Batch: B2 Roll No.:
Experiment / assignment / tutorial No. 3

Title: Implementation of Database in SQL -DDL

Objective: Define/modify database definitions with proper constraints

Expected Outcome of Experiment:

CO 2: Convert entity-relationship diagrams into relational tables, populate a relational database and formulate SQL queries on the data Use SQL for creation and query the database.

CO 3: Define and apply integrity constraints and improve database design using normalization techniques.

Books/ Journals/ Websites referred:

1. Sharaman Shah,"*Oracle for Professional*", SPD.
2. Dr. P.S. Deshpande, SQL and PL/SQL for Oracle 10g.Black book, Dreamtech Press
3. Korth, Slberchatz, Sudarshan: "Database Systems Concept", 5th Edition , McGraw Hill
4. Peter Rob and Carlos Coronel,"Database Systems Design, Implementation and Management", Thompson Learning, 5th Edition

Pre Lab/ Prior Concepts:
Resources used: Postgresql

Theory: The set of relations in a database must be specifies to the system by means of a data definition language (DDL). The SQL DDL allows specification of not only a set of relations but also specific information about the relation including,

1. The schema for each relation
2. The domain of values associated with each attribute
3. The integrity constraints
4. The set of indices to be maintained for each relation
5. The security and authorization information for each relation
6. The physical storage structure of each relation on disk

Syntax Create Table:

create table employee(ssn,fname varchar(10), mname varchar(10), lname varchar(10),

desg varchar(20), gender varchar(5), addr varchar(20), bdate datetime, sal float,primary

key(ssn));

create table manages(ssn int, dept_code int, start_dt datetime, foreign key(ssn)

references employee, foreign key(dept_code) refrences department, key(ssn,dept_code)) on delete set null;primary

Data Constraints

Busines managers of the organization determine the a set of rules that must be applied before the data is stored in the database. The application of such rules on raw data ensures **data integrity**.

Eg:- An employee belonging to Sales department cannot have salary higher than Rs. 1000.

An employee has an unique identification number.

Applying Data Constraints

Oracle permits data constraints to be attached to table columns using SQL syntax.

Constraints can be attached to table columns using

Alter table

Unique Constraint

Unique Constraint- At column level Syntax

<ColumnName><Datatype>(<size>)

UNIQUE Unique Constraint- At table level

CREATE TABLE<TableName>(

<ColumnName><Datatype>(<size>)

<ColumnName><Datatype>(<size>)

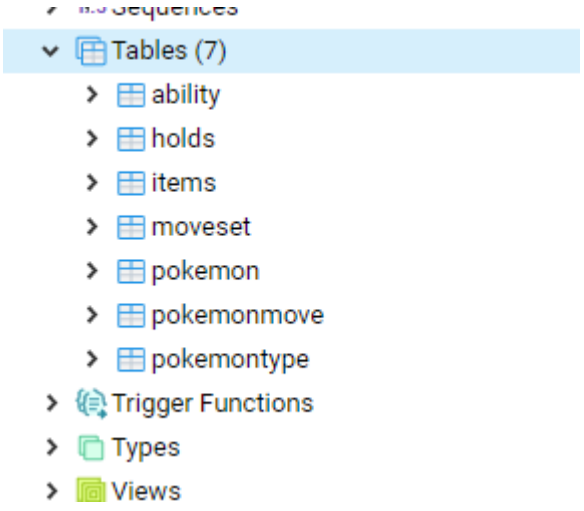
<Columnname><Datatype>(<size>)

UNIQUE(<ColumnName1>,<ColumnName2>);

Implementation Details (Problem Statement, Query and Screenshots of Results):

```
create database pokemonDB;
 create table ability(abilityName varchar(12),abilityNo int,isHidden int,flavourText varchar(50), primary key (abilityNo));
 create table items(itemName Varchar(12), effect varchar(50),itemNo int,primary key (itemNo));
create table pokemonType(typeID int, primary key (typeID),typeName varchar(12));
 create table pokemonMove(moveName varchar(12),moveID int,accuracy int,mtype int, primary key(moveID),
            foreign key (mtype) references pokemonType);
 create table pokemon(pokedexNo int,  pokemonName varchar(12),evolvsID int, evolvsFromID int, abilityNo int, pType int, Stype int,
            primary key(pokedexNo),
            foreign key(evolvsID) references pokemon,
            foreign key(evolvsFromID) references pokemon,
            foreign key(abilityNo) references ability,
            foreign key(pType) references pokemonType,
            foreign key(Stype) references pokemonType);
create table moveSet(moveID int,pokedexNo int,
            foreign key (moveID) references pokemonMove,
            foreign key (pokedexNo) references pokemon);

 create table holds(holderID int,  itemID int, foreign key (holderID) references pokemon, foreign key (itemID) references items);
```



Conclusion:

Thus we have created sql table for our problem statement. We made a database with five tables. Many of these tables were interdependent on each other, which was shown using foreign keys. In this experiment we learnt how to perform table creation, primary keys and foreign keys of database.

Post Lab Questions:

1. **Which command is used for removing a table and all its data from the database:**

   A. DROP Command
   B. TRUNCATE Command
   C. Both Commands

A drop command

2. **For the given ER model, using DDL command: Write syntax to create CREATE Tables with all possible integrity constraints**

create table pokemon(pokedexNo int, pokemonName varchar(12),evolvsID int, evolvsFromID int, abilityNo int, pType int, Stype int,

primary key(pokedexNo) not null,

foreign key(evolvsID) references pokemon,

foreign key(evolvsFromID) references pokemon,

foreign key(abilityNo) references ability,

foreign key(pType) references pokemonType,

foreign key(Stype) references pokemonType);

Problem Statement:

A small accounting firm wants a simple HR application that will help it to keep track of its employees, their positions, allowances, salary scales, and which company vehicles their employees drive. The application must keep track of all the positions at the firm, the employees filling these positions, the allowances for these positions, the salary scales for these positions, and the company vehicles assigned to these positions.