***** EXPERIMENT NO 01 *****

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Author : Atharva Paliwal
Roll No : 40 [5B]
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AIM : To study the relation model and demonstrate basic SQL commands in Oracle 11g.

PROBLEM STATEMENT:

Establish the TinyStores database and execute different SQL queries against it. The logical database schemata, the organisation of relations and their contents are as below-
EMP (EMP_CODE, EMP_FNAME, EMP_LNAME, EMP_DOB, STORE_CODE)
STORE (STORE_CODE, STORE_NAME, YTD_SALES, REGION_CODE, EMP_CODE)
REGION (REGION_CODE, REGION_DESC)

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```
conn CS540/atharva;
Connected
```

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Query 1 : Write SQL code that will create the TinyStores database.

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```
CREATE TABLE EMP(
      EMP_CODE NUMBER(2) NOT NULL,
      EMP_FNAME VARCHAR2(15) NOT NULL,
      EMP_LNAME VARCHAR2(15) NOT NULL,
      EMP_DOB DATE DEFAULT SYSDATE-(365*16) NOT NULL,
      STORE_CODE NUMBER(2) NOT NULL,
      SALARY NUMBER(5) CHECK (SALARY>10000) NOT NULL,
      CONSTRAINT PK_EMP PRIMARY KEY (EMP_CODE)
      );

CREATE TABLE STORE(
      STORE_CODE NUMBER(2) NOT NULL,
      STORE_NAME VARCHAR2(25) NOT NULL,
      YTD_SALES NUMBER(9,2) DEFAULT 0 NOT NULL,
      REGION_CODE NUMBER(1) NOT NULL,
      EMP_CODE NUMBER (2),
      CONSTRAINT PK_STORE PRIMARY KEY (STORE_CODE),
      CONSTRAINT FK_STORE_EMPCODE FOREIGN KEY (EMP_CODE) REFERENCES
EMP(EMP_CODE)
      );
```

```
CREATE TABLE REGION (
      REGION_CODE NUMBER(1) NOT NULL,
      REGION_DESC VARCHAR(10) CHECK (REGION_DESC IN
            ('EAST','WEST','NORTH','SOUTH')),
      CONSTRAINT PK_REGION PRIMARY KEY (REGION_CODE)
      );
Table created.
```

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Query 4 : Write SQL code to print the date and time of the system.

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```
SELECT TO_CHAR(
      SYSDATE, 'DD-MM-YYYY HH24:MI:SS') "NOW"
      FROM DUAL;

      NOW
      -------------------
      08-08-2020 02:01:05
```

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Query 5: List the first name, last name, gender, Pincode and email for all persons.

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```
SELECT *
      FROM EMP
      WHERE SALARY<=35000;

  EMP_CODE EMP_FNAME       EMP_LNAME       EMP_DOB   STORE_CODE     SALARY
---------- --------------- --------------- --------- ---------- ----------
        14 MOHANA          SETH            01-JUN-71         22      27000
        15 SHASWAT         PURI            23-NOV-59         11      25000
        16 SIMON           PARERA          03-SEP-60         12      25000
        20 RADHIKA         GANESAN         06-MAR-66         11      31000
        21 PAMPA           ROY             11-DEC-74         12      28000
        23 SRINIWAS        REDDY           25-AUG-64         31      26000
        24 VALLABH         ROY             11-DEC-74         41      32000
        25 BAHAR           MIRPURI         09-FEB-69         22      29000
8 rows selected.
```

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Query 6 : Write SQL code to list the first names and last names of the employees who were born before 01-JAN-1972 and who are posted in the western region.

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```
SELECT EMP_FNAME,EMP_LNAME
      FROM EMP, STORE, REGION
      WHERE (REGION.REGION_DESC='WEST'
                  AND EMP.STORE_CODE=STORE.STORE_CODE)
            AND (EMP.EMP_DOB < '01-JAN-72'
                  AND STORE.REGION_CODE=REGION.REGION_CODE);

      EMP_FNAME       EMP_LNAME
      --------------- ---------------
      APRAJITA        RAKSHAK
      KASHISH         SHUKLA
      BAHAR           MIRPURI
      MOHANA          SETH
4 rows selected.
```

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Query 7 : Write SQL code that will for each store print the name of manager along with the store details.

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```
SELECT STORE_NAME,EMP_FNAME,EMP_LNAME,YTD_SALES,REGION_DESC
      FROM STORE,EMP,REGION
      WHERE STORE.EMP_CODE=EMP.EMP_CODE
            AND STORE.REGION_CODE=REGION.REGION_CODE;

      STORE_NAME           EMP_FNAME   EMP_LNAME    YTD_SALES   REGION_DES
      -------------------  ----------- ------------ ----------  ----------
      SUCCESS JUNCTION     KASHISH     SHUKLA        000555.76  WEST
      CURIOSITY CIRCLE     ATHARVA     PALIWAL       568000.00  SOUTH
      OPPORTUNITY SQUARE   GAZAL       SINGH         986785.40  EAST
      CENTRAL DELUGE       VIKRANT     GOKHALE       2930098.35 EAST
      ATTRIBUTE ALLEY      RISHIKESH   KALE          944568.66  NORTH
      DATABASE CORNER      CHANCHAL    BHATI        1420000.34  WEST
6 rows selected.
```

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Query 8: Write SQL code to print store code, store name, region name for each store.

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```
SELECT STORE_CODE,STORE_NAME,REGION_DESC
      FROM STORE,REGION
      WHERE  STORE.REGION_CODE=REGION.REGION_CODE;

      STORE_CODE STORE_NAME                REGION_DES
      ---------- ------------------------- ----------
                  21 SUCCESS JUNCTION          WEST
                  22 DATABASE CORNER           WEST
                  11 OPPORTUNITY SQUARE        EAST
                  31 ATTRIBUTE ALLEY           NORTH
                  12 CENTRAL DELUGE            EAST
                  41 CURIOSITY CIRCLE          SOUTH
      6 rows selected.
```

**********VIVA-VOCE**********

1. What is SQL?

Ans: Structured Query Language or **SQL** is a standard Database language which is used to create, maintain and retrieve the data from relational databases like MySQL, Oracle, SQL Server, PostGres, etc.

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2. Enlist functions of DBA.

Ans:

- Schema definition
- Storage structure and Access Method definition
- Software installation and maintenance
- Database backup and recovery
- Security
- Authentication
- Performance monitoring
- Database Tuning
- Troubleshooting

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3. What are the advantages of a RDBMS over a DBMS?

Ans:

- Storage: RDBMS stores data in the form of tables unlike DBMS as file
- Avoid Data Redundancy: RDBMS utilizes keys and indexes in the table to avoid redundancies
- Normalization: RDBMS supports Normalization where as DBMS does not
- ACID: RDBMS are consistent and well structured. They obey ACID (Atomicity, Consistency, Isolation, Durability)
- Relationship: RDBMS maintains relationships among the tables
- Integrity constraints: RDBMS supports the integrity constraints at the schema level.

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4. Differentiate between a relation and a table.

Ans: A Table is a collection of related data held in a tabular format within a database. In terms of the RDBMS, a table can be considered a convenient representation of a relation, but the two are not strictly equivalent. For instance, a SQL table can potentially contain duplicate rows, whereas a true relation cannot contain duplicate rows that we call as tuples. Similarly, representation as a table implies a particular ordering to the rows and columns, whereas a relation is explicitly unordered.

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5. Differentiate between the 3GLs and the 4GLs.

Ans:

- 3GLs are procedural languages because the instructions are procedure-oriented which means code tells the computer what to do as wells how to do. On other hand, 4GLs are non-procedural languages because the instructions only specify the computer what to do and does not tell how to do.
- In 3GLs, a large volume of assembly language and machine language instructions are generates as compared to 4GLs. 4GLs requires very less statements due to its reduced complexity.
- Most of 4GLs are associated with data processing and databases where as 3GLs with others.
- Examples:
  - 3GLs: C, C++, C#, JAVA, PASCAL, BASIC, etc.
  - 4GLs: SQL, Ramis, Visual FoxPro, etc.

********** **INFERENCES** **********

- Studied and learned about relational model
- Implemented the relational model with SQL on Oracle 11g
- Created a database with tables EMP, STORE and REGION
- Implemented various queries on different tables which are related to each other in database

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******END******