**LAB MANUAL FOR**

**DATABASE MANAGEMENT SYSTEM**

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1. Create a database and write the programs to carry out the following operation :
   1. Add a record in the database
   2. Delete a record in the database
   3. Modify the record in the database
   4. Generate queries
   5. Generate the report
   6. List all the records of database in ascending order.

Objective: Create tables and specify the Questionnaires in SQL.

##### Theory & Concepts:

**Introduction about SQL-**

SQL (Structured Query Language) is a nonprocedural language, you specify what you want, not how to get it. A block structured format of English key words is used in this Query language. It has the following components.

##### DDL (Data Definition Language)-

The SQL DDL provides command for defining relation schemas, deleting relations and modifying relation schema.

##### DML (DATA Manipulation Language)-

It includes commands to insert tuples into, delete tuples from and modify tuples in the database.

##### View definition-

The SQL DDL includes commands for defining views.

Transaction Control- SQL includes for specifying the beginning and ending of transactions.

##### Embedded SQL and Dynamic SQL-

Embedded and Dynamic SQL define how SQL statements can be embedded with in general purpose programming languages, such as C, C++, JAVA, COBOL, Pascal and Fortran.

##### Integrity-

The SQL DDL includes commands for specifying integrity constraints that the data stored in the database must specify. Updates that violate integrity constraints are allowed.

##### Authorization-

The SQL DDL includes commands for specifying access rights to relations and views.

##### Data Definition Language-

The SQL DDL allows specification of not only a set of relations but also information about each relation, including-

* Schema for each relation
* The domain of values associated with each attribute.
* The integrity constraints.
* The set of indices to be maintained for each relation.
* The security and authorization information for each relation.
* The physical storage structure of each relation on disk.

##### Domain types in SQL-

**The SQL standard supports a variety of built in domain types, including-**

* Char (n)- A fixed length character length string with user specified length .
* Varchar (n)- A variable character length string with user specified maximum length n.
* Int- An integer.
* Small integer- A small integer.
* Numeric (p, d)-A Fixed point number with user defined precision.
* Real, double precision- Floating point and double precision floating point numbers with machine dependent precision.
* Float (n)- A floating point number, with precision of at least n digits.
* Date- A calendar date containing a (four digit) year, month and day of the month.
* Time- The time of day, in hours, minutes and seconds Eg. Time ’09:30:00’.
* Number- Number is used to store numbers (fixed or floating point).

##### DDL statement for creating a table-

**Syntax-**

Create table tablename

(columnname datatype(size), columnname datatype(size)); Creating a table from a table-

##### Syntax-

CREATE TABLE TABLENAME

[(columnname, columnname, ………)]

AS SELECT columnname, columnname FROM tablename;

##### Insertion of data into tables-

**Syntax-**

INSERT INTO tablename [(columnname, columnname, ………)] Values(expression, expression);

##### Inserting data into a table from another table:

**Syntax-**

INSERT INTO tablename

SELECT columnname, columnname, ……. FROM tablename;

##### Insertion of selected data into a table from another table:

**Syntax-**

INSERT INTO tablename

SELECT columnname, columnname……..

FROM tablename

WHERE columnname= expression;

##### Retrieving of data from the tables-

**Syntax-**

SELECT \* FROM tablename;

##### The retrieving of specific columns from a table-

**Syntax-**

SELECT columnname, columnname, …. FROM tablename;

##### Elimination of duplicates from the select statement-

**Syntax-**

SELECT DISTINCT columnname, columnname FROM tablename;

##### Selecting a data set from table data-

**Syntax-**

SELECT columnname, columnname FROM tablename

WHERE searchcondition;

## Assignment No.1

##### Q1. Create the following tables:

1. **client\_master**

columnname datatype size client\_no varchar2 6

name varchar2 20

address1 varchar2 30

address2 varchar2 30

city varchar2 15

state varchar2 15

pincode number 6

bal\_due number 10,2

##### Product\_master

Columnname datatype size Product\_no varchar2

Description varchar2 Profit\_percent number Unit\_measure varchar2 Qty\_on\_hand number Reoder\_lvlnumber Sell\_price number Cost\_price number

##### Q2- Insert the following data into their respective tables:

Clientno Name city pincode state bal.due

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 0001 | Ivan | Bombay | 400054 | Maharashtra | 15000 |
| 0002 | Vandana | Madras | 780001 | Tamilnadu | 0 |
| 0003 | Pramada | Bombay | 400057 | Maharashtra | 5000 |
| 0004 | Basu | Bombay | 400056 | Maharashtra | 0 |
| 0005 | Ravi | Delhi | 100001 |  | 2000 |
| 0006 | Rukmini | Bombay | 400050 | Maharashtra | 0 |

##### Data for Product Master:

Product No. Desciption Profit % Unit Qty Reorder Sell Cost

Percent measured on hand lvl price

price

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| P00001 | 1.44floppies | 5 | piece | 100 | 20 | 525 | 500 |
| P03453 | Monitors | 6 | piece | 10 | 3 | 12000 | 11200 |
| P06734 | Mouse | 5 | piece | 20 | 5 | 1050 | 500 |
| P07865 | 1.22 floppies | 5 | piece | 100 | 20 | 525 | 500 |
| P07868 | Keyboards | 2 | piece | 10 | 3 | 3150 | 3050 |
| P07885 | CD Drive | 2.5 | piece | 10 | 3 | 5250 | 5100 |
| P07965 | 540 HDD | 4 | piece | 10 | 3 | 8400 | 8000 |
| P07975 | 1.44 Drive | 5 | piece | 10 | 3 | 1050 | 1000 |
| P08865 | 1.22 Drive | 5 | piece | 2 | 3 | 1050 | 1000 |

##### Q3:- On the basis of above two tables answer the following Questionries:

1. Find out the names of all the clients.
2. Retrieve the list of names and cities of all the clients.
3. List the various products available from the product\_master table.
4. List all the clients who are located in Bombay.
5. Display the information for client no 0001 and 0002.
6. Find the products with description as ‘1.44 drive’ and ‘1.22 Drive’.
7. Find all the products whose sell price is greater then 5000.
8. Find the list of all clients who stay in in city ‘Bombay’ or city ‘Delhi’ or ‘Madras’.
9. Find the product whose selling price is greater than 2000 and less than or equal to 5000.
10. List the name, city and state of clients not in the state of ‘Maharashtra’.

## Theory and Concept Experiment 2

##### Objective:- To Manipulate the Operations on the table.

DML ( Data Manipulation Language) Data manipulation is

* The retrieval of information stored in the database.
* The insertion of new information into the database.
* The deletion of information from the database.
* The modification of information stored by the appropriate data model. There are basically two types.

1. **Procedural DML**:- require a user to specify what data are needed and how to get those data.
2. **Non Procedural DML** : require a user to specify what data are needed without specifying how to get those data.

##### Updating the content of a table:

In creation situation we may wish to change a value in table without changing all values in the tuple . For this purpose the update statement can be used.

Update table name

Set columnname = expression, columnname =expression…… Where columnname = expression;

##### Deletion Operation:-

A delete query is expressed in much the same way as Query. We can delete whole tuple ( rows) we can delete values on only particulars attributes.

##### Deletion of all rows

**Syntax:**

Delete from tablename :

##### Deletion of specified number of rows Syntax:

Delete from table name Where search condition ;

##### Computation in expression lists used to select data

+ Addition - Subtraction

* multiplication \*\* exponentiation

/ Division () Enclosed operation

Renaming columns used with Expression Lists: - The default output column names can be renamed by the user if required

##### Syntax:

Select column name result\_columnname, Columnname result\_columnname,

From table name;

##### Logical Operators:

The logical operators that can be used in SQL sentenced are

AND all of must be included

OR any of may be included

NOT none of could be included

**Range Searching:** Between operation is used for range searching.

##### Pattern Searching:

The most commonly used operation on string is pattern matching using the operation ‘like’ we describe patterns by using two special characters.

* + Percent (%) ; the % character matches any substring we consider the following examples.
  + ‘Perry %’ matches any string beginning with perry
  + ‘% idge % matches any string containing’ idge as substring.
  + ‘ - - - ‘ matches any string exactly three characters.
  + ‘ - - - % matches any string of at least of three characters.

##### Oracle functions:

Functions are used to manipulate data items and return result. function follow the format of function \_name (argument1, argument2 ..) .An arrangement is user defined variable or constant. The structure of function is such that it accepts zero or more arguments.

Examples:

Avg return average value of n

##### Syntax:

Avg ([distinct/all]n)

Min return minimum value of expr.

##### Syntax:

MIN((distinct/all )expr)

Count Returns the no of rows where expr is not null

##### Syntax:

Count ([distinct/all)expr]

Count (\*) Returns the no rows in the table, including duplicates and those with nulls. Max Return max value of expr

##### Syntax:

Max ([distinct/all]expr)

Sum Returns sum of values of n

##### Syntax:

Sum ([distinct/all]n)

##### Sorting of data in table

**Syntax:**

Select columnname, columnname From table

Order by columnname;

## Assignment No. # 2

##### Question.1 Using the table client master and product master answer the following Questionnaires.

1. Change the selling price of ‘1.44 floppy drive to Rs.1150.00
2. Delete the record with client 0001 from the client master table.
3. Change the city of client\_no’0005’ to Bombay.
4. Change the bal\_due of client\_no ‘0001, to 1000.
5. Find the products whose selling price is more than 1500 and also find the new selling price as original selling price \*15.
6. Find out the clients who stay in a city whose second letter is a.
7. Find out the name of all clients having ‘a’ as the second letter in their names.
8. List the products in sorted order of their description.
9. Count the total number of orders
10. Calculate the average price of all the products.
11. Calculate the minimum price of products.
12. Determine the maximum and minimum prices . Rename the tittle as ‘max\_price’ and min\_price respectively.
13. Count the number of products having price greater than or equal to 1500.