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Assignment - 03

* Date of Completion: 1th - August - 2020
* Date of Submission: 14th - September - 2020
* Title: Design SQL queries for suitable database application.
* Problem Statement: Design atleast 10 SQL queries for suitable database application using SQL DML statements: Insert, Select, Update, Delete with operators, functions and set operators.
* Objective:
  - To understand & implement the various DML commands.
  - To understand database concepts like functions & set operators.
* Outcome:
  - To be able to implement the DML statements on given schema
  - Students will learn about Insert, Select, Update, Delete with operators, functions & set operators.
* S/W and H/W Requirements:
  MySQL, Windows 10 (64bit), i5 processor.
* Theory:
  - creation of database:
    syntax: create database db-name;

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- Showing all databases:
  Syntax: show databases;
  > use database db_name;

- Tables
  - Tables can be created inside a database using this syntax:
  > create table table_name (column_name, column_type);

Other things that can be included are:
- Field attribute NOT NULL can be used if we don't want any column to be null.
- Field attribute AUTO_INCREMENT can be use to create sequence.
- Keyword PRIMARY_KEY can be used to define a column as a primary key.

- CONSTRAINT:
  MySQL constraint is used to define rules to allow or restrict what values can be stored in columns

Various constraints are:
i) NOT NULL - allows to specify that a column can not contain NULL value.

ii) UNIQUE - does not allow to insert a duplicate value in a column.

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iii) PRIMARY KEY - enforces the table to accept unique data for that column & creates a unique index for accessing table faster

iv) FOREIGN KEY :- creates a link between two tables by one specific column of both tables. The specified column in one table must be a PRIMARY KEY & referred by column of another table known as FOREIGN KEY.

v) CHECK - determines whether the value is valid or not from a logical expression

vi) DEFAULT - while inserting a data into a table if no value is supplied to a column, then the column gets a default type value

Syntax:

CREATE table [table_name]
([column_name] [data_type] ([size]) [column constrain
.... [table constraint]([[column_name]...])...)

FOREIGN KEY:

Syntax:

FOREIGN KEY [column_list] REFERENCES
[primary key table] ([column_list]);

can be used with create or alter statements.

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CASCADE - deletes or updates the row from parent table (containing PRIMARY KEY) & automatically delete or update the matching rows in the child table.

RESTRICT - bars the removal of or modification of rows from the parent table.

Dropping constraints:
ALTER table table_name DROP [constraint] [constraint_name];

- DESCRIBING a TABLE:
  Syntax: desc table_name;

- DROPPING TABLE:
  Syntax: drop table table_name;

- INSERT QUERY:
  - inserting values into a Table:

Syntax:
  insert into table_name (field1, field2 ...)
  values (value1, value2, ...);

- SELECT QUERY:
  - it is used to fetch data

  Syntax:
  SELECT field1, field2... from table_1, table_2...
  [WHERE CLAUSE] [OFFSET M] [LIMIT N]

- if you want all fields you can specify (*) in place of fields.

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- Offset sets from where query will start returning records By default offset=0
- You can limit the number of returns using the LIMIT attribute

- WHERE clause:
  - we can use a conditional clause called the where clause to filter out the results out of select / update command.

Syntax: select field1, field2, ... from table1, ...
[WHERE condition1 [AND|OR] condition2];

- Operators that can be used are:
  =, !=, >, <, >=, <=

- UPDATE Query:
  this will modify any field value of any MySQL table.

Syntax:
Update tablename SET field1 = new value1,
field2 = value2 ... [WHERE clause];

- DELETE Query:
  - used to delete a record from a table

Syntax:
Delete from table_name [where clause];

- LIKE clause:
  - used with where clause and can be used to replace '=' sign.

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Syntax:
SELECT field1, field2 from table_1, table_2 ... where field1 like condition1 [AND [OR]] field = '...';

- you can use like clause instead of equals to sign.
- if like clause is used along with % sign then it will work like a meta character search

- ORDER BY:
  - sorts the records

Syntax:
Select field1, field2... from table1, table2, ...
order by field1, [field2...] [ASC [DESC]];

- PATTERN MATCHING:
  - enables you to use _ to match any single single characters & % to match any number of characters.

ex: to find names beginning with b
- select * from table_name where name like 'b%';

- REGEXP Operator:
  - type of pattern matching based on regular expressions

Patterns: ^, $, ., [...], [^...], p1|p2|p3..., etc can be used.

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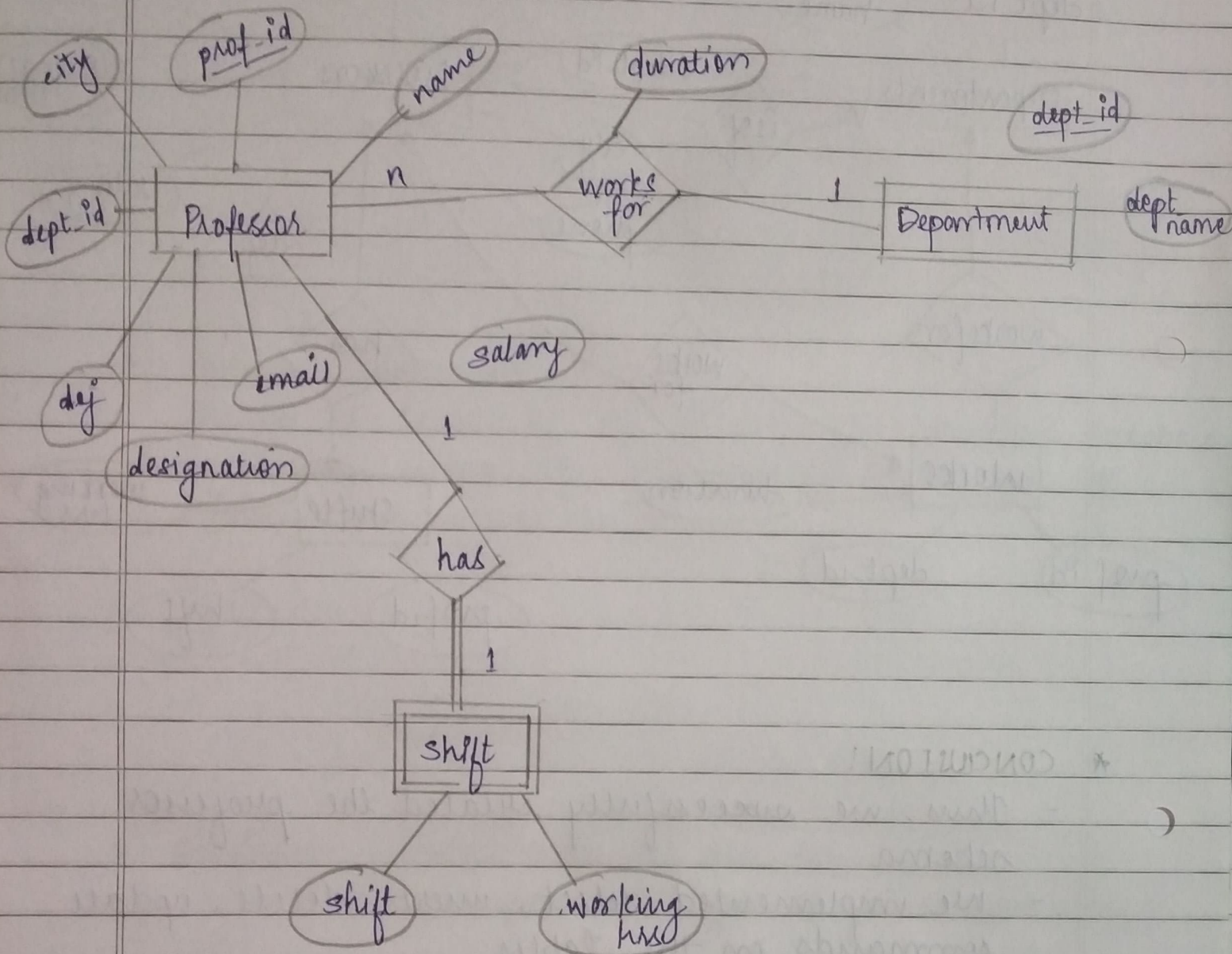
* E-R Diagram:-



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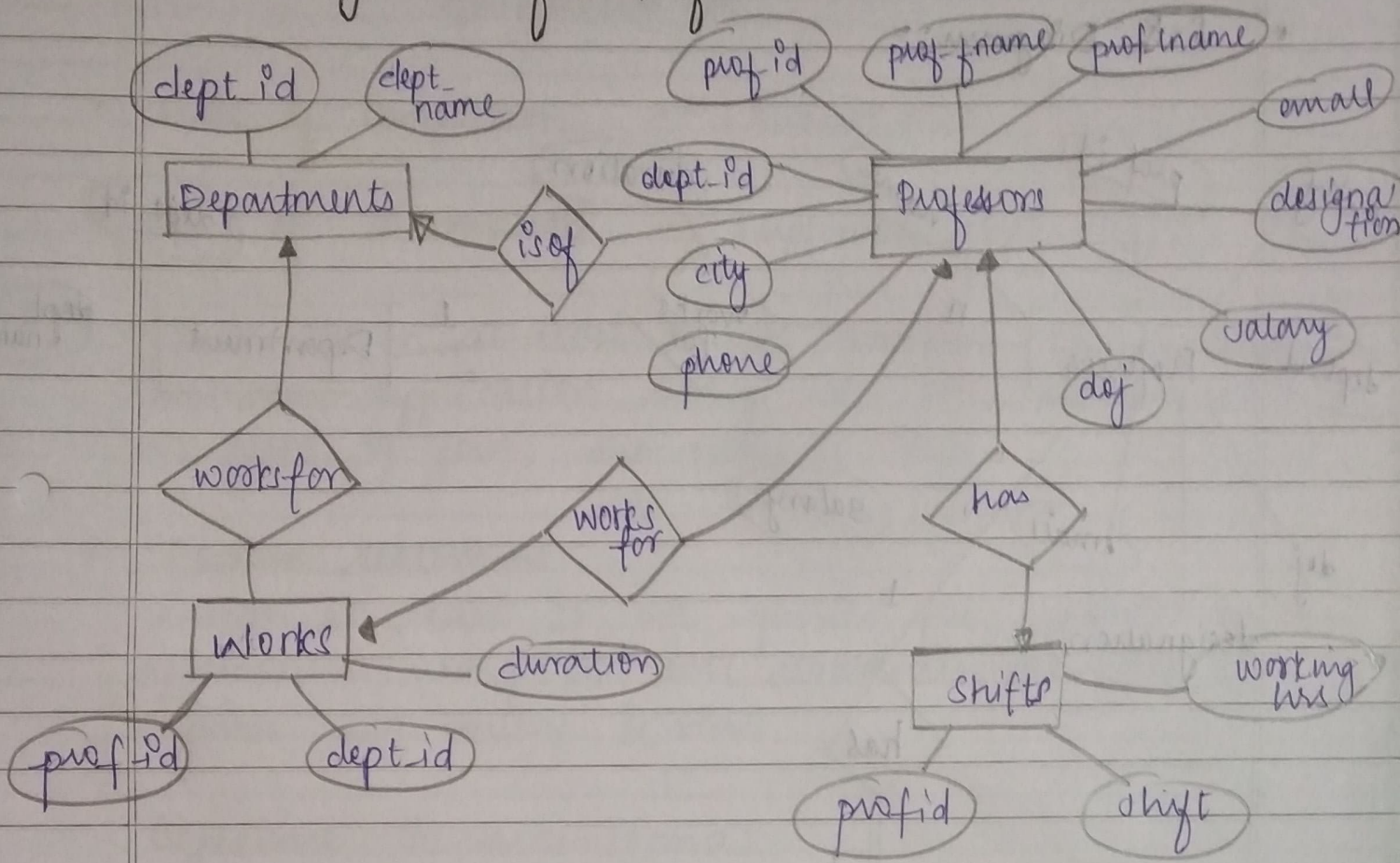
o ER diagram for Professor schema:-



* CONCLUSION:

- Thus, we successfully created the professor schema
- We implemented select, insert, delete, update commands on the tables.
- We used the where clause, pattern matching, like clause, order by in various queries.