Assignment 4
COMP 3005

Sammy Diamantstein
101060342

```
CREATE TABLE Bank (B# varchar(10) PRIMARY KEY, Name varchar(10), City varchar(10));

CREATE TABLE Customer (C# varchar(10) PRIMARY KEY, Name varchar(10), Age int, City varchar(10));

CREATE TABLE Account (C# varchar(10), B# varchar(10), Balance int, FOREIGN KEY (B#) REFERENCES Bank(B#), FOREIGN KEY (C#) REFERENCES Customer(C#), PRIMARY KEY(C#, B#));

INSERT INTO Bank VALUES ('B1', 'England', 'London');

INSERT INTO Bank VALUES ('B2', 'America', 'New York');

INSERT INTO Bank VALUES ('B3', 'Royal', 'Toronto');

INSERT INTO Bank VALUES ('B4', 'France', 'Paris');

INSERT INTO Customer VALUES ('C1', 'Adams', 20, 'London');

INSERT INTO Customer VALUES ('C2', 'Blake', 30, 'Paris');

INSERT INTO Customer VALUES ('C3', 'Clark', 25, 'Paris');

INSERT INTO Customer VALUES ('C4', 'Jones', 20, 'London');

INSERT INTO Customer VALUES ('C5', 'Smith', 30, 'Toronto');

INSERT INTO Account VALUES ('C1', 'B1', 1000);

INSERT INTO Account VALUES ('C1', 'B2', 2000);

INSERT INTO Account VALUES ('C1', 'B3', 3000);

INSERT INTO Account VALUES ('C1', 'B4', 4000);

INSERT INTO Account VALUES ('C2', 'B1', 2000);

INSERT INTO Account VALUES ('C2', 'B2', 3000);

INSERT INTO Account VALUES ('C2', 'B3', 4000);

INSERT INTO Account VALUES ('C3', 'B1', 3000);

INSERT INTO Account VALUES ('C3', 'B2', 4000);

INSERT INTO Account VALUES ('C4', 'B1', 4000);

INSERT INTO Account VALUES ('C4', 'B2', 5000);
```

```
SQL> -- question 1
SQL> select C.Name from Customer C
SQL> where exists
SQL> (select * from Account A
SQL> where C.C# = A.C#);

NAME
----------
Adams
Blake
Clark
Jones

SQL> _
```

```
SQL> -- question 2
SQL> select C.Name, B.Name from Customer C, Bank B
SQL> where not exists
SQL> (select * from Account A
SQL> where C.C# = A.C# and A.B# = B.B#);

NAME      NAME
--------- ----------
Smith     England
Smith     America
Clark     Royal
Jones     Royal
Smith     Royal
Blake     France
Clark     France
Jones     France
Smith     France

9 rows selected.

SQL> _
```

```
SQL> -- question 3
SQL> select C.Name from Customer C
SQL> where not exists
SQL> (select * from Account A
SQL> where C.C# = A.C#);

NAME
----------
Smith

SQL>
```

```
SQL> -- question 4
SQL> select B.Name from Bank B
SQL> where exists
SQL> (select * from Account A, Customer C
SQL> where C.Name = 'Blake' and C.C# = A.C# and A.B# = B.B#)
SQL> union
SQL> select B.Name from Bank B
SQL> where exists
SQL> (select * from Account A, Customer C
SQL> where C.Name = 'Clark' and C.C# = A.C# and A.B# = B.B#);

NAME
----------
America
England
Royal

SQL> _
```

```
SQL> -- question 5
SQL> select C.Name from Customer C
SQL> where not exists
SQL> (select * from Bank B
SQL> where not exists
SQL>     (select * from Account A
SQL>     where C.C# = A.C# and A.B# = B.B#));

NAME
---------
Adams

SQL> _
```

```
SQL> SELECT C.name FROM Customer C WHERE NOT EXISTS
SQL>     (SELECT * FROM Bank B WHERE
SQL>         (B.name NOT IN ('Royal', 'France')
SQL>             OR EXISTS
SQL>             (SELECT * FROM Account A WHERE C.c# = A.c# AND B.b# = A.b#))
SQL>    AND
SQL>         (B.name IN ('Royal', 'France') OR NOT EXISTS
SQL>             (SELECT * FROM Account A WHERE C.c# = A.c# AND B.b# = A.b#)));

NAME
----------
Clark
Jones

SQL>
```

```
SQL> -- question 7
SQL> select C3.Name from Customer C3, Customer C
SQL> where C3.Name != 'Clark' and C.Name = 'Clark' and exists
SQL>     (select * from Bank B, Account A1, Account A
SQL>     where C.C# = A.C# and A.B# = B.B#
SQL>     and C3.C# = A1.C# and A1.B# = B.B#);

NAME
----------
Adams
Blake
Jones

SQL> _
```

```
SQL> -- question 8
SQL> select C3.Name from Customer C3, Customer C
SQL> where C3.Name != 'Clark' and C.Name = 'Clark' and NOT exists
SQL>     (select * FROM Bank B
SQL>         WHERE EXISTS
SQL>         (SELECT * FROM Account A
SQL>         where C.C# = A.C# and A.B# = B.B#)
SQL>     and not exists
SQL>     (select * from Account A1, Account A
SQL>     where C.C# = A.C# and A.B# = B.B#
SQL>     and C3.C# = A1.C# and A1.B# = B.B#));

NAME
----------
Adams
Blake
Jones

SQL>
```

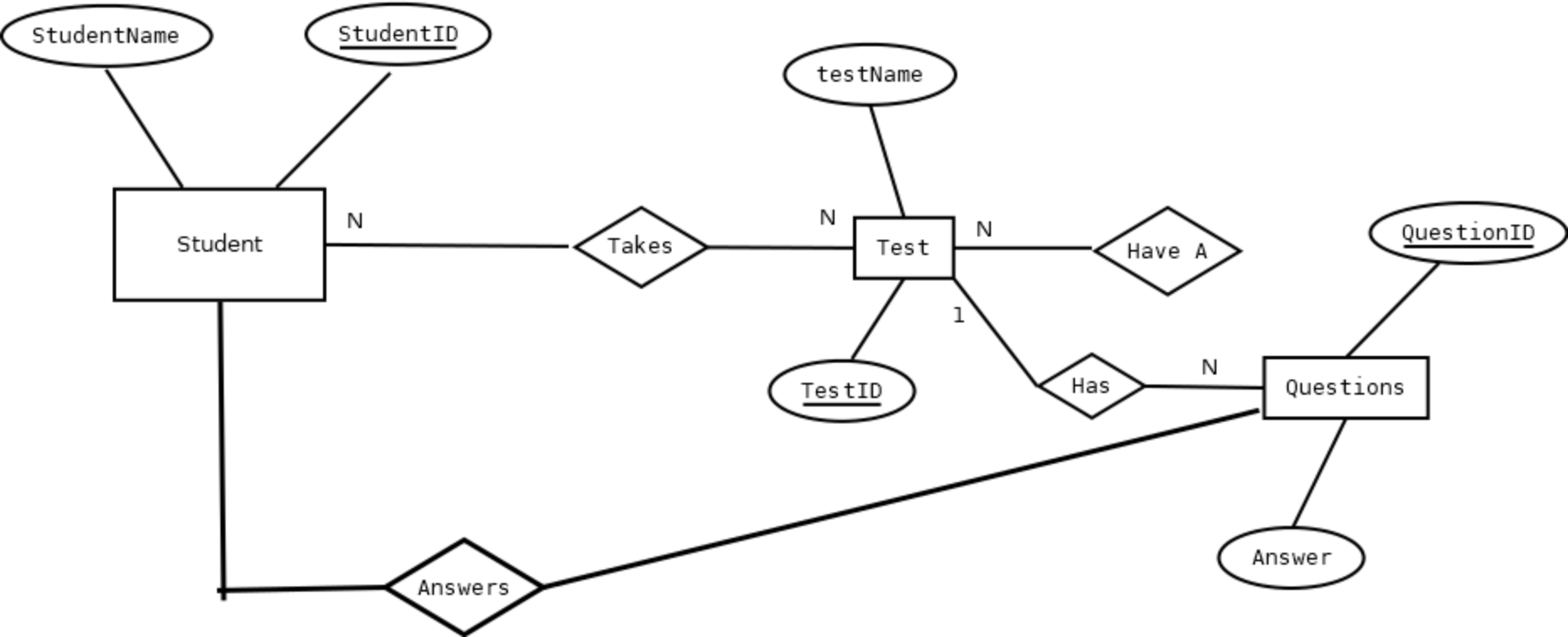
```
SQL> -- question 9
SQL> select distinct C.Name
SQL> from Customer C, Account A1, Account A2
SQL> where C.C# = A1.C#
SQL> and C.C# = A2.C#
SQL> and A1.B# !=A2.B#;

NAME
----------
Adams
Blake
Clark
Jones

SQL> _
```

```
SQL> -- question 10
SQL> select distinct C.Name
SQL> from Customer C, Account A1 where C.C# = A1.C#
SQL> group by C.Name Having count(A1.B#)>1;

NAME
----------
Adams
Blake
Clark
Jones

SQL>
```

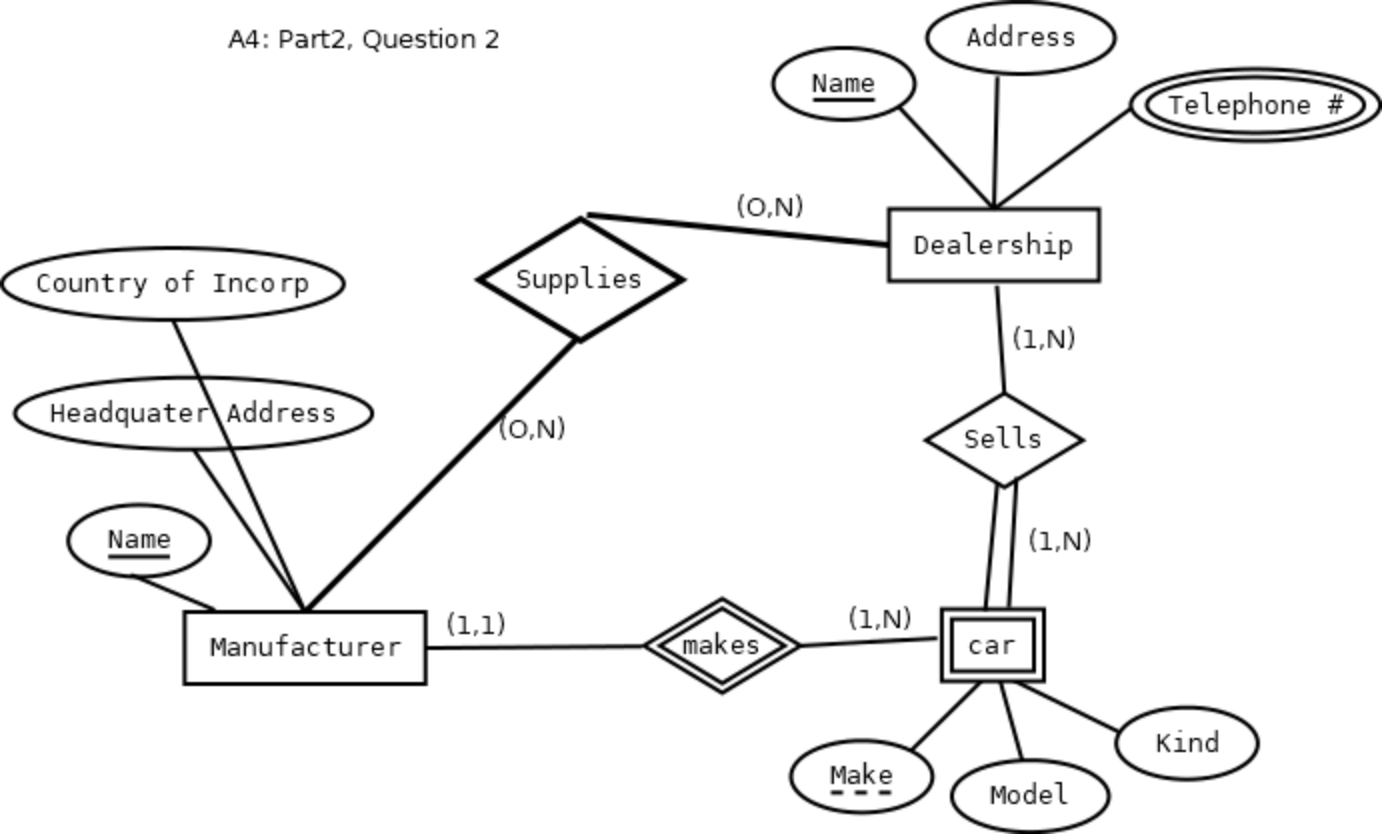
```
SQL> -- question 11
SQL> select  *
SQL> from Customer FULL OUTER JOIN Account USING (C#)
SQL> FULL OUTER JOIN Bank USING(B#);

B#         C#         NAME             AGE CITY         BALANCE NAME       CITY
---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
B1         C1         Adams              20 London           1000 England    London
B2         C1         Adams              20 London           2000 America    New York
B3         C1         Adams              20 London           3000 Royal      Toronto
B4         C1         Adams              20 London           4000 France     Paris
B1         C2         Blake              30 Paris            2000 England    London
B2         C2         Blake              30 Paris            3000 America    New York
B3         C2         Blake              30 Paris            4000 Royal      Toronto
B1         C3         Clark              25 Paris            3000 England    London
B2         C3         Clark              25 Paris            4000 America    New York
B1         C4         Jones              20 London           4000 England    London
B2         C4         Jones              20 London           5000 America    New York

B#         C#         NAME             AGE CITY         BALANCE NAME       CITY
---------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
           C5         Smith              30 Toronto

12 rows selected.

SQL> _
```

```
SQL> -- question 12
SQL> select Name, SUM(Balance)
SQL> from Customer FULL OUTER JOIN Account USING (C#)
SQL> group by C#, Name;

NAME       SUM(BALANCE)
---------- ------------
Clark              7000
Adams             10000
Blake              9000
Jones              9000
Smith

SQL>
```

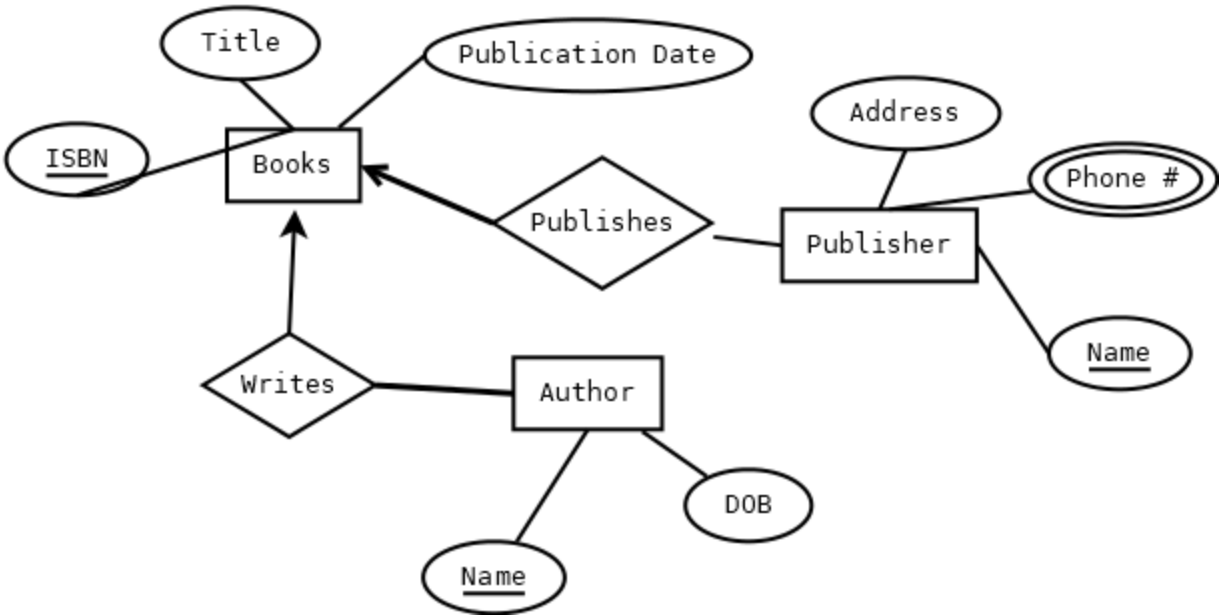
A4: Part2, Question 1



A4: Part2, Question 2



A4: Part2, Question 3



A4: Part2, Question 4