**EXERCISE #2**

**The Relational Model 1: Introduction, QBE, and Relational Algebra**

**Learning Outcomes:**

* Describe the relational model;
* Understand QBE;
* Use criteria in QBE;
* Create calculated columns in QBE;
* Use functions in QBE;
* Sort Data in QBE;
* Join tables in QBE;
* Update data using QBE; and
* Understand relational algebra.

***Scoring:***

3 points : all statements are correct

2 points : most statements are correct

1 point : few statements are correct

no point : no statement is correct

What is a relation?

A relation means that the values within each table are related to

each other. Tables may also be related to other tables. A connection

between table, linked by database keys (primary/foreign key).

What is a relational database?

A **relational database** is a type of **database** that stores and provides

access to data points that are related to one another. Tables are linked

to each other with the help of database keys.

What is an unnormalized relation? Is it a relation according to definition of the word relation?

**unnormalized relation** is any **relation** in its raw state, and they

commonly contain repeating values, and other characteristics that

are not found in **denormalized relations**. According to the definition

of the word relation, it cannot be considered as a relation.

What does it mean to qualify a field name? How would you qualify the Street field in the Customer table?

Qualifying a field name means to specify the table to which the field

Belongs. It is represented by combining the column name and the

Table name. Qualified field is represented as tablename.fieldname.

So, to qualify the street field in the customer table, it has to be

Customer.Street

What is a primary key? What is the primary key for each table in Solmaris Condominium Group database?

A **primary key** is either an existing table column or a column that is

specifically generated by the database according to a defined sequence.

The primary keys for each table in Solmaris are: tblLocation.LocationNum,

tblOwner.OwnerNum, tblCondoUnti.CondoID,

tblServiceCategory.CategoryNum, and tblServiceRequest.ServiceID.

**Create queries using the Solmaris Condominium Group data:**

1. List the owner number, last name, and first name of every condo owner.

SELECT OwnerNum, LastName,   
FirstNameFROM tblOwner;

2. List the complete Location table (all rows and columns).

SELECT \* FROM tblLocation

3. List the last name and first name of every owner located in Lewiston.

SELECT LastName, FirstName

FROM tblOwner

WHERE City = 'Lewiston'

4. List the last name and first name of every owner not located in Lewiston.

SELECT LastName, FirstName

FROM tblOwner

WHERE City <> 'Lewiston'

5. List the location number and unit number for every condo whose square footage is equal to or less than 1,084 square feet.

SELECT LocationNum, UnitNum

FROM tblCondoUnit

WHERE SqrFt <= 1084

6. List the location number and unit number of every condo with three bedrooms.

SELECT LocationNum, UnitNum

FROM tblCondoUnit

WHERE Bdrms = 3

7. List the unit number for every condo with three bedrooms that is located in location number 1.

SELECT UnitNum

FROM tblCondoUnit

WHERE Bdrms = 3 AND LocationNum = 1

8. List the location number and unit number for each condo whose condo fees are between 200 and 300 per month.

SELECT LocationNum, UnitNum

FROM tblCondoUnit

WHERE CondoFee BETWEEN 200 AND 300

9. List the unit number for every condo in location 2 whose monthly condo fee is less than 200.

SELECT UnitNum

FROM tblCondoUnit

WHERE LocationNum = 2 AND CondoFee < 200

10. Labor is billed at the rate of 35 per hour. List the condo ID, category number, estimated hours, and estimated labor cost for every service request. To obtain the estimated labor cost, multiply the estimated hours by 35. Use the column name “EstimatedCost” for the estimated labor cost.

SELECT CondoID, CategoryNum, EstHours, (EstHours\*35) AS EstimatedCost

FROM tblServiceRequest;

11. List the owner number and last name for all owners who live in Florida (FL), Georgia (GA), or South Carolina (SC).

SELECT OwnerNum, LastName

FROM tblOwner

WHERE State IN ('FL', 'GA', 'SC')

12. List the location number, unit number, square footage, and condo fee for all units. Sort the results by condo fee within the square footage.

SELECT LocationNum, UnitNum, SqrFt, CondoFee

FROM tblcondoUnit

ORDER BY Condofee,SqrFt

13. How many two-bedroom condos are located at each location?

SELECT LocationNum, COUNT(bdrms) AS Numberof2bedrooms

FROM tblCondoUnit

WHERE bdrms = 2

GROUp BY LocationNum;

14. Calculate the total condo fees Solmaris receives each month.

SELECT sum(condofee)

FROM tblCondoUnit

15. For every condo, list the location number, unit number, owner number, owner’s first name, and owner’s last name.

SELECT LocationNum, UnitNum, tblOwner.OwnerNum, FirstName, LastName

FROM tblCondoUnit

LEFT JOIN tblOwner

ON tblCondoUnit.OwnerNum = tblOwner.OwnerNum;

16. For every service request for painting, list the condo ID, description, and status.

SELECT CondoID, Description, Status

FROM tblServiceRequest

WHERE CategoryNum = (SELECT CategoryNum

FROM tblServiceCategory

WHERE CategoryDescription = 'Painting');

17. For every service request for electrical systems, list the condo ID, location number, unit number, estimated hours, spent hours, owner number, and owner’s last name.

SELECT tblServiceRequest.CondoId, tblCondoUnit.LocationNum, tblCondoUnit.UnitNum, tblServiceRequest.EstHours, tblServiceRequest.SpentHours, tblCondoUnit.OwnerNum, tblOwner.LastName

FROM ((((tblServiceCategory

INNER JOIN tblServiceRequest ON tblServiceCategory.CategoryNum = tblServiceRequest.CategoryNum)

INNER JOIN tblCondoUnit ON tblCondoUnit.CondoID = tblServiceRequest.CondoID)

INNER JOIN tblLocation ON tblCondoUnit.LocationNum = tblLocation.LocationNum)

INNER JOIN tblOwner ON tblCondoUnit.OwnerNum = tblOwner.OwnerNum)

WHERE tblServiceCategory.CategoryDescription = 'Electrical Systems';

18. Create a new table named LargeCondo using all the columns in the CondoUnit table for condos with square footage greater than 1,500 square feet.

SELECT \* INTO Largecondo

FROM tblCondoUnit

WHERE (((tblCondoUnit.[SqrFt])>1500));

19. Use an update query to change the condo fee of any unit in the LargeCondo table whose fee is currently 300 to 350.

UPDATE LargeCondo

SET CondoFee = 350

WHERE CondoFee = 300;

20. Use a delete query to delete all rows in the LargeCondo table in which the condo fee is 670.

DELETE FROM LargeCondo

WHERE CondoFee = 670;

21. How would you modify the query in #7 to list all condos with three bedrooms that are located in location number 1 or any condo in either location that is larger than 1,200 square feet?

SELECT UnitNum

FROM tblCondoUnit

WHERE (Bdrms = 3 AND LocationNum = 1)

OR SqrFt >1200