

Part A**ER Diagram**

Draw an Entity Relationship (ER) Diagram to represent the following requirement set given by one of the “Faculty of Technology” operating in the government university system.

You need to identify and model Entities, Attributes, Key Attributes, and Relationships and clearly note down the Cardinality Ratios and Participation Constraints of relationships.

The Faculty is organized into departments. Each department has a unique name, a unique identification code, and a senior Lecturer who manages the department as the head of the department. Department keeps track of the start date when a senior Lecturer appointed as head of the department.

A department offers a number of course units, which are having a unique code, a unique name and duration.

Faculty stores each lecturer's name, upf number (unique to a lecturer), designation, address, salary, gender, contact numbers and birth date. A lecturer is assigned to only one department. One lecturer teaches several course units, and some course units are taught by more than one lecturer. Department keeps track of the number of teaching hours per week for each course unit.

Each and every Lecturer is having one advisor who may be a senior lecturer or a peer lecturer. Advisors are having several lecturers under them.

Faculty keeps track of the family members of each lecturer for insurance purposes. Faculty keeps each family member's first name, gender, birth date, and relationship to the lecturer.

Part B**SQL using MySQL Server**

“**Max Electronics**” is a company who sells **electrical** and **electronic** products island wide, through their branches located in various locations of the country.

They maintain 3 separate MS Excel data sheets to keep their company’s product details as described below. Now they need to upgrade their system to a MySQL backend by updating the existing MS Excel system

Item datasheet	- Details of electrical and electronic products
Store datasheet	- Details of stored quantities in their branches
Location datasheet	- Details of the branches

Based on this case, develop the “**maxtronic**” database in **MySQL** and Provide answers to the questions in your assignment.

1. Log on to the MySQL server using “**root**” account.
2. Create a blank database as “**maxtronic**”.
3. Activate your “**maxtronic**” database as the current working database.
4. Create following user for “**Max Electronics**”.
 - a. **admin_max** : All privileges with **GRANT**
 - b. **emp_max** : **SELECT,INSERT,UPDATE,DELETE**
 - c. **user_max** : **SELECT**
5. Create table called “**item**” using the following structure.

Field Name	Data Type	Length
itm_code	char	4
itm_description	varchar	25
itm_unit_price	decimal	(9,2)
itm_imported	tinyint	1
itm_supplier	varchar	20

6. Add following records to above table.

item_code	itm_description	itm_unit_price	itm_imported	itm_supplier
IT10	Television	24000.00	1	Sony
IT11	Computer	60000.00	1	Dell
IT12	Laser Printer	19000.00	1	HP
IT13	VCD Player	7599.00	1	
IT15	Polisher	12000.00	1	National
IT16	Scanner	16000.00		HP
IT17	Refrigerator	65000.00	1	LG
IT18	Table Lamp	2999.90	0	Abans
IT19	Wall Clock	1200.00	1	
IT20	Blender	4800.00	1	National
IT14	Oven	7300.00	0	Abans

7. Create the following table structure called **location**

Field Name	Data Type	Length
loc_code	char	4
loc_name	varchar	25
loc_contact	char	11
loc_address	varchar	300

8. Enter following data into **location** table.

loc_code	loc_name	loc_contact	loc_address
L01	Colombo	0112946058	Colombo 04
L02	Kalutara		Main Street
L03	Galle	0912546893	
L04	Matara	0415670045	Dharmapala Mawatha

9. Observe the following data set and create a suitable table structure called **store** to add following record to the same table.

st_item_code	st_location_code	st_qty	st_date
IT10	L01	30	2016-04-08
IT10	L03	3	2016-04-02
IT10	L04	10	2016-04-25
IT11	L01	25	
IT11	L02	12	2016-05-07
IT13	L04	60	2016-05-09
IT16	L02	5	

Write following Queries using SQL statements

- Find out the names of the tables you have created in your database.
- Examine the structure of the table **item**.
- Exit from MySQL server and log on again.
- Retrieve all records from **item** table.
- Retrieve all records from **location** table.
- Retrieve all records from **store** table.
- Retrieve **itm_description** and **itm_unit_price** from Item table.
- Retrieve the item codes from **store** table.
- Retrieve the item codes without repetition from **store** table.
- Retrieve **itm_description** and **itm_unit_price** from Item table according to the descending order of the unit price.
- Retrieve **st_item_code** and **st_qty** from the **store** table according to the ascending order of **st_item_code** and then by descending order of **st_qty**.
- Retrieve all records from Item table where **itm_unit_price** is greater than 20000.00.
- Retrieve item codes which are stored in the location **L01**.
- List the item descriptions begin with letter T.
- List the item descriptions end with **er**.
- List the details of items of supplier Dell, HP and LG
- Get the item code and the item name which supplier is known.
- Get the item code and the item name which supplier is not known.
- Retrieve description, stored quantity and location name where items **itm_unit_price** exceeds 20000.00.
- Retrieve **st_item_code**, **loc_name** and **st_qty** for the items which are stored in **store** table.
- Retrieve the Item descriptions and stored location names.
- How many items are available in the item table?
- Get the summation of quantities stored in all locations.