CST2355 - Database Systems

Assignment 1: Setting up Databases

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Table Data

Customer Table

CustomerID	FirstName	LastName	City
1	Kristoff	Kurn	Vancouver
2	Billy	Elliot	Toronto
3	Justin	Hackman	Woodstock
4	Deena	Donor	NULL

Employee Table

EmployeeID	CustomerID	ManagerID	FirstName	LastName	City	AnnualSalary	HourlyWage
1	NULL	4	Bob	Smith	Windsor	80000	NULL
2	NULL	1	Bob	Smith	Toronto	NULL	15
3	NULL	1	Tanya	Duncan	London	60000	NULL
4	4	NULL	Deena	Donor	NULL	NULL	NULL

Expense Table

ExpenseID	ExpenseType	ExpenseAmount	StaysID
1	Deposit	50	1
2	Room Rate	50	1
3	Smoke Damage	25	1
4	Carpet Damage	30	1
5	Room Rate	30	2
6	Room Rate	35	3
7	Smoker Deposit	20	3
8	Room Rate	35	4
9	Smoker Deposit	20	4
10	Room Rate	35	5
11	Smoker Deposit	20	5
12	Room Rate	35	6
13	Smoker Deposit	20	6

Stays Table

StaysID	CustomerID	FromDate	ToDate
1	1	2022-02-03	2022-02-17
2	2	2022-01-20	2022-01-21
3	3	2022-02-02	2022-02-03
4	3	2022-02-08	2022-02-09
5	3	2022-02-17	2022-02-18
6	3	2022-02-28	2022-03-01
7	4	2022-01-01	2022-01-02
8	4	2022-02-01	2022-02-02
9	4	2022-03-01	2022-03-02
10	4	2022-04-01	2022-04-02

SQL Queries

Any Blanks

```
SELECT *
FROM CUSTOMER
WHERE CustomerID IS NULL OR
                    FirstName IS NULL OR
                    LastName IS NULL OR
                    City IS NULL
ORDER BY LastName DESC, FirstName ASC;
```

Number of Days

- In Microsoft SQL, the DATEDIFF needs to add a third parameter for time difference, instead of Having, it includes a WHERE statement with the DATEDIFF syntax instead of the DaysStayed alias.

- In Oracle, the DATEDIFF is a TO_DATE subtract TO_DATE, instead of Having, it includes a WHERE statement with the TO_DATE syntax instead of the DaysStayed alias.

At Most 2 Days

```
SELECT FirstName, LastName, DATEDIFF(s.ToDate, s.FromDate) AS DaysStayed
FROM CUSTOMER c
JOIN STAYS s ON s.CustomerID = c.CustomerID
HAVING DaysStayed <= 2;
```

Exactly 4 Days

```
SELECT FirstName, LastName, DATEDIFF(s.ToDate, s.FromDate) AS DaysStayed
FROM CUSTOMER c
JOIN STAYS s ON s.CustomerID = c.CustomerID
HAVING DaysStayed = 4;
```

More Than 6 Days

```
SELECT FirstName, LastName, datediff(s.ToDate, s.FromDate) AS DaysStayed
FROM CUSTOMER c
JOIN STAYS s ON s.CustomerID = c.CustomerID
HAVING DaysStayed > 6;
```

Expenses Including Room Rate

-In Microsoft SQL, FOR XML is used instead of GROUP_CONCAT

-In Oracle, an XMLAGG is used instead of GROUP_CONCAT

```
SELECT FirstName, LastName, (GROUP_CONCAT(e.ExpenseType SEPARATOR ', ')) AS Expenses , SUM(e.ExpenseAmount)
+

(DATEDIFF(s.ToDate, s.FromDate) * (SELECT (SUM(e2.ExpenseAmount)) FROM Expense e2 WHERE e2.StaysID = s.StaysID
AND e2.ExpenseType = 'Room Rate')) - (SELECT (SUM(e2.ExpenseAmount)) FROM Expense e2 WHERE e2.StaysID =
s.StaysID AND e2.ExpenseType = 'Room Rate') AS TotalExpenses

FROM CUSTOMER c

JOIN STAYS s ON s.CustomerID = c.CustomerID

JOIN expense e ON e.StaysId = s.StaysID

GROUP BY s.StaysID

HAVING TotalExpenses > 50

ORDER BY TotalExpenses DESC;
```

Expenses Excluding Room Rate

-In Microsoft SQL, FOR XML is used instead of GROUP_CONCAT

-In Oracle, an XMLAGG is used instead of GROUP_CONCAT

```
SELECT FirstName, LastName, (GROUP_CONCAT(e.ExpenseType SEPARATOR ', ')) AS Expenses , SUM(e.ExpenseAmount)
AS TotalExpenses

FROM CUSTOMER c

JOIN STAYS s ON s.CustomerID = c.CustomerID

JOIN EXPENSE e ON e.StaysId = s.StaysID

WHERE e.ExpenseType != 'Room Rate'

GROUP BY s.StaysID

HAVING TotalExpenses > 50

ORDER BY TotalExpenses DESC;
```

Employees

```
SELECT FirstName, LastName, City,
(SELECT FirstName FROM EMPLOYEE e2 WHERE Employeeid = e1.ManagerID) AS ManagerFirstName,
(SELECT LastName FROM EMPLOYEE e2 WHERE Employeeid = e1.ManagerID) AS ManagerLastName,
(sELECT City FROM EMPLOYEE e2 WHERE Employeeid = e1.ManagerID) AS ManagerCity
FROM EMPLOYEE e1;
```

From London and Winnipeg

```
– In Microsoft and Oracle, the WHERE is changed to WHERE City = 'London' OR City = 'Winnipeg'

SELECT DISTINCT FirstName, Lastname, City
FROM EMPLOYEE
WHERE City = 'London' OR 'Winnipeg'
UNION
SELECT DISTINCT FirstName, LastName, City
FROM CUSTOMER
WHERE City = 'London' OR 'Winnipeg';
```

From Cities

```
SELECT City AS CityList, FirstName, LastName
FROM EMPLOYEE
UNION
SELECT City AS CityList, FirstName, LastName
FROM CUSTOMER
ORDER BY CityList;
```

Employees are Customers

```
SELECT e.FirstName, e.LastName
FROM EMPLOYEE e, CUSTOMER c
WHERE e.CustomerID = c.CustomerID AND e.CustomerID IS NOT NULL;
```

Employee Customer MC – In oracle the letters are case sensitive so the like operators need to match.

```
SELECT *
FROM EMPLOYEE e, CUSTOMER c
WHERE e.CustomerID = c.CustomerID AND e.CustomerID IS NOT NULL
 AND (e.LastName LIKE 'M%' OR e.LastName LIKE '%C%');
```

Databases

SQL Server

Design Diagram

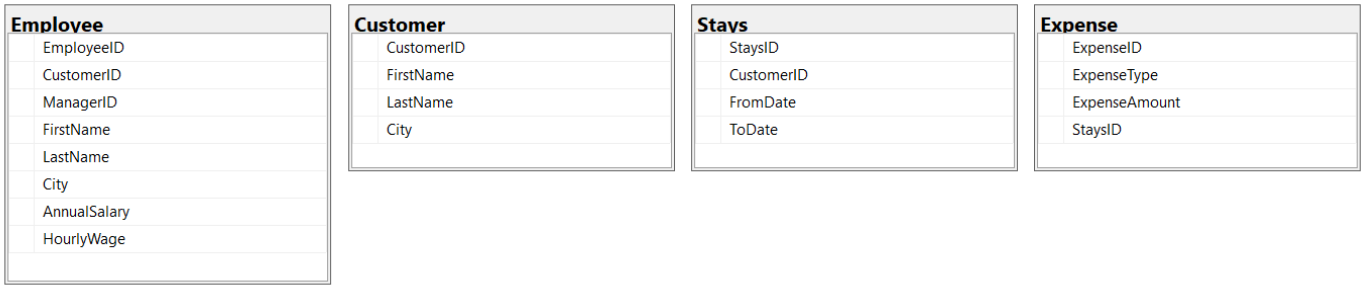

Table Structure

```
select * from Customer
```

100 %

Results | Messages

	CustomerID	FirstName	LastName	City
1	1	Kristoff	Kurn	Vancouver
2	2	Billy	Elliot	Toronto
3	3	Justin	Hackman	Woodstock
4	4	Deena	Donor	NULL

```
select * from Employee
```

100 %

Results | Messages

	EmployeeID	CustomerID	ManagerID	FirstName	LastName	City	AnnualSalary	HourlyWage
1	1	0	4	Bob	Smith	Windsor	80000	0
2	2	0	1	Bob	Smith	Toronto	0	15
3	3	0	1	Tanya	Duncan	London	60000	0
4	4	4	0	Deena	Donor	NULL	0	0

```
select * from Expense
```

100 %

Results | Messages

	ExpenseID	ExpenseType	ExpenseAmount	StaysID
1	1	Deposit	50	1
2	2	Room Rate	50	1
3	3	Smoke Damage	25	1
4	4	Carpet Damage	30	1
5	5	Room Rate	30	2
6	6	Room Rate	35	3
7	7	Smoker Deposit	20	3
8	8	Room Rate	35	4
9	9	Smoker Deposit	20	4
10	10	Room Rate	35	5
11	11	Smoker Deposit	20	5
12	12	Room Rate	35	6
13	13	Smoker Deposit	20	6

```
select * from stays
```

100 %

Results | Messages

	StaysID	CustomerID	FromDate	ToDate
1	1	1	2022-02-03 00:00:00.000	2022-02-17 00:00:00.000
2	2	2	2022-01-20 00:00:00.000	2022-01-21 00:00:00.000
3	3	3	2022-02-02 00:00:00.000	2022-02-03 00:00:00.000
4	4	3	2022-02-08 00:00:00.000	2022-02-09 00:00:00.000
5	5	3	2022-02-17 00:00:00.000	2022-02-18 00:00:00.000
6	6	3	2022-02-28 00:00:00.000	2022-03-01 00:00:00.000
7	7	4	2022-01-01 00:00:00.000	2022-01-02 00:00:00.000
8	8	4	2022-02-01 00:00:00.000	2022-02-02 00:00:00.000
9	9	4	2022-03-01 00:00:00.000	2022-03-02 00:00:00.000
10	10	4	2022-04-01 00:00:00.000	2022-04-02 00:00:00.000

Oracle

Design Diagram

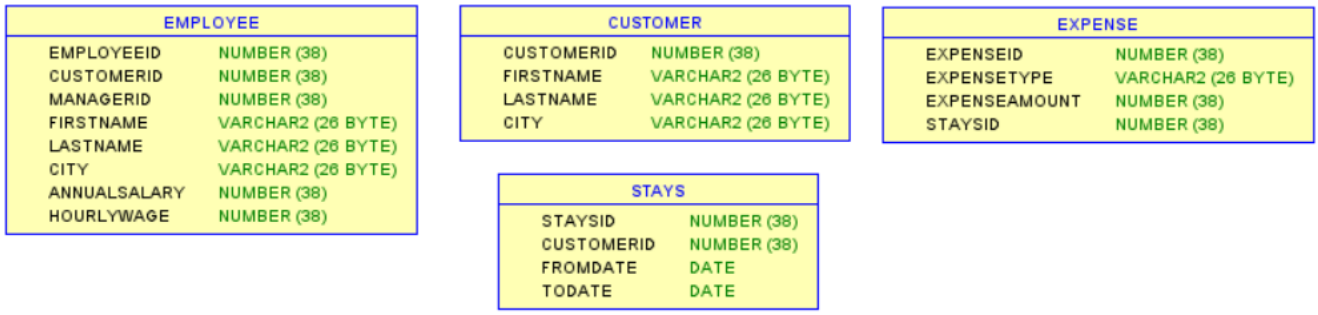

Table Structure

```
1 SELECT * FROM CUSTOMER
```

Script Output | Query Result | SQL | All Rows Fetched: 4 in 0.001 seconds

	CUSTOMERID	FIRSTNAME	LASTNAME	CITY
1	1	Kristoff	Kurn	Vancouver
2	2	Billy	Elliot	Toronto
3	3	Justin	Hackman	Woodstock
4	4	Deena	Donor	(null)

```
1 SELECT * FROM EMPLOYEE
```

Script Output | Query Result | SQL | All Rows Fetched: 4 in 0.001 seconds

	EMPLOYEEID	CUSTOMERID	MANAGERID	FIRSTNAME	LASTNAME	CITY	ANNUALSALARY	HOURLYWAGE
1	1	0	4	Bob	Smith	Windsor	80000	0
2	2	0	1	Bob	Smith	Toronto	0	15
3	3	0	1	Tanya	Duncan	London	60000	0
4	4	4	0	Deena	Donor	(null)	0	0

```
1 SELECT * FROM EXPENSE
```

Script Output | Query Result | SQL | All Rows Fetched: 13 in 0.002 seconds

	EXPENSEID	EXPENSETYPE	EXPENSEAMOUNT	STAYSID
1	1	Deposit	50	1
2	2	Room Rate	50	1
3	3	Smoke Damage	25	1
4	4	Carpet Damage	30	1
5	5	Room Rate	30	2
6	6	Room Rate	35	3
7	7	Smoker Deposit	20	3
8	8	Room Rate	35	4
9	9	Smoker Deposit	20	4
10	10	Room Rate	35	5
11	11	Smoker Deposit	20	5
12	12	Room Rate	35	6
13	13	Smoker Deposit	20	6

```
1 SELECT * FROM STAYS
```

Script Output | Query Result | SQL | All Rows Fetched: 10 in 0.003 seconds

	STAYSID	CUSTOMERID	FROMDATE	TODATE
1	1	1	22-02-03	22-02-17
2	2	2	22-01-20	22-01-21
3	3	3	22-02-02	22-02-03
4	4	3	22-02-08	22-02-09
5	5	3	22-02-17	22-02-18
6	6	3	22-02-28	22-03-01
7	7	4	22-01-01	22-01-02
8	8	4	22-02-01	22-02-02
9	9	4	22-03-01	22-03-02
10	10	4	22-04-01	22-04-02

MySQL

Design Diagram

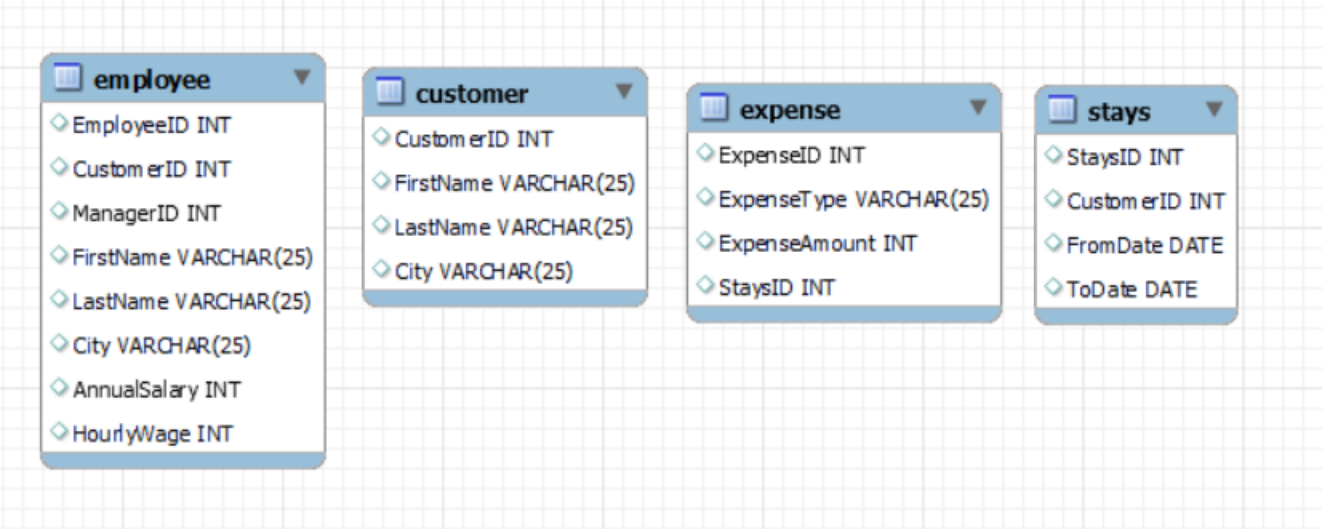

Table Structure

```
1 •  SELECT * FROM CUSTOMER
2
3
```

Result Grid | Filter Rows: | Export: | Wra

CustomerID	FirstName	LastName	City
1	Kristoff	Kurn	Vancouver
2	Billy	Elliot	Toronto
3	Justin	Hackman	Woodstock
4	Deena	Donor	NULL

```
1 •  SELECT * FROM Employee
2
3
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EmployeeID	CustomerID	ManagerID	FirstName	LastName	City	AnnualSalary	HourlyWage
1	NULL	4	Bob	Smith	Windsor	80000	NULL
2	NULL	1	Bob	Smith	Toronto	NULL	15
3	NULL	1	Tanya	Duncan	London	60000	NULL
4	4	NULL	Deena	Donor	NULL	NULL	NULL

```
1 •  SELECT * FROM expense
2
3
```

Result Grid | Filter Rows: | Export:

ExpenseID	ExpenseType	ExpenseAmount	StaysID
1	Deposit	50	1
2	Room Rate	50	1
3	Smoke Damage	25	1
4	Carpet Damage	30	1
5	Room Rate	30	2
6	Room Rate	35	3
7	Smoker Deposit	20	3
8	Room Rate	35	4
9	Smoker Deposit	20	4
10	Room Rate	35	5
11	Smoker Deposit	20	5
12	Room Rate	35	6
13	Smoker Deposit	20	6

```
1 •  SELECT * FROM stays
2
3
```

Result Grid | Filter Rows:

StaysID	CustomerID	FromDate	ToDate
1	1	2022-02-03	2022-02-17
2	2	2022-01-20	2022-01-21
3	3	2022-02-02	2022-02-03
4	3	2022-02-08	2022-02-09
5	3	2022-02-17	2022-02-18
6	3	2022-02-28	2022-03-01
7	4	2022-01-01	2022-01-02
8	4	2022-02-01	2022-02-02
9	4	2022-03-01	2022-03-02
10	4	2022-04-01	2022-04-02