

Assignment 3:

Q1) Differentiate Inner Join and Outer Join with examples. Further, explain Left Outer Join and Right Outer Join through examples.

- An INNER JOIN between two tables includes data that exists in both of the tables. So entry found in the first table, that does not have an entry in the second table, will be excluded from the result table.

Example: If you want to retrieve students and their activities from student table and activity table, but you only retrieve data for students who have activities.

```
SELECT * FROM student INNER JOIN activity
WHERE student.s_id = activity.s_id;
```

- An OUTER JOIN between two tables includes all of the rows from one table, and also those rows from the other table which share a common value on both sides of the join.

Example: If you want to retrieve all students and their activities, regardless of whether or not they actually have activities in the activity table.

```
SELECT * FROM student OUTER JOIN activity
WHERE student.s_id = activity.s_id;
```

Q2) Consider the given tables

Sale

| Sale# | Amount | Date    | Cust# | SalesRep# |
|-------|--------|---------|-------|-----------|
| S-1   | 7,200  | 1 July  | C-1   | E-12      |
| S-2   | 10,000 | 21 July | C-2   | E-10      |
| S-3   | 16,000 | 22 July | C-5   | E-10      |
| S-4   | 10,000 | 26 July | C-2   | E-10      |
| S-5   | 16,600 | 31 July | C-5   | E-10      |
| S-6   | 35,000 | 15 Aug  | C-3   | E-10      |
| S-7   | 23,000 | 21 Aug  | C-4   | E-99      |

Sale-CashRecDuality

| Sale# | RA#  | Applied |
|-------|------|---------|
| S-2   | RA-1 | 1,666   |
| S-4   | RA-2 | 10,000  |
| S-1   | RA-3 | 7,200   |
| S-3   | RA-4 | 16,000  |
| S-5   | RA-4 | 16,600  |
| S-2   | RA-5 | 1,666   |

Write the result of the following query:

```
Select *
From Sale RightJoin [Sale-CashRecDuality]
Where [Sale.Sale#]=[Sale-CashRecDuality.Sale#];
```

| Sale# | Amount | Date    | Cust# | SalesRep# | Sale# | RA#  | Applied |
|-------|--------|---------|-------|-----------|-------|------|---------|
| S-2   | 10,000 | 21 July | C-2   | E-10      | S-2   | RA-1 | 1,666   |
| S-4   | 10,000 | 26 July | C-2   | E-10      | S-4   | RA-2 | 10,000  |
| S-1   | 7,200  | 1 July  | C-1   | E-12      | S-1   | RA-3 | 7,200   |
| S-3   | 16,000 | 22 July | C-5   | E-10      | S-3   | RA-4 | 16,000  |
| S-5   | 16,600 | 31 July | C-5   | E-10      | S-5   | RA-4 | 16,000  |
| S-2   | 10,000 | 21 July | C-2   | E-10      | S-2   | RA-5 | 1,666   |

❖ Q3) Identify typical resources, internal agents, and external agents associated with each of the following business events:

- a. Sales call or similar instigation event.
- b. Sales order or similar mutual commitment event.
- c. Sale, shipment and/or service engagement or other economic decrement event.
- d. Cash receipt or other economic increment event.
- e. Sale return or other economic decrement reversal event.

a. Sales call or similar instigation event:

Resources: Goods or services inventory.

Internal Agents: sales or marketing personnel, or customer service representatives.

External Agents: Customers.

b. Sales order or similar mutual commitment event:

Resources: Goods or services inventory

Internal Agents: Sales or customer service representatives and/or order entry clerks.

External Agents: Customers.

c. Sale, shipment and/or service engagement or other economic decrement event:

Resources: Goods or services inventory.

Internal Agents: Shipping clerks, sales order personnel or salesperson.

External Agents: Transportation suppliers, and customers.

d. Cash receipt or other economic increment event:

Resources: Cash.

Internal Agents: Cashiers, accounts receivable clerks, or other company employees.

External Agents: Customers and credit card company.

**e. Sale return or other economic decrement reversal event:**

Resources: Goods or services.

Internal Agents: Sales manager, and receiving clerks.

External Agents: Customer and sometimes a common carrier.

Reference: Dunn, C., Cherrington, J., & Hollander, A. (2005). The Sales/Collection Business Process. In Enterprise information systems: A pattern-based approach (3rd ed., pp. 203-219. Boston: McGraw-Hill/Irwin.

**Q4) Horizon Books:**

Horizon Books is a bookstore in downtown Madina Munawara. It carries an inventory of approximately 50,000 books. Customers come in and browse the shelves, select their books, and take them to one of three cashiers positioned in different parts of the store. One of the cashiers is situated at an information desk where customers can discover whether a particular book is in stock, place orders for books not currently available in the bookstore, and collect and pay for books previously ordered. The cashier at the information desk has a book database that is consulted for every query. There are no credit sales. All customers pay for their purchases at the time of purchase. Draw a diagram showing all cardinalities.

