Syracuse', 'New York', '13210');
insert into trader_info values(4, 'Manan', 'Dedhia', '654651819', '315-395-7788', '400',
'Westcott Street', 'Syracuse', 'New York', '13210');

```

```
Stock Management S... (AD\yspasar (55)) X
97 );
98
99 insert into company_info values(1, 'Apple', '1', 'Cupertino', 'California', '95014', '1976-04-01');
100 insert into company_info values(2, 'Google', '1600', 'Menlo Park', 'California', '94043', '1998-09-04');
101 insert into company_info values(3, 'Amazon', '410', 'Seattle', 'Washington', '98109', '1994-07-05');
102
103 insert into broker_info values(1, 'Johnny', 'Walker', '315-555-5555', '45', 'Tiemann Place', 'Manhattan', 'New York', '10027');
104 insert into broker_info values(2, 'Paul', 'Smith', '315-545-6655', '7906', '5th Avenue', 'Brooklyn', 'New York', '11209');
105 insert into broker_info values(3, 'Marc', 'New York', '315-343-5566', '4322', 'Queens Street', 'Long Island City', 'New York', '11101');
106
107 insert into exchange values(1, 'NYSE');
108 insert into exchange values(2, 'NASDAQ');
109 insert into exchange values(3, 'CSE');
110
111 insert into trader_info values(1, 'Yash', 'Pasar', '987651819', '315-450-1430', '212', 'Westcott Street', 'Syracuse', 'New York', '13210');
112 insert into trader_info values(2, 'Amit', 'Jadhav', '984321819', '315-395-7948', '141', 'Avondale Place', 'Syracuse', 'New York', '13210');
113 insert into trader_info values(3, 'Devansh', 'Khakkar', '787673219', '315-378-9014', '716', 'South Beech Street', 'Syracuse', 'New York', '13210');
114 insert into trader_info values(4, 'Manan', 'Dedhia', '654651819', '315-395-7788', '400', 'Westcott Street', 'Syracuse', 'New York', '13210');
115
116 insert into account_info values(1, '1800', '1500', '1', '3');
117 insert into account_info values(2, '2800', '1000', '1', '2');
118
100 %
Messages
(1 row(s) affected)
(1 row(s) affected)
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100 %
Query executed successfully. ist-s-students.syr.edu (12.... AD\yspasar (55) IST659_M005_yspasar 00:00:00 0 rows
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```
insert into account_info values(1, '1800', '1500', '1', '3');
insert into account_info values(2, '2800', '1000', '1', '2');
insert into account_info values(3, '800', '3500', '2', '1');
insert into account_info values(4, '400', '2500', '2', '2');
insert into account_info values(5, '900', '1500', '2', '3');
insert into account_info values(6, '800', '1500', '3', '1');
insert into account_info values(7, '800', '500', '4', '2');
```

```
Stock Management S... (AD\yspasar (63)) X
106 insert into broker_info values(4, 'John', 'Hopkins', '315-343-7666', '4322', 'Queens Street', 'Long Island City', 'New York', '11101');
107
108 insert into exchange values(1, 'NYSE');
109 insert into exchange values(2, 'NASDAQ');
110 insert into exchange values(3, 'CSE');
111 insert into exchange values(4, 'ASE');
112
113 insert into trader_info values(1, 'Yash', 'Pasar', '987651819', '315-450-1430', '212', 'Westcott Street', 'Syracuse', 'New York', '13210');
114 insert into trader_info values(2, 'Amit', 'Jadhav', '984321819', '315-395-7948', '141', 'Avondale Place', 'Syracuse', 'New York', '13210');
115 insert into trader_info values(3, 'Devansh', 'Khakkar', '787673219', '315-378-9014', '716', 'South Beech Street', 'Syracuse', 'New York', '13210');
116 insert into trader_info values(4, 'Manan', 'Dedhia', '654651819', '315-395-7788', '400', 'Westcott Street', 'Syracuse', 'New York', '13210');
117
118 insert into account_info values(1, '1800', '1500', '1', '3');
119 insert into account_info values(2, '2800', '1000', '1', '2');
120 insert into account_info values(3, '800', '3500', '2', '1');
121 insert into account_info values(4, '400', '2500', '2', '2');
122 insert into account_info values(5, '900', '1500', '2', '3');
123 insert into account_info values(6, '800', '1500', '3', '1');
124 insert into account_info values(7, '800', '500', '4', '2');
125
126 insert into broker_exchange_deals values(1, '0.15', '1', '1');
127
100 %
Messages
(1 row(s) affected)
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100 %
Query executed successfully. ist-s-students.syr.edu (12.... AD\yspasar (63) IST659_M005_yspasar 00:00:00 0 rows
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```

insert into broker_exchange_deals values(1, '0.15', '1', '1');
insert into broker_exchange_deals values(2, '0.25', '1', '2');
insert into broker_exchange_deals values(3, '0.10', '1', '3');
insert into broker_exchange_deals values(4, '0.15', '2', '1');
insert into broker_exchange_deals values(5, '0.25', '2', '2');
insert into broker_exchange_deals values(6, '0.10', '3', '3');

```

The screenshot shows a SQL query execution window titled "Stock Management S... (AD\yspasar (63))". The query editor contains several insert statements. The results pane shows the following messages:

```

(1 row(s) affected)
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(1 row(s) affected)

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The status bar at the bottom indicates "Query executed successfully." and "0 rows" were returned.

```

insert into stock_info values(1,'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '1' );
insert into stock_info values(2,'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '2' );
insert into stock_info values(3,'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '3' );
insert into stock_info values(4,'Alphabet Inc.', '1267', 'GOOGL', '1998-09-04', '1241.47', '2', '1' );
insert into stock_info values(5,'Alphabet Inc.', '1267', 'GOOGL', '1998-09-04', '1241.47', '2', '2' );
insert into stock_info values(6,'Alphabet Inc.', '1267', 'GOOGL', '1998-09-04', '1241.47', '2', '3' );
insert into stock_info values(7,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '1' );
insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );

```



```

Stock Management S...(AD\yspasar (63))
115 insert into trader_info values(3, 'Devansh', 'Khakkar', '787673219', '315-378-9014', '716', 'South Beech Street', 'Syracuse', 'New York', '13210');
116 insert into trader_info values(4, 'Manan', 'Dedhia', '654651819', '315-395-7788', '400', 'Westcott Street', 'Syracuse', 'New York', '13210');
117
118 insert into account_info values(1, '1800', '1500', '1', '3');
119 insert into account_info values(2, '2800', '1000', '1', '2');
120 insert into account_info values(3, '800', '3500', '2', '1');
121 insert into account_info values(4, '400', '2500', '2', '2');
122 insert into account_info values(5, '900', '1500', '2', '3');
123 insert into account_info values(6, '800', '1500', '3', '1');
124 insert into account_info values(7, '800', '500', '4', '2');
125
126 insert into broker_exchange_deals values(1, '0.15', '1', '1');
127 insert into broker_exchange_deals values(2, '0.25', '1', '2');
128 insert into broker_exchange_deals values(3, '0.10', '1', '3');
129 insert into broker_exchange_deals values(4, '0.15', '2', '1');
130 insert into broker_exchange_deals values(5, '0.25', '2', '2');
131 insert into broker_exchange_deals values(6, '0.10', '3', '3');
132
133 insert into stock_info values(1, 'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '1');
134 insert into stock_info values(2, 'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '2');
135 insert into stock_info values(3, 'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '3');
100 %
Messages
(1 row(s) affected)
(1 row(s) affected)
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(1 row(s) affected)
(1 row(s) affected)
(1 row(s) affected)
100 %
Query executed successfully. ist-s-students.syr.edu (12... AD\yspasar (63) IST659_M005_yspasar 00:00:00 0 rows

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```

insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1,1 );
insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2,4 );
insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3,6 );
insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3,6 );
insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3,6 );
insert into transaction_info values(17,1320,5,42,30,1,3,2,1,3,6 );

```

```

Stock Management S...(AD\yspasar (63))
135 insert into stock_info values(3, 'Apple Inc.', '1300', 'AAPL', '1980-12-12', '203.86', '1', '3');
136 insert into stock_info values(4, 'Alphabet Inc.', '1267', 'GOOGL', '1998-09-04', '1241.47', '2', '1');
137 insert into stock_info values(5, 'Alphabet Inc.', '1267', 'GOOGL', '1998-09-04', '1241.47', '2', '2');
138 insert into stock_info values(6, 'Alphabet Inc.', '1267', 'GOOGL', '1998-09-04', '1241.47', '2', '3');
139 insert into stock_info values(7, 'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '1');
140 insert into stock_info values(8, 'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2');
141 insert into stock_info values(9, 'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3');
142 insert into stock_info values(10, 'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4');
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2,4 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3,6 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3,6 );
148 insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3,6 );
149 insert into transaction_info values(6,1320,5,42,30,1,3,2,1,3,6 );
150
151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
100 %
Messages
(1 row(s) affected)
(1 row(s) affected)
(1 row(s) affected)
(1 row(s) affected)
(1 row(s) affected)
(1 row(s) affected)
100 %
Query executed successfully. ist-s-students.syr.edu (12... AD\yspasar (63) IST659_M005_yspasar 00:00:00 0 rows

```

SELECT * FROM company_info;

The screenshot shows a SQL IDE window titled "Stock Management S... (AD\yspasar (63))". The query editor contains the following SQL code:

```

140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
148 insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3 );
149 insert into transaction_info values(6,1320,51,42,30,1,3,2,1,3 );
150
151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

The "Results" tab shows the output of the query:

company_id	company_name	streetNo	city	c_state	zipcode	established_date
1	Apple	1	Cupertino	California	95014	1976-04-01 00:00:00.000
2	Google	1600	Menlo Park	California	94043	1998-09-04 00:00:00.000
3	Amazon	410	Seattle	Washington	98109	1994-07-05 00:00:00.000

The status bar at the bottom indicates: "Query executed successfully." | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 3 rows

SELECT * FROM broker_info;

The screenshot shows the same SQL IDE window. The query editor contains the same SQL code as the previous screenshot, but the "Results" tab now shows the output of the query:

broker_id	broker_fname	broker_lname	broker_contact	broker_streetno	broker_streetname	broker_city	broker_state	broker_zip
1	Johnny	Walker	315-555-5555	45	Tiemann Place	Manhattan	New York	10027
2	Paul	Smith	315-545-6655	7906	5th Avenue	Brooklyn	New York	11209
3	Marc	New York	315-343-5566	4322	Queens Street	Long Island City	New York	11101
4	John	Hopkins	315-343-7666	4322	Queens Street	Long Island City	New York	11101

The status bar at the bottom indicates: "Query executed successfully." | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 4 rows

SELECT * FROM exchange;

Stock Management S...(AD\yspasar (63))

```

140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
148 insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3 );
149 insert into transaction_info values(6,1320,51,42,30,1,3,2,1,3 );
150
151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

100 %

Results Messages

	exchange_id	exchange_name
1	1	NYSE
2	2	NASDAQ
3	3	CSE
4	4	ASE

Query executed successfully. ist-s-students.syr.edu (12.... AD\yspasar (63) IST659_M005_yspasar 00:00:00 4 rows

SELECT * FROM trader_info;

Stock Management S...(AD\yspasar (55))

```

147
148 SELECT * FROM company_info;
149 SELECT * FROM broker_info;
150 SELECT * FROM exchange;
151 SELECT * FROM trader_info;
152 SELECT * FROM account_info;
153 SELECT * FROM broker_exchange_deals;
154 SELECT * FROM stock_info;
155 SELECT * FROM transaction_info;
156
157
158
159
160

```

100 %

Results Messages

	trader_id	trader_fname	trader_lname	account_no	trader_contact	trader_streetno	trader_streetname	trader_city	trader_state	trader_zip
1	1	Yash	Pasar	987651819	315-450-1430	212	Westcott Street	Syracuse	New York	13210
2	2	Amit	Jadhav	984321819	315-395-7948	141	Avondale Place	Syracuse	New York	13210
3	3	Devansh	Khakkar	787673219	315-378-9014	716	South Beech Street	Syracuse	New York	13210
4	4	Manan	Dedhia	654651819	315-395-7788	400	Westcott Street	Syracuse	New York	13210

Query executed successfully. ist-s-students.syr.edu (12.... AD\yspasar (55) IST659_M005_yspasar 00:00:00 4 rows

SELECT * FROM account_info;

Stock Management S... (AD\yspasar (63))

```

140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
148 insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3 );
149 insert into transaction_info values(6,1320,51,42,30,1,3,2,1,3 );
150
151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

100 %

Results Messages

	account_id	cash	security	trader_id	broker_id
1	1	1800	1500	1	3
2	2	2800	1000	1	2
3	3	800	3500	2	1
4	4	400	2500	2	2
5	5	900	1500	2	3
6	6	800	1500	3	1
7	7	800	500	4	2

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 7 rows

SELECT * FROM broker_exchange_deals;

Stock Management S... (AD\yspasar (63))

```

140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
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149 insert into transaction_info values(6,1320,51,42,30,1,3,2,1,3 );
150
151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

100 %

Results Messages

	id	fees_given	broker_id	exchange_id
1	1	0.15	1	1
2	2	0.25	1	2
3	3	0.10	1	3
4	4	0.15	2	1
5	5	0.25	2	2
6	6	0.10	3	3

Query executed successfully. | ist-s-students.syr.edu (12.... | AD\yspasar (63) | IST659_M005_yspasar | 00:00:00 | 6 rows

SELECT * FROM stock_info;

Stock Management S...(AD\yspasar (63))

```

140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
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151 SELECT * FROM company_info;
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153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

100 %

Results Messages

stock_id	stock_name	shares_no	stock_symbol	stock_launchDate	s_price	company_id	trade_exchange_id
1	Apple Inc.	1300	AAPL	1980-12-12 00:00:00.000	204	1	1
2	Amazon.com Inc.	900	AMZN	1997-11-11 00:00:00.000	1862	3	4
3	Apple Inc.	1300	AAPL	1980-12-12 00:00:00.000	204	1	2
4	Apple Inc.	1300	AAPL	1980-12-12 00:00:00.000	204	1	3
5	Alphabet Inc.	1267	GOOGL	1998-09-04 00:00:00.000	1241	2	1
6	Alphabet Inc.	1267	GOOGL	1998-09-04 00:00:00.000	1241	2	2
7	Alphabet Inc.	1267	GOOGL	1998-09-04 00:00:00.000	1241	2	3
8	Amazon.com Inc.	900	AMZN	1997-11-11 00:00:00.000	1862	3	1
9	Amazon.com Inc.	900	AMZN	1997-11-11 00:00:00.000	1862	3	2
10	Amazon.com Inc.	900	AMZN	1997-11-11 00:00:00.000	1862	3	3

Query executed successfully.

ist-s-students.syr.edu (12.... AD\yspasar (63) IST659_M005_yspasar 00:00:00 10 rows

SELECT * FROM transaction_info;

Stock Management S...(AD\yspasar (63))

```

140 insert into stock_info values(8,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '2' );
141 insert into stock_info values(9,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '3' );
142 insert into stock_info values(10,'Amazon.com Inc.', '900', 'AMZN', '1997-11-11', '1861.69', '3', '4' );
143
144 insert into transaction_info values(1,20400,100,12,30,1,1,1,1,1 );
145 insert into transaction_info values(2,10200,50,6,15,2,2,2,2,2 );
146 insert into transaction_info values(3,16728,82,42,30,1,3,2,1,3 );
147 insert into transaction_info values(4,16728,82,42,30,1,3,2,1,3 );
148 insert into transaction_info values(5,11120,55,42,30,1,3,2,1,3 );
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151 SELECT * FROM company_info;
152 SELECT * FROM broker_info;
153 SELECT * FROM exchange;
154 SELECT * FROM trader_info;
155 SELECT * FROM account_info;
156 SELECT * FROM broker_exchange_deals;
157 SELECT * FROM stock_info;
158 SELECT * FROM transaction_info;
159
160 /* 1. For each public company list the number of exchanges which its stock trades on */

```

100 %

Results Messages

order_id	T_Price	No_Of_Shares	brokeragepaidby_seller	brokeragepaidby_buyer	id	stock_id	broker_id	exchange_id	trader_id
1	20400	100	12	30	1	1	1	1	1
2	10200	50	6	15	2	2	2	2	2
3	16728	82	42	30	1	3	2	1	3
4	16728	82	42	30	1	3	2	1	3
5	11120	55	42	30	1	3	2	1	3
6	1320	51	42	30	1	3	2	1	3

Query executed successfully.

ist-s-students.syr.edu (12.... AD\yspasar (63) IST659_M005_yspasar 00:00:00 6 rows

Trigger

drop trigger S_Quantity
create trigger S_Quantity

```

ON transaction_info
AFTER INSERT
AS
DECLARE @No_Of_Shares AS INT
DECLARE @T_Price AS INT
SET @No_Of_Shares = (SELECT TOP 1 inserted.No_Of_Shares FROM inserted)
SET @T_Price = (SELECT TOP 1 inserted.T_Price FROM inserted)
IF @No_Of_Shares < 50
BEGIN
    RAISERROR ('Number of shares should be greater than or equal to 50',15,1);
    ROLLBACK
END
if @T_Price < 10000
BEGIN
    RAISERROR ('Total transaction value has to be greater than or equal to 10000',15,1);
    ROLLBACK

```

The screenshot shows a web application interface for 'Purchases'. The form contains several input fields with the following values: Order Id (13), Total Price (20120), Number Of Shares (45), Brokerage(Seller) (12), Brokerage(Buyer) (50), ID (2), Stock Id (2), Broker Id (1), Exchange Id (1), Trader ID (2), and Account ID (1). An 'Add Purchase' button is at the bottom left. A Microsoft Access error dialog box is open in the center, displaying the message: 'ODBC--insert on a linked table 'dbo_transaction_info' failed. [Microsoft][ODBC Driver 13 for SQL Server][SQL Server]Number of shares should be greater than or equal to 50 (#50000) [Microsoft][ODBC Driver 13 for SQL Server][SQL Server]The transaction ended in the trigger. The batch has been aborted. (#3609)'. An 'OK' button is at the bottom right of the dialog.

Major Data Questions

/* 1. For each public company list the number of exchanges which its stock trades on */

```

select s.stock_name, count(s.trade_exchange_id) as No_of_exchanges
from stock_info s
group by s.stock_name
ORDER BY No_of_exchanges;

```

Results Messages		
	stock_name	No_of_exchanges
1	Alphabet Inc.	3
2	Apple Inc.	3
3	Amazon.com Inc.	4

/* 2. List all Exchanges who have stock from the public company established before "Jan01,1982" */

```
select e.exchange_name
from exchange e
inner join stock_info s on s.trade_exchange_id = e.exchange_id
inner join company_info c on c.company_id = s.company_id
where c.established_date < '1982-01-01';
```

Results Messages	
	exchange_name
1	NYSE
2	NASDAQ
3	CSE

/* 3. Find each Trader who has exactly one account */

```
select a.trader_id
from account_info a
group by a.trader_id
having count(a.account_id) = 1;
```

Results Messages	
	trader_id
1	3
2	4

/* 4. Find all Brokerages who do not have any accounts */

```
select b.broker_fname,b.broker_lname, b.broker_id
from broker_info b
left join account_info as a
on b.broker_id = a.broker_id
where b.broker_id
not in (select distinct(broker_id) from account_info);
```

	broker_fname	broker_lname	broker_id
1	John	Hopkins	4

/* 5. List all stocks belonging to each Exchange */

```

Select stock_name, exchange_name
from stock_info as s
join exchange as e on s.trade_exchange_id = e.exchange_id
order by s.stock_name

```

	stock_name	exchange_name
1	Alphabet Inc.	NYSE
2	Alphabet Inc.	NASDAQ
3	Alphabet Inc.	CSE
4	Amazon.com Inc.	NYSE
5	Amazon.com Inc.	NASDAQ
6	Amazon.com Inc.	CSE
7	Amazon.com Inc.	ASE
8	Apple Inc.	NASDAQ
9	Apple Inc.	CSE
10	Apple Inc.	NYSE

login Page

1. Admin Login

Stock Management System

User Name

Password

AdminLogin

Trader Login

2. Trader Login

Login Screen

Stock Management System

Last Name

Phone Number

Login

3. Interface once logged in

Stock Management System

Open Report

Broker

Company

Trader

Stock



Forms

1. Broker Form

Broker Form

Broker ID	<input type="text" value="7"/>
First Name	<input type="text" value="Amit"/>
Last Name	<input type="text" value="Jadhav"/>
Contact Number	<input type="text" value="3153957948"/>
Street Number	<input type="text" value="141"/>
Street Name	<input type="text" value="Avondale"/>
City	<input type="text" value="San Fransico"/>
State	<input type="text" value="California"/>
Zip Code	<input type="text" value="13210"/>
<input type="button" value="Add Broker"/> <input type="button" value="Delete Broker"/>	

2. Company Form

Company



company_id	<input type="text" value="4"/>
company_name	<input type="text" value="Microsoft"/>
streetNo	<input type="text" value="10"/>
city	<input type="text" value="Washs"/>
c_state	<input type="text" value="Xst"/>
zipcode	<input type="text" value="55555"/>
established_date	<input type="text" value="4/24/2019"/>

3. Stock Form

Stock

Stock Id	<input type="text" value="11"/>
Stock Name	<input type="text" value="Apple Inc."/>
Shares Number	<input type="text" value="1200"/>
Stock Symbol	<input type="text" value="AAD"/>
Launch Date	<input type="text" value="12/12/1980"/>
Stock Price	<input type="text" value="206"/>
Company ID	<input type="text" value="1"/>
Exchange Id	<input type="text" value="1"/>

4. Trader

Trader



trader_id	<input type="text" value="5"/>
trader_fname	<input type="text" value="Advaith"/>
trader_lname	<input type="text" value="Kamath"/>
account_no	<input type="text" value="145254789"/>
trader_contact	<input type="text" value="315-395-8965"/>
trader_streetno	<input type="text" value="12"/>
trader_streetname	<input type="text" value="Westcott"/>
trader_city	<input type="text" value="Syracuse"/>
trader_state	<input type="text" value="New York"/>
trader_zip	<input type="text" value="13210"/>

Add Trader

Delete Trader

5. Purchases

Purchases



Order Id	<input type="text" value="12"/>
Total Price	<input type="text" value="10201"/>
Number Of Shares	<input type="text" value="100"/>
Brokerage (Seller)	<input type="text" value="10"/>
Brokerage (Buyer)	<input type="text" value="30"/>
ID	<input type="text" value="1025"/>
Stock Id	<input type="text" value="22"/>
Broker Id	<input type="text" value="5415"/>
Trader ID	<input type="text" value="1125"/>
Account ID	<input type="text" value="102"/>
Exchange	<div><input type="text" value=""/><div>▼</div></div> <div>ASE CSE NASDAQ NYSE</div>

Add Purchase

Report

1. Admin Report

Overall Stock Report

trader_id	T_Price	account_i	exchange	No_Of_Shares	stock_id	broker_i
1		10201 1	1		100 1	1
2		10200 4	2		50 2	2
2		15014 4	1		62 2	1
2		20201 4	3		50 2	1
2		20145 4	1		61 2	2
3		16728 6	1		82 3	2
3		16728 6	1		82 3	2
3		11120 6	1		55 3	2
3		10320 6	1		51 3	2

2. Individual Trader Report

TraderReport

order_i	T_Price	No_Of_Shares	stock_i	accou	trader	trader_fname	trader_lname
3	16728	82 3	6	3	Devansh	Khakkar	
4	16728	82 3	6	3	Devansh	Khakkar	
5	11120	55 3	6	3	Devansh	Khakkar	
7	10320	51 3	6	3	Devansh	Khakkar	