LONDON METROPOLITAN UNIVERSITY

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CC4002NA Information Systems

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Assignment Submission Date: 22 March 2019

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

Proposal:

This proposal is written to mark my coursework of the module, Information System. This coursework was an individual coursework which tells us to create a database of an organization having at least five tables with five rows each. This coursework was given on the 17th week and must be submitted by 20th week.

Purpose:

The purpose of this coursework is to encourage the file management process of an organic market organization. Digitally, data are stored in a database, it as well as replaces the files in which data were stored in an old way. To create a database, firstly an ER diagram and relational diagram is made. Then, the database is said to be created.

Problem statement:

The Organic market Organization might be facing a lot of problems such as updating the data from the files which require excess time and hard efforts. The organization may come up to a lot of problems if the such files get lost. So, database helps to keep record of such data in proper manner.

Aims:

The instruction provided during the task handling must be followed to make sure the coursework is completed. Research from different websites, books and journals must be done to succeed in this coursework. The Normalization process used during creation of a database must be followed properly to create a good database sample. The coursework had to be put up with much effort and consumed much time and must be submitted in time as well.

Objectives:

The objectives of Database Management System are:

- Designing and creating a database
- Entering data
- Maintaining data
- Accessing of data
- Sorting records
- Securing data
- Producing reports

Proposed Approach:

Many references must be taken from different websites and books and journals as well to complete the database project flawlessly. An ER diagram and relational diagram is made and then the database is created.

Target Audience:

The database created can be used by any organic product producing company to hold record of the products that has been sold and the individual who bought the specific product with their address location, contact number and contact address as well.

Hardware and software requirement:

Specific hardware requirement is not highly necessary for this creation. The only requirement for this is for MySQL to be installed and work properly.

Microsoft Word helps us make a decent report. Similarly, draw.io is used to make ERD and RD. Microsoft Excel is used to make Gantt Chart.

Activities description and timeline:

A Gantt Chart is a type of bar chart that illustrates a project schedule. This chart lists the task to be performed and time intervals on the vertical axis and horizontal axis respectively. The activities done during the project is described by a Gantt Chart and the Gantt Chart for this project is provided below:

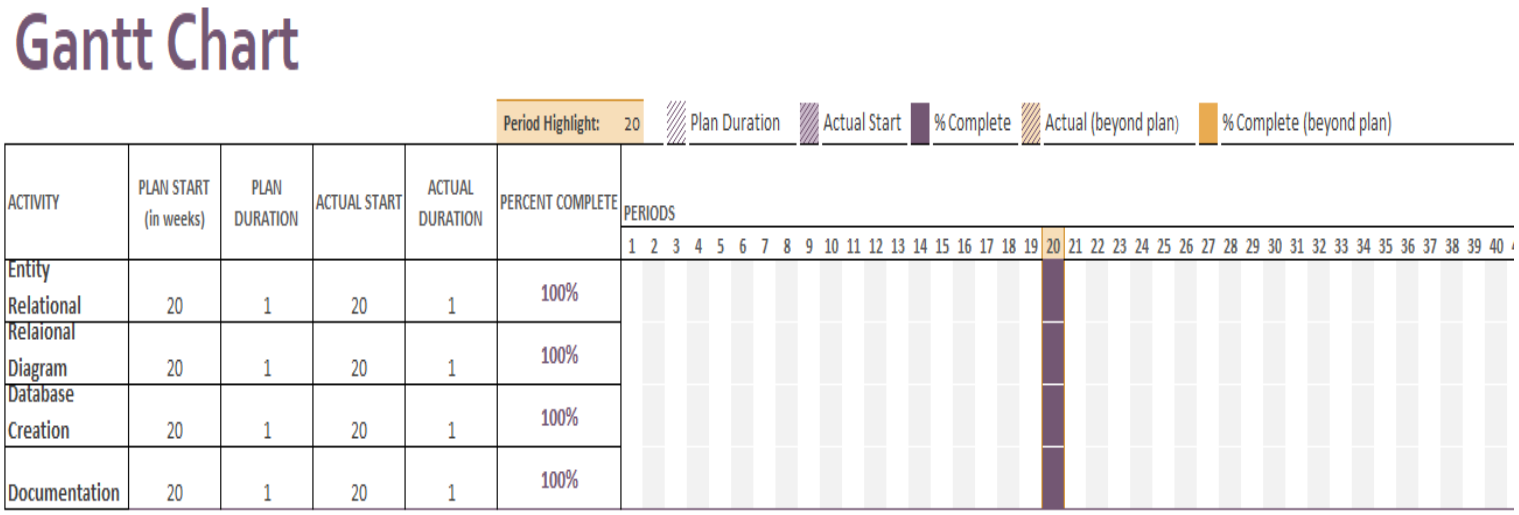

Figure 1 Gantt Chart

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Introduction:

1970 − Dr. **Edgar F. "Ted" Codd** of IBM is known as the father of relational databases. He described a relational model for databases.

1974 − Structured Query Language appeared.

1978 − IBM worked to develop Codd's ideas and released a product named System/R.

1986 − IBM developed the first prototype of relational database and standardized by ANSI. The first relational database was released by Relational Software which later came to be known as Oracle. (Reddy, 2017)

In this coursework we learnt about a systematic collection of data which is collectively called database. Database also called Database Management System (DBSM) was found by Dr Edgar F Codd who worked at IBM in San Jose, California in the 1970s. Database is a collection of information that is organized so that it can be easily accessed, managed and updated. DBMS provides users and programmers with a systematic way to create, retrieve, update and manage data. The function of DBMS is to Control Security, Allow Concurrency, Maintain Data Integrity, Provide Backup and Recovery Services, Control Data Redundancy and Allow Data Independence as well. We use DBMS to avoid unnecessary repetition of duplicate data and because it is cost effective as well.

We use XAMPP for coding a database. This software was developed by Apache Server and its objective is to create a smooth surface for developers to enter the world of Apache Server. It promotes developers to use the free open source software to increase the developers progress in the world of databases.

In our given coursework we have used XAMPP to create a MySQL database. Here, we have created various tables and interlinked them with each other relatively. The database project I made is related to an organic product making organization namely Saboo Nepal.

This company hold various transactions with the employees, sellers, suppliers and other personals. I have made five relative tables namely Employee, Seller, Product_Company, Payment and Supplier. Primary key is used in each row of particular column to uniquely identify each row assigned to that particular table. Foreign key is used to reference the same record to the table from another table. Similarly, Constraints like Auto_Increment, Unique, not null, etc has been used for further ease. One to one relation, many to one relation, one to many relations and many to many relations has been shown with the help of Entity Relation Diagram.

A Data Dictionary where all the attributes are used, has been created to further describe the constraints and entity relations. Step by step screenshots has been uploaded for the creation of the database and various queries has been explained through the screenshots as well. Hence, using XAMPP I have created a database for an organic product market.

Discussion and Analysis:

The database management system (DBMS) is software where we can manipulate, retrieve and manage data in the database. The DBMS generally manipulate the data itself, the data format, field names, record structure, and file structure. Some of the database management system include:

- MySQL
- SQL Server
- Oracle
- dBase
- FoxPro

But fourth-generation query languages, such as SQL, are used alone the DBMS packets to interact with a database. (techopedia, 2019).

Normalization is a database design technique which organizes tables in a manner that reduces redundancy and dependency of data.

It divides larger tables to smaller tables and links them using relationships. (Guru99, 2019)

What Can SQL do?

- SQL can execute queries against a database
- SQL can retrieve data from a database
- SQL can insert records in a database
- SQL can update records in a database
- SQL can delete records from a database
- SQL can create new databases
- SQL can create new tables in a database
- SQL can create stored procedures in a database
- SQL can create views in a database
- SQL can set permissions on tables, procedures, and views

(W3schools, 2019)

Database Model:

Data are the facts put up to any consideration. One's name, age, weight, height, picture, file, pdf, etc can be considered as data. The systematic collection of such data is called Database. Database makes data management very easy. Our internet service providers, for example store data and use them during our billings and many more functions. They need to store, manipulate and show the data related to the customers and other users. So, they use Database to store such data as it is much easier and dependable. Various such examples exist to proof the benefits of Database.

Database Management System is a collection of programs which helps the users to access the database. Integrated Data Store (IDS) is the first Database Management System in history. There are four major types of Database Management System and they are as follows:

- Hierarchical
- Network DBMS
- Relational DBMS
- Object Oriented Relational DBMS

Structured Query Language (SQL) is the standard language used for dealing with Relational Databases.

1. This figure shows how we create a database:

```
MariaDB [(none)]> CREATE DATABASE Saboo_Nepal;
Query OK, 1 row affected (0.07 sec)
```

Figure 2 Creating Database.

2. Now, we create a table named employee as shown in the figure below:

```
MariaDB [Saboo_Nepal]> select * from employee;
+------------+---------------------+--------------------+------------------+----------+
| EmployeeID | Employee_First_Name | Employee_Last_Name | Employee_Address | SellerID |
+------------+---------------------+--------------------+------------------+----------+
|      10000 | Rijan               | Shakya             | Sanepa           |        1 |
|      10001 | Romi                | Shrestha           | Hattiban         |        2 |
|      10002 | Sambridhi           | Kandel             | Sitapaila        |        3 |
|      10003 | Sastok              | Bhattarai          | Matatirtha       |        4 |
|      10004 | Shrisab             | Shrestha           | Kalanki          |        5 |
+------------+---------------------+--------------------+------------------+----------+
```

Figure 3 Employee Table.

3. Then, we create a table named Seller as shown in the figure below:

```
MariaDB [Saboo_Nepal]> select * from seller;
+----------+-------------------+------------------+----------------+
| SellerID | Seller_First_Name | Seller_Last_Name | Seller_Address |
+----------+-------------------+------------------+----------------+
|        1 | Anisha            | Shrestha         | Bhaktapur      |
|        2 | Bina              | Lama             | Kalanki        |
|        3 | Sija              | Tripathi         | Baluwatar      |
|        4 | Mohit             | Maharjan         | Patan          |
|        5 | Nikesh            | Subedi           | Koteshwor      |
+----------+-------------------+------------------+----------------+
5 rows in set (0.05 sec)
```

Figure 4 Seller Table.

4. Again, we create another table named Product_Company as shown in the figure below:

```
MariaDB [Saboo_Nepal]> select * from Product_Company;
+-----------+--------------+-------------------+--------------+----------+
| ProductID | Product_Name | Manufactured_Date | Best_Before  | SellerID |
+-----------+--------------+-------------------+--------------+----------+
|         1 | Shampoo      |              2012 | one_ months  |        1 |
|         2 | Soap         |              2013 | fifteen_days |        2 |
|         3 | Brush        |              2014 | two_months   |        3 |
|         4 | Surf         |              2015 | three_months |        4 |
|         5 | Handwash     |              2016 | one_week     |        5 |
+-----------+--------------+-------------------+--------------+----------+
5 rows in set (0.04 sec)
```

Figure 5 Product_Company Table.

5. We also create a table named Payment as shown in the figure below:

```
MariaDB [Saboo_Nepal]> select * from payment;
+-----------+-------------+----------+
| PaymentID | CustomerID  | StaffID  |
+-----------+-------------+----------+
|        10 |         100 |     1000 |
|        11 |         101 |     1001 |
|        12 |         102 |     1002 |
|        13 |         103 |     1003 |
|        14 |         104 |     1004 |
+-----------+-------------+----------+
5 rows in set (0.05 sec)
```

Figure 6 Payment Table.

6. Then we create our final table namely Supplier as shown in figure below:

```
MariaDB [Saboo_Nepal]> select * from Supplier;
+------------+---------------------+--------------------+------------------+------------+
| SupplierID | Supplier_First_Name | Supplier_Last_Name | Supplier_Address | EmployeeID |
+------------+---------------------+--------------------+------------------+------------+
|          1 | Kunal               | Shah               | Dharan           |      10000 |
|          2 | Pratibha            | Amatya             | Kamalpokhari     |      10001 |
|          3 | Sandesh             | Rimal              | Gongabu          |      10002 |
|          4 | Krishna             | Bhattarai          | Putalisadak      |      10003 |
|          5 | Bijeeta             | Amatya             | Imadol           |      10004 |
+------------+---------------------+--------------------+------------------+------------+
5 rows in set (0.04 sec)
```

Figure 7 Supplier Table.

7. The initial table made before inserting the values is expressed in the figure as provided below:

```
MariaDB [Saboo_Nepal]> Show tables;
+-------------------------+
| Tables_in_saboo_nepal   |
+-------------------------+
| employee                |
| payment                 |
| product_company         |
| seller                  |
| supplier                |
+-------------------------+
5 rows in set (0.00 sec)
```

Figure 8 Initial Table.

8. The respective tables were formed by using the INSERT INTO command as we can see in the following figure:

```
MariaDB [Saboo_Nepal]> INSERT INTO Employee(EmployeeID, Employee_First_Name, Employee_Last_Name, Employee_Address, SellerID) values ("10000", "Rijan", "Shakya", "Sanepa
", "1"),("10001", "Romi", "Shrestha", "Hattiban", "2"),("10002", "Sambridhi", "Kandel", "Sitapaila", "3"),("10003", "Sastok", "Bhattarai", "Matatirtha", "4"),("10004",
"Shrisab", "Shrestha", "Kalanki", "5");
```

Figure 9 Inserting in Employee Table.

```
MariaDB [Saboo_Nepal]> INSERT INTO Seller(Seller_First_Name, Seller_Last_Name, Seller_Address) values ("Anisha", "Shrestha", "Bhaktapur"),("Bina", "Lama", "Kalanki"), (
"Sija", "Tripathi", "Baluwatar"),("Mohit", "Maharjan", "Patan"),("Nikesh", "Subedi", "Koteshwor");
```

Figure 10 Inserting in Seller Table.

```
MariaDB [Saboo_Nepal]> INSERT INTO Product_Company(ProductID, Product_Name, Manufactured_Date, Best_Before, SellerID) values ("1", "Shampoo", "2012", "one_ months", "1"
),("2", "Soap", "2013", "fifteen_days", "2"), ("3", "Brush", "2014", "two_months", "3"),("4", "Surf", "2015", "three_months", "4"),("5", "Handwash", "2016", "one_week",
 "5");
```

Figure 11 Inserting in Product_Company Table.

```
MariaDB [Saboo_Nepal]> INSERT INTO Payment(PaymentID, CustomerID, StaffID) values ("10", "100", "1000"),("11", "101", "1001"),("12", "102", "1002"),("13", "103", "1003"
),("14", "104", "1004");
```

Figure 12 Inserting in Payment Table.

```
MariaDB [Saboo_Nepal]> INSERT INTO Supplier(Supplier_First_Name, Supplier_Last_Name, Supplier_Address, EmployeeID) value
s ("Kunal", "Shah", "Dharan", "10000"),("Pratibha", "Amatya", "Kamalpokhari", "10001"),("Sandesh", "Rimal", "Gongabu", "
10002"),("Krishna", "Bhattarai", "Putalisadak", "10003"),("Bijeeta", "Amatya", "Imadol", "10004");
```

Figure 13 Inserting in Supplier Table.

Entity Relation Diagram:

The figure below is a representation of an information system showing its relationship between tables connected with reach other which helps us to express a concept of entity relationships. The figure provided below has five tables connected to each other. First of all, a table Supplier having constraints SupplierID, Supplier_First_Name, Supplier_Last_Name, Supplier_Address and EmployeeID supplies product to table Product_Company having constraints ProductID, Product_Name, Manufactured_Date, Best_Before and SellerID. Then, the table Prodcut_Company hires employee from the table Employee having constraints EmployeeID, Employee_First_Name, Employee_Last_Name, Employee_Address and SellerID. Now, the table Employee deals with the table Seller having constraints SellerID, Seller_First_Name, Seller_Last_Name and Seller_Address. Finally, the table Seller sells the product and receives payment from the table Payment having constraints PaymentID, CustomerID and StaffID.

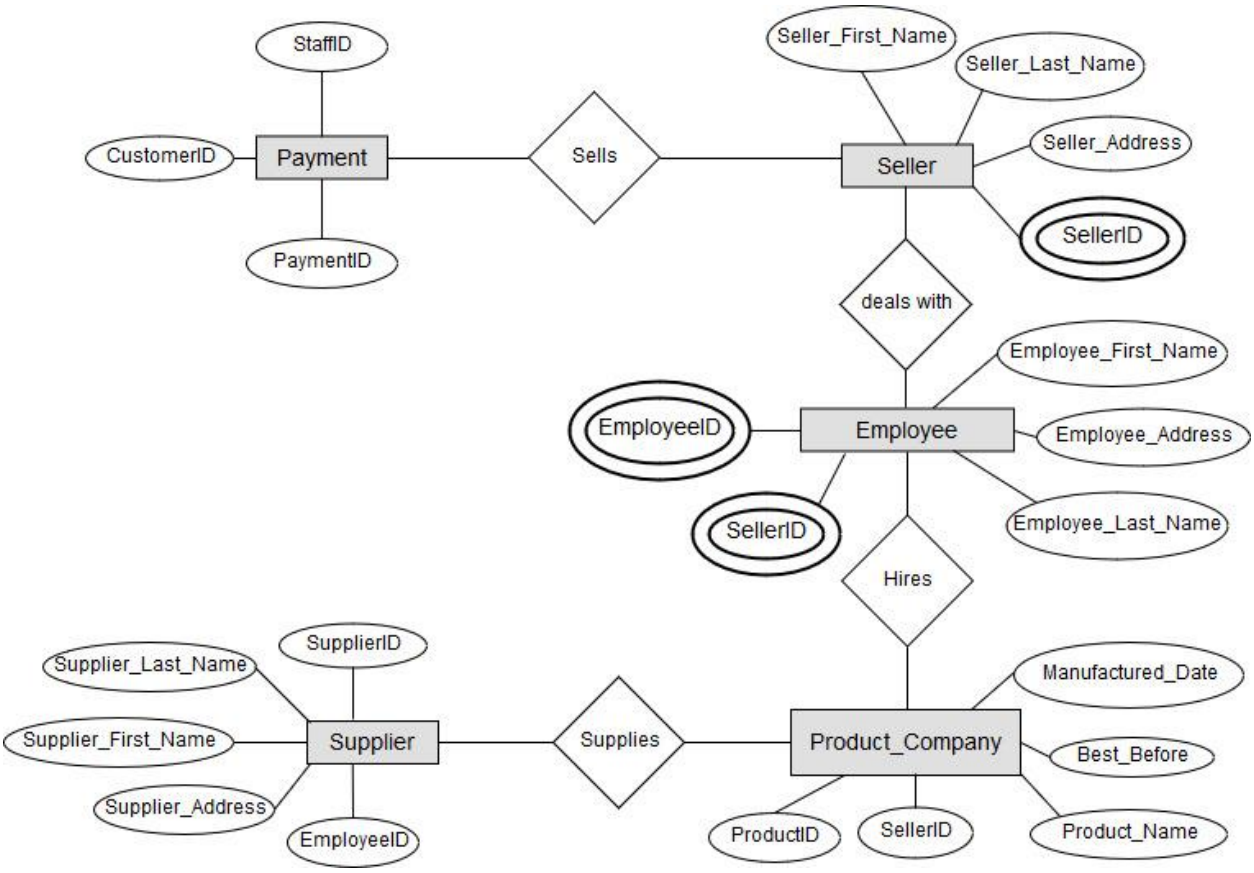


Figure 14 Entity Relation Diagram

Relation Diagram:

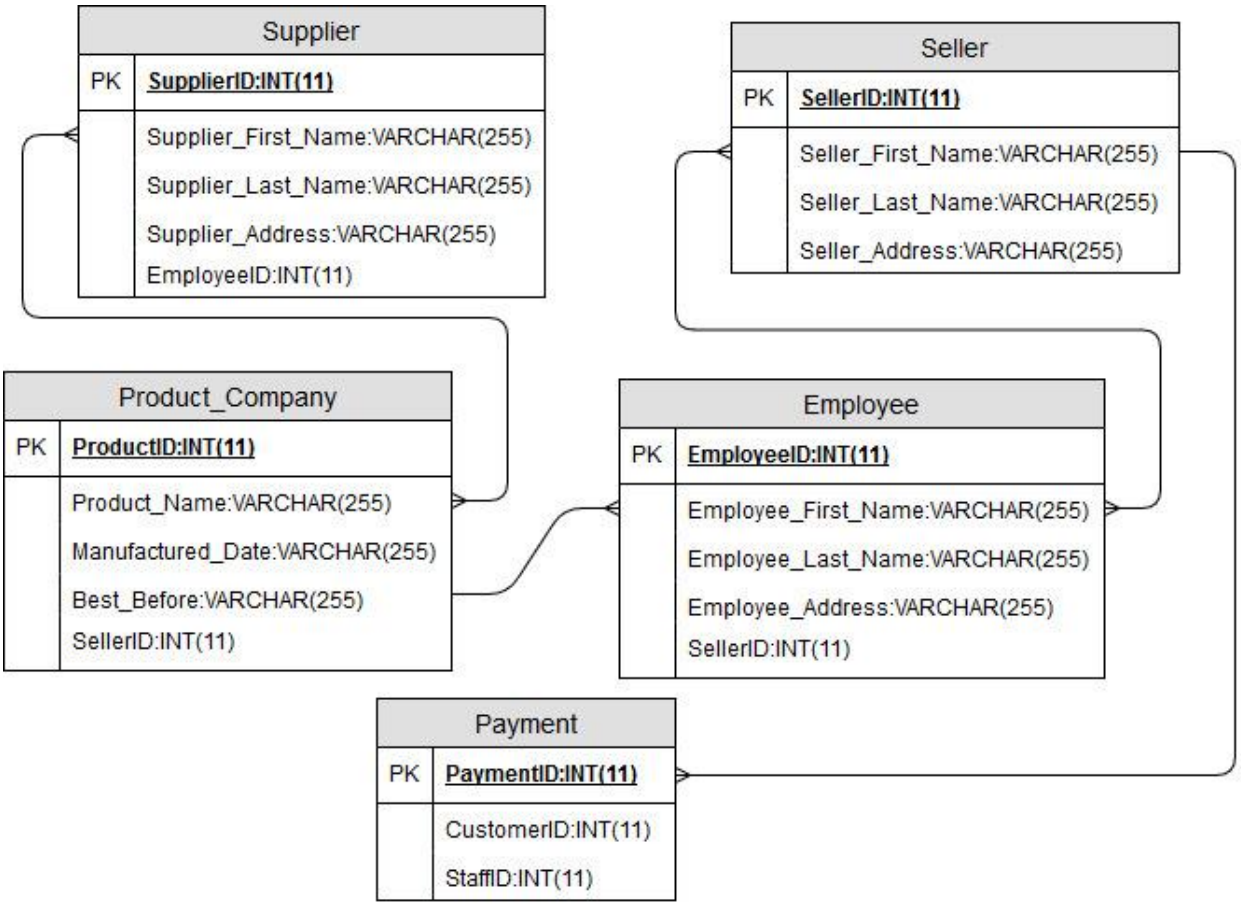


Figure 15 Relation Diagram

Data Dictionary:

A data dictionary is a file or a set of files that contains a database's metadata. The data dictionary contains records about other objects in the database, such as data ownership, data relationships to other objects, and other data. The data dictionary is a crucial component of any relational database. Ironically, because of its importance, it is invisible to most database users. Typically, only database administrators interact with the data dictionary. (techopedia, 2019)

Table for Seller:

Entity Name	Entity Description	Column Names	Column Description	Data Type	Data Length	Primary Key	Null Value	Unique	Remarks
Seller	Seller contains all the information about the Seller	SellerID	ID given to Seller for recognition	Int	11	YES	NO	NO	Auto_Increment
		Seller_First_Name	First Name of Seller	VARCHAR	255	NO	YES	NO	NO
		Seller_Last_Name	Last Name of Seller	VARCHAR	255	NO	YES	NO	NO
		Seller_Address	Address of Seller	VARCHAR	255	NO	NO	NO	NO

Table 1 Table for Seller

Table for Product_Company:

Entity Name	Entity Description	Column Names	Column Description	Data Type	Data Length	Primary Key	Null Value	Unique	Foreign Key
Product_Company	Product_Company contains all the information about the Product	ProductID	ID given to Product for recognition	Int	11	YES	NO	YES	NO
		Product_Name	Name of Product	VARCHAR	255	NO	NO	NO	NO
		Manufactured_Date	Recent date of product	VARCHAR	255	NO	YES	NO	NO
		Best_Before	Expire date of product	VARCHAR	255	NO	NO	NO	NO
		SellerID	ID of seller	Int	255	NO	NO	NO	YES

Table 2 Table for Product_Company

Table for Payment

Entity Name	Entity Description	Column Names	Column Description	Data Type	Data Length	Primary Key	Null Value	Unique	Foreign Key	Remarks
Payment	Payment contains all the information about the Price and payment	PaymentID	ID of Unique Payment	Int	11	YES	NO	NO	NO	
		CustomerID	ID of Customer	Int	11	NO	NO	NO	NO	
		StaffID	ID of Staff	Int	11	NO	NO	NO	NO	

Table 3 Table for Payment

Table for Employee:

Entity Name	Entity Description	Column Names	Column Description	Data Type	Data Length	Primary Key	Null Value	Unique	Foreign Key	remarks
Employee	Employee contains all the information about the Employee	EmployeeID	ID given to Employee for recognition	Int	11	YES	NO	NO	NO	Auto_Increment
		Employee_First_Name	First Name of Employee	VARCHAR	255	NO	YES	NO	NO	
		Employee_Last_Name	Last Name of Employee	VARCHAR	255	NO	YES	NO	NO	
		Employee_Address	Address of Employee	VARCHAR	255	NO	NO	NO	NO	
		SellerID	ID of seller	Int	255	NO	NO	NO	YES	

Table 4 Table for Employee

Table for Supplier:

Entity Name	Entity Description	Column Names	Column Description	Data Type	Data Length	Primary Key	Null Value	Unique	Foreign Key	Remarks
Supplier	Supplier contains all the information about the Supplier	SupplierID	ID given to Supplier for recognition	Int	11	YES	NO	NO	NO	Auto_Increment
		Supplier_First_Name	First Name of Supplier	VARCHAR	255	NO	YES	NO	NO	
		Supplier_Last_Name	Last Name of Supplier	VARCHAR	255	NO	NO	NO	NO	
		Supplier_Address	Address of Supplier	VARCHAR	255	NO	NO	NO	NO	
		EmployeeID	ID of employee	Int	11	NO	NO	NO	YES	

Table 5 Table for Supplier

Queries:

1. The first query I would like to present is the query I used to show the descending form of a random table. I chose the employee table and the result of this query is as shown in the figure:

```
MariaDB [Saboo_Nepal]> select * from employee order by EmployeeID desc;
+------------+----------------------+--------------------+------------------+----------+
| EmployeeID | Employee_First_Name | Employee_Last_Name | Employee_Address | SellerID |
+------------+----------------------+--------------------+------------------+----------+
|      10004 | Shrisab              | Shrestha           | Kalanki          |        5 |
|      10003 | Sastok               | Bhattarai          | Matatirtha       |        4 |
|      10002 | Sambridhi            | Kandel             | Sitapaila        |        3 |
|      10001 | Romi                 | Shrestha           | Hattiban         |        2 |
|      10000 | Rijan                | Shakya             | Sanepa           |        1 |
+------------+----------------------+--------------------+------------------+----------+
5 rows in set (0.05 sec)
```

Figure 16 Query in descending order.

2. In this query I have selected seller table to show Seller_Address between Bhaktapur and Koteshwor. The result is as provided in the figure below:

```
MariaDB [Saboo_Nepal]> select * from seller where Seller_Address between "Bhaktapur" and "Koteshwor";
+----------+-------------------+------------------+----------------+
| SellerID | Seller_First_Name | Seller_Last_Name | Seller_Address |
+----------+-------------------+------------------+----------------+
|        1 | Anisha            | Shrestha         | Bhaktapur      |
|        2 | Bina              | Lama             | Kalanki        |
|        5 | Nikesh            | Subedi           | Koteshwor      |
|        6 | Anisha            | Shrestha         | Bhaktapur      |
|        7 | Bina              | Lama             | Kalanki        |
|       10 | Nikesh            | Subedi           | Koteshwor      |
+----------+-------------------+------------------+----------------+
6 rows in set (0.00 sec)
```

Figure 17 Query of between.

3. In this query I show all the Employee_First_Name that starts with “s” as shown in the figure below:

```
MariaDB [Saboo_Nepal]> select * from employee where Employee_First_Name like "s%";
+------------+----------------------+--------------------+------------------+----------+
| EmployeeID | Employee_First_Name | Employee_Last_Name | Employee_Address | SellerID |
+------------+----------------------+--------------------+------------------+----------+
|      10002 | Sambridhi            | Kandel             | Sitapaila        |        3 |
|      10003 | Sastok               | Bhattarai          | Matatirtha       |        4 |
|      10004 | Shrisab              | Shrestha           | Kalanki          |        5 |
+------------+----------------------+--------------------+------------------+----------+
3 rows in set (0.01 sec)
```

Figure 18 Query of starting letter.

4. In this query I show all the Seller_First_Name that ends with “a” as shown in the figure below:

```
MariaDB [Saboo_Nepal]> select * from seller where Seller_First_Name  like "%a";
+----------+-------------------+------------------+----------------+
| SellerID | Seller_First_Name | Seller_Last_Name | Seller_Address |
+----------+-------------------+------------------+----------------+
|        1 | Anisha            | Shrestha         | Bhaktapur      |
|        2 | Bina              | Lama             | Kalanki        |
|        3 | Sija              | Tripathi         | Baluwatar      |
```

Figure 19 Query of ending letter.

5. In this query I have shown you, how to select a particular column from a certain table. The result is as shown in the figure:

```
MariaDB [Saboo_Nepal]> select paymentID from payment;
+------------+
| paymentID |
+------------+
|         10 |
|         11 |
|         12 |
|         13 |
|         14 |
+------------+
5 rows in set (0.01 sec)
```

Figure 20 Query of particular column.

6. In this query I showed you how to update a field in a table:

```
MariaDB [Saboo_Nepal]> Select * from payment;
+-----------+------------+---------+
| PaymentID | CustomerID | StaffID |
+-----------+------------+---------+
|        10 |        100 |    1000 |
|        11 |        101 |    1001 |
|        12 |        102 |    1002 |
|        13 |        103 |    1003 |
|        14 |        104 |    1004 |
+-----------+------------+---------+
5 rows in set (0.04 sec)

MariaDB [Saboo_Nepal]> update payment set CustomerID= 105 where StaffID= 1001;
Query OK, 1 row affected (0.12 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [Saboo_Nepal]> Select * from payment;
+-----------+------------+---------+
| PaymentID | CustomerID | StaffID |
+-----------+------------+---------+
|        10 |        100 |    1000 |
|        11 |        105 |    1001 |
|        12 |        102 |    1002 |
|        13 |        103 |    1003 |
|        14 |        104 |    1004 |
+-----------+------------+---------+
5 rows in set (0.00 sec)
```

Figure 21 Query of Update

7. This query shows how to delete a row from a table:

```
MariaDB [Saboo_Nepal]> select * from Seller;
+----------+--------------------+-------------------+-----------------+
| SellerID | Seller_First_Name  | Seller_Last_Name  | Seller_Address  |
+----------+--------------------+-------------------+-----------------+
|        1 | Anisha             | Shrestha          | Bhaktapur       |
|        2 | Bina               | Lama              | Kalanki         |
|        3 | Sija               | Tripathi          | Baluwatar       |
|        4 | Mohit              | Maharjan          | Patan           |
|        5 | Nikesh             | Subedi            | Koteshwor       |
|        6 | Anisha             | Shrestha          | Bhaktapur       |
|        7 | Bina               | Lama              | Kalanki         |
|        8 | Sija               | Tripathi          | Baluwatar       |
|        9 | Mohit              | Maharjan          | Patan           |
|       10 | Nikesh             | Subedi            | Koteshwor       |
+----------+--------------------+-------------------+-----------------+
10 rows in set (0.02 sec)

MariaDB [Saboo_Nepal]> Delete from Seller where SellerID=6;
Query OK, 1 row affected (0.12 sec)

MariaDB [Saboo_Nepal]> Select * from Seller;
+----------+--------------------+-------------------+-----------------+
| SellerID | Seller_First_Name  | Seller_Last_Name  | Seller_Address  |
+----------+--------------------+-------------------+-----------------+
|        1 | Anisha             | Shrestha          | Bhaktapur       |
|        2 | Bina               | Lama              | Kalanki         |
|        3 | Sija               | Tripathi          | Baluwatar       |
|        4 | Mohit              | Maharjan          | Patan           |
|        5 | Nikesh             | Subedi            | Koteshwor       |
|        7 | Bina               | Lama              | Kalanki         |
|        8 | Sija               | Tripathi          | Baluwatar       |
|        9 | Mohit              | Maharjan          | Patan           |
|       10 | Nikesh             | Subedi            | Koteshwor       |
+----------+--------------------+-------------------+-----------------+
9 rows in set (0.00 sec)
```

Figure 22 Query of deleting row.

8. This query shown the use of IN operator. The result is as shown in the figure:

```
MariaDB [Saboo_Nepal]> Select * from Seller where SellerID in (7,8,9,10);
+----------+--------------------+-------------------+-----------------+
| SellerID | Seller_First_Name  | Seller_Last_Name  | Seller_Address  |
+----------+--------------------+-------------------+-----------------+
|        7 | Bina               | Lama              | Kalanki         |
|        8 | Sija               | Tripathi          | Baluwatar       |
|        9 | Mohit              | Maharjan          | Patan           |
|       10 | Nikesh             | Subedi            | Koteshwor       |
+----------+--------------------+-------------------+-----------------+
4 rows in set (0.02 sec)
```

Figure 23 Query of IN operator.

9. The query returns the total number of rows in a table:

```
MariaDB [Saboo_Nepal]> Select count(EmployeeID) as EmployeeID from Employee;
+------------+
| EmployeeID |
+------------+
|          5 |
+------------+
```

Figure 24 Query of Count.

10. This query is used to return unique entries from a column of given table. The result is as shown in the figure:

```
MariaDB [Saboo_Nepal]> Select distinct(SellerID) from Seller;
+-----------+
| SellerID |
+-----------+
|         1 |
|         2 |
|         3 |
|         4 |
|         5 |
|         7 |
|         8 |
|         9 |
|        10 |
+-----------+
9 rows in set (0.00 sec)
```

Figure 25 Query of Distinct

Research:

During the coursework, lots of research had to be done to succeed in completing the making of a database management system. There was quite a many confusion I had during the whole coursework. Some of my confusion was clear by my tutorial guide Mr. Bibek Raj Joshi where as some of my doubts were cleared by referring to some books, journals and websites. In this part of the document, I have mentioned some of the books, journals and websites that I referred to.

Books:

1. **Database Design ER Relationship Diagram:**

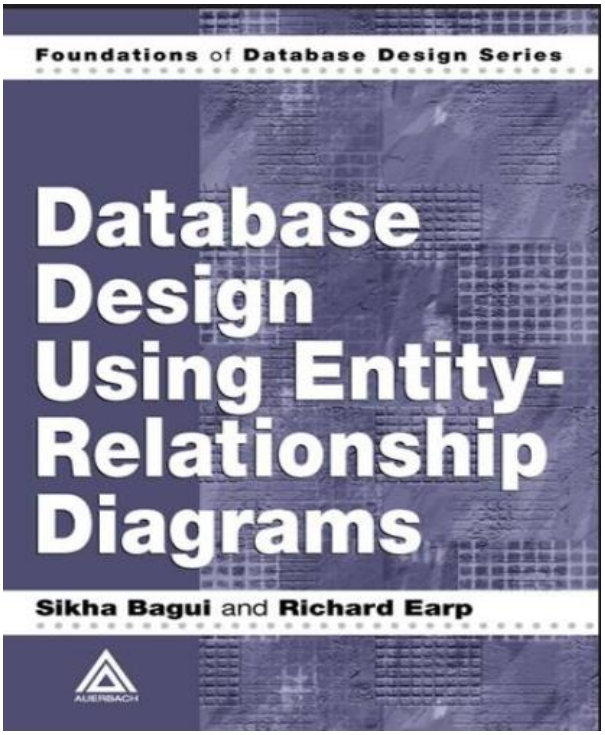


Figure 26 Database Design ER Relationship Diagram:

This book was distributed on 2003, composed by Sikha Bagui and Richard Erap. This book helped me to understand the idea about entity relation diagram. It helped me map a clear database structures, of the information that I enter.

2. **Database Management Systems:**

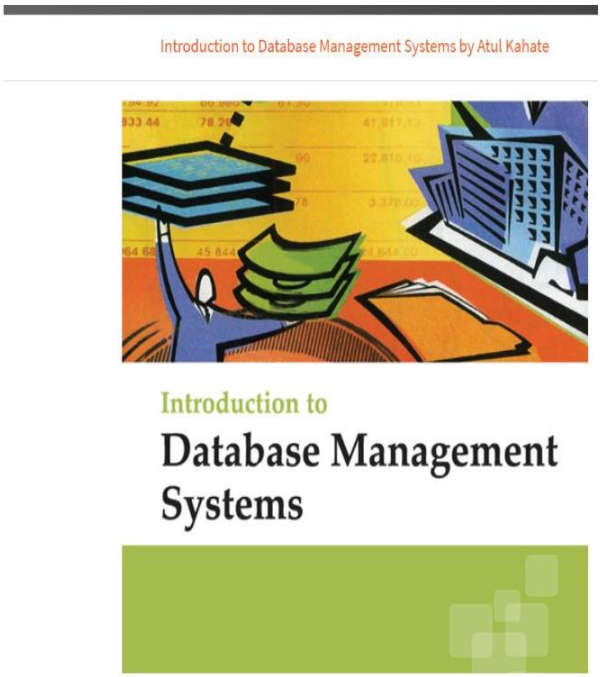


Figure 27 Database Management Systems:

This book provides basic necessary information on Database Management Systems. This book is only worth for learning basic commands and syntax for database management system. This book is perfectly designed for beginners who are new to the term database management system.

3. **Learning SQL:**

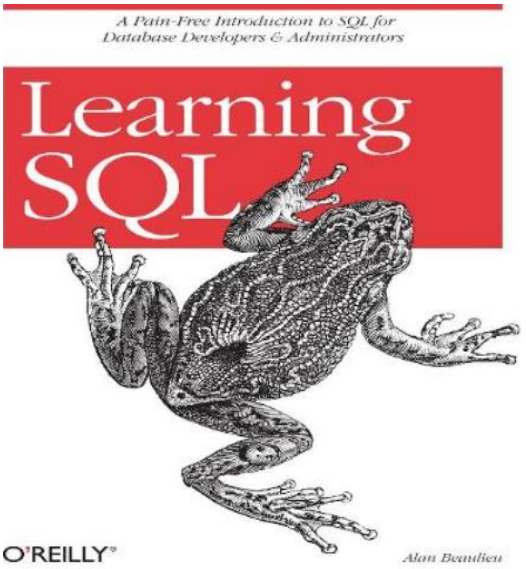


Figure 28 Learning SQL:

The book was published on 2005 by Alan Beaulieu. This booked helped me a lot to learn about advanced database system and provided me with knowledge upon how the data are generated, manipulated and used.

4. **Beginning Database Design:**

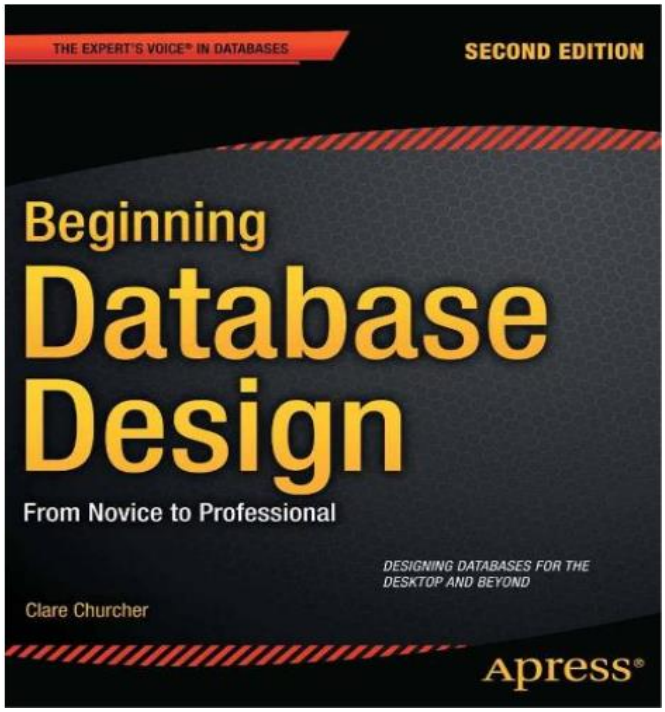


Figure 29 Beginning Database Design:

This book was published on 2007 by Clare Churcher. This book is one of the best ways of learning database for beginners, hinting us with step by step description and showing how everything is done descriptively and correctly. It helped a lot in learning new commands and new syntax which I could use during the project of my coursework. This book came very handy in time.

5. **SQL Queries:**

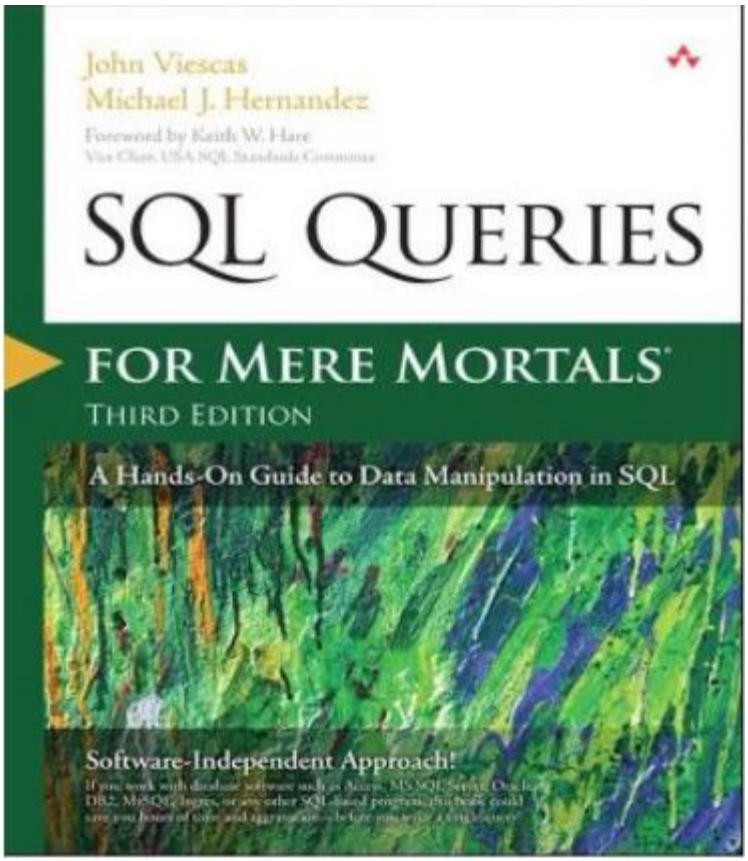


Figure 30 SQL Queries:

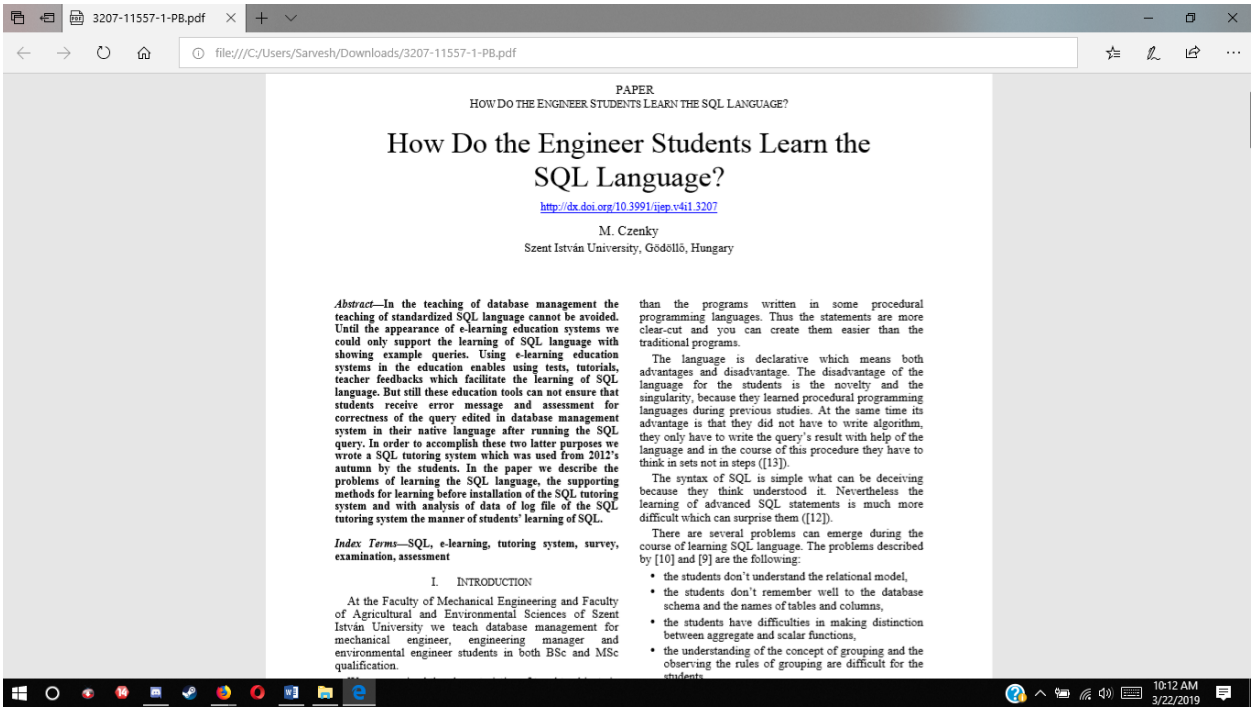
This book was written by Micheal J. Hernandez and John Viescas. This book helped me a lot to learn about queries and various types of commands we were not familiar with. It explained thoroughly about the commands and functions in SQL that we had yet not reckoned.

Journals:

1. How Do the Engineer Students Learn the SQL Language?

SQL language is highly structured and has limited number of statements. An SQL statement is much shorter

than the programs written in some procedural programming languages. Thus, the statements are more clear-cut, and you can create them easier than the traditional programs. (M, 2014)



PAPER
HOW DO THE ENGINEER STUDENTS LEARN THE SQL LANGUAGE?

How Do the Engineer Students Learn the SQL Language?

http://dx.doi.org/10.3991/ijep.v4i1.3207

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Abstract—**In the teaching of database management the teaching of standardized SQL language cannot be avoided. Until the appearance of e-learning education systems we could only support the learning of SQL language with showing example queries. Using e-learning education systems in the education enables using tests, tutorials, teacher feedbacks which facilitate the learning of SQL language. But still these education tools can not ensure that students receive error message and assessment for correctness of the query edited in database management system in their native language after running the SQL query. In order to accomplish these two latter purposes we wrote a SQL tutoring system which was used from 2012's autumn by the students. In the paper we describe the problems of learning the SQL language, the supporting methods for learning before installation of the SQL tutoring system and with analysis of data of log file of the SQL tutoring system the manner of students' learning of SQL.**

Index Terms—**SQL, e-learning, tutoring system, survey, examination, assessment**

I. INTRODUCTION

At the Faculty of Mechanical Engineering and Faculty of Agricultural and Environmental Sciences of Szent István University we teach database management for mechanical engineer, engineering manager and environmental engineer students in both BSc and MSc qualification.

than the programs written in some procedural programming languages. Thus the statements are more clear-cut and you can create them easier than the traditional programs.

The language is declarative which means both advantages and disadvantage. The disadvantage of the language for the students is the novelty and the singularity, because they learned procedural programming languages during previous studies. At the same time its advantage is that they did not have to write algorithm, they only have to write the query's result with help of the language and in the course of this procedure they have to think in sets not in steps ([13]).

The syntax of SQL is simple what can be deceiving because they think understood it. Nevertheless the learning of advanced SQL statements is much more difficult which can surprise them ([12]).

There are several problems can emerge during the course of learning SQL language. The problems described by [10] and [9] are the following:

- the students don't understand the relational model,
- the students don't remember well to the database schema and the names of tables and columns,
- the students have difficulties in making distinction between aggregate and scalar functions,
- the understanding of the concept of grouping and the observing the rules of grouping are difficult for the students

Figure 31 How Do the Engineer Students Learn the SQL Language?

2. Structured query language

SQL is an abbreviation for *structured query language*, and pronounced either *see-kwell* or as separate letters.

SQL is a standardized query language for requesting information from a database. The original version called *SEQUEL* (*structured English query language)* was designed by an IBM research centre in 1974 and 1975. SQL was first introduced

as a commercial database system in 1979 by Oracle Corporation. (Beal, 2019)

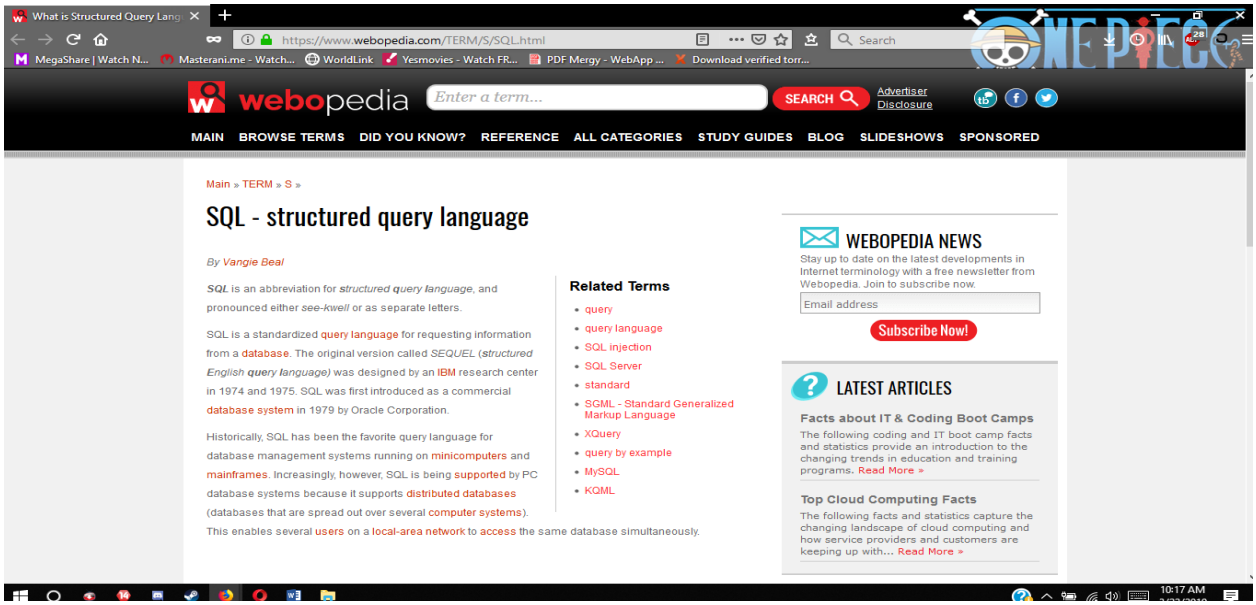
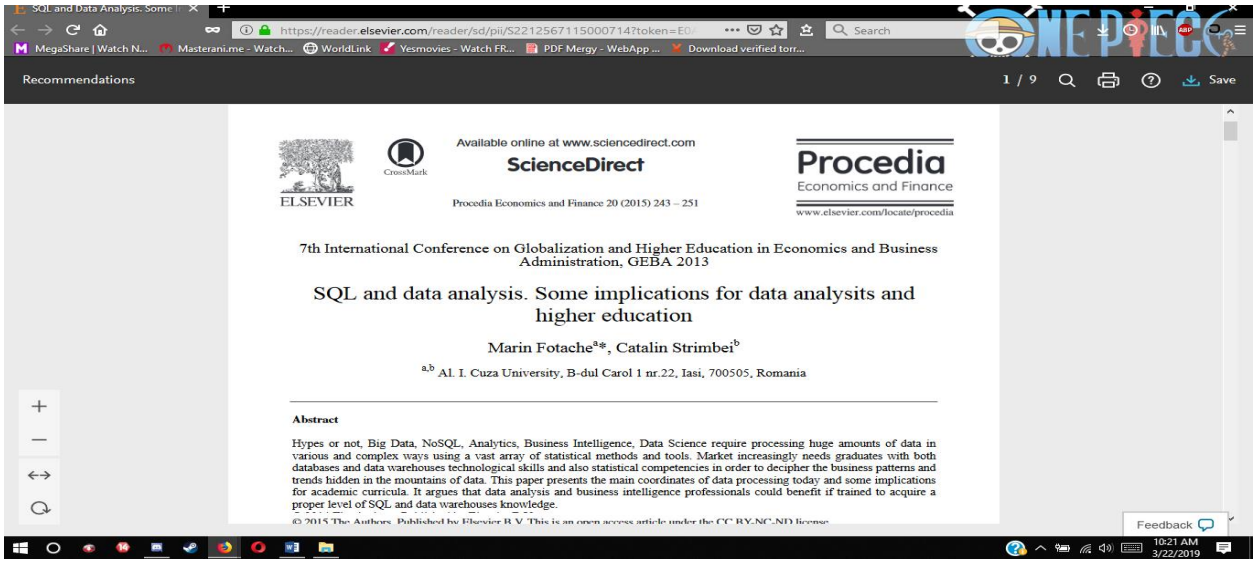


Figure 32 SQL - structured query language

3. SQL and data analysis. Some implications for data analysis and higher education

In IT and business world hypes and fads emerge and disappear in a very quick pace. The top of the hypes changes every few months. Marketing departments of almost all tech companies compete in repackaging and rebranding old stuff suggesting coolness and desirability of their products (Buhl et.al, 2013). It seems the strategy works, at least for some. (Fotache & Strimbei, 2015)



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7th International Conference on Globalization and Higher Education in Economics and Business Administration, GEBA 2013

SQL and data analysis. Some implications for data analysits and higher education

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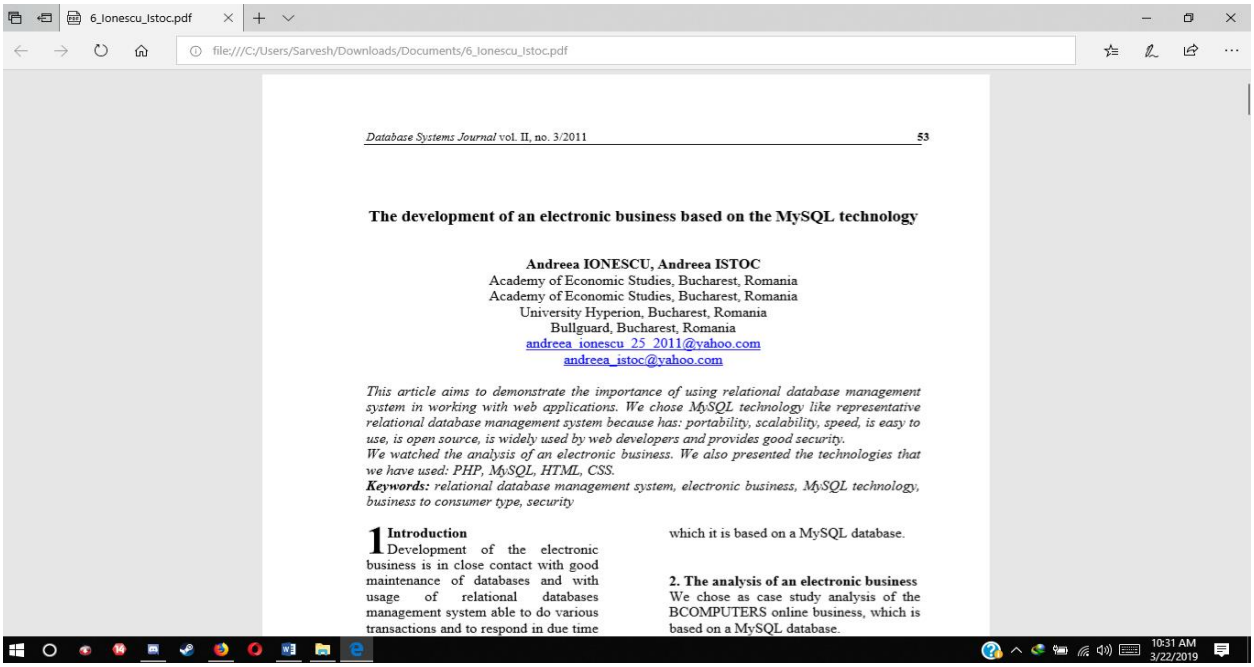
Abstract

Hypes or not, Big Data, NoSQL, Analytics, Business Intelligence, Data Science require processing huge amounts of data in various and complex ways using a vast array of statistical methods and tools. Market increasingly needs graduates with both databases and data warehouses technological skills and also statistical competencies in order to decipher the business patterns and trends hidden in the mountains of data. This paper presents the main coordinates of data processing today and some implications for academic curricula. It argues that data analysis and business intelligence professionals could benefit if trained to acquire a proper level of SQL and data warehouses knowledge.

Figure 33 SQL and data analysis. Some implications for data analysits and higher education

4. **The development of an electronic business based on the MySQL technology**

   This article aims to demonstrate the importance of using relational database management system in working with web applications. We chose MySQL technology like representative relational database management system because has: portability, scalability, speed, is easy to use, is open source, is widely used by web developers and provides good security. (Ionescu, 2011)



Database Systems Journal vol. II, no. 3/2011 53

The development of an electronic business based on the MySQL technology

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This article aims to demonstrate the importance of using relational database management system in working with web applications. We chose MySQL technology like representative relational database management system because has: portability, scalability, speed, is easy to use, is open source, is widely used by web developers and provides good security. We watched the analysis of an electronic business. We also presented the technologies that we have used: PHP, MySQL, HTML, CSS.

Keywords: *relational database management system, electronic business, MySQL technology, business to consumer type, security*

1 Introduction

Development of the electronic business is in close contact with good maintenance of databases and with usage of relational databases management system able to do various transactions and to respond in due time which it is based on a MySQL database.

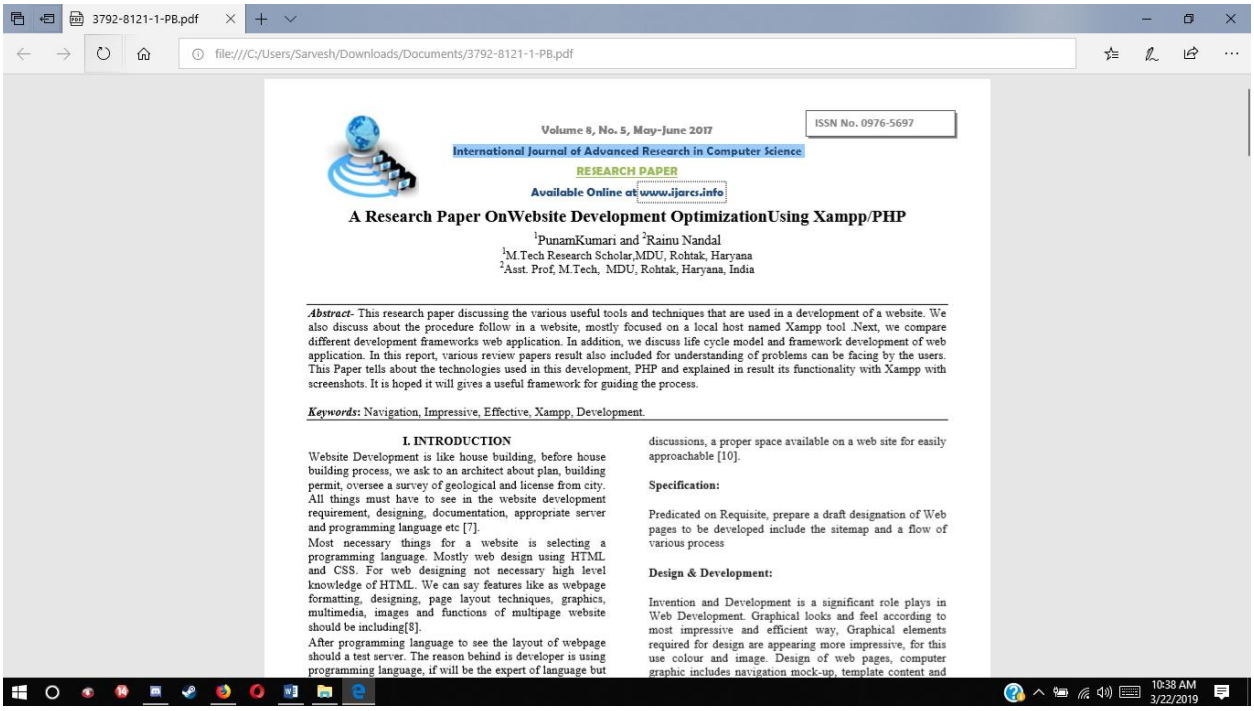
2. The analysis of an electronic business

We chose as case study analysis of the BCOMPUTERS online business, which is based on a MySQL database.

Figure 34 The development of an electronic business based on the MySQL technology

5. **A Research Paper On Website Development Optimization Using Xampp/PHP**

Website Development is like house building, before house building process, we ask to an architect about plan, building permit, oversee a survey of geological and license from city. All things must have to see in the website development requirement, designing, documentation, appropriate server and programming language etc. (Kumari & Nandal, 2017)



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Volume 8, No. 5, May-June 2017 ISSN No. 0976-5697

International Journal of Advanced Research in Computer Science

RESEARCH PAPER

Available Online at www.ijarcs.info

A Research Paper OnWebsite Development OptimizationUsing Xampp/PHP

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[1]M.Tech Research Scholar,MDU, Rohtak, Haryana

[2]Asst. Prof, M.Tech, MDU, Rohtak, Haryana, India

***Abstract*-** This research paper discussing the various useful tools and techniques that are used in a development of a website. We also discuss about the procedure follow in a website, mostly focused on a local host named Xampp tool .Next, we compare different development frameworks web application. In addition, we discuss life cycle model and framework development of web application. In this report, various review papers result also included for understanding of problems can be facing by the users. This Paper tells about the technologies used in this development, PHP and explained in result its functionality with Xampp with screenshots. It is hoped it will gives a useful framework for guiding the process.

***Keywords*:** Navigation, Impressive, Effective, Xampp, Development.

I. INTRODUCTION

Website Development is like house building, before house building process, we ask to an architect about plan, building permit, oversee a survey of geological and license from city. All things must have to see in the website development requirement, designing, documentation, appropriate server and programming language etc [7].

Most necessary things for a website is selecting a programming language. Mostly web design using HTML and CSS. For web designing not necessary high level knowledge of HTML. We can say features like as webpage formatting, designing, page layout techniques, graphics, multimedia, images and functions of multipage website should be including[8].

After programming language to see the layout of webpage should a test server. The reason behind is developer is using programming language, if will be the expert of language but

discussions, a proper space available on a web site for easily approachable [10].

Specification:

Predicated on Requisite, prepare a draft designation of Web pages to be developed include the sitemap and a flow of various process

Design & Development:

Invention and Development is a significant role plays in Web Development. Graphical looks and feel according to most impressive and efficient way, Graphical elements required for design are appearing more impressive, for this use colour and image. Design of web pages, computer graphic includes navigation mock-up, template content and

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Figure 35 A Research Paper On Website Development Optimization Using Xampp/PHP

Website:

With these various websites shown below, I overcame my problems:

1. https://www.computerscience.gcse.guru/theory/what-is-a-database

This website taught me about what a database is and what it is used for. It expressed the use of database in Libraries, Schools, Supermarkets and Websites. It also held various direct links to other theories related to database.

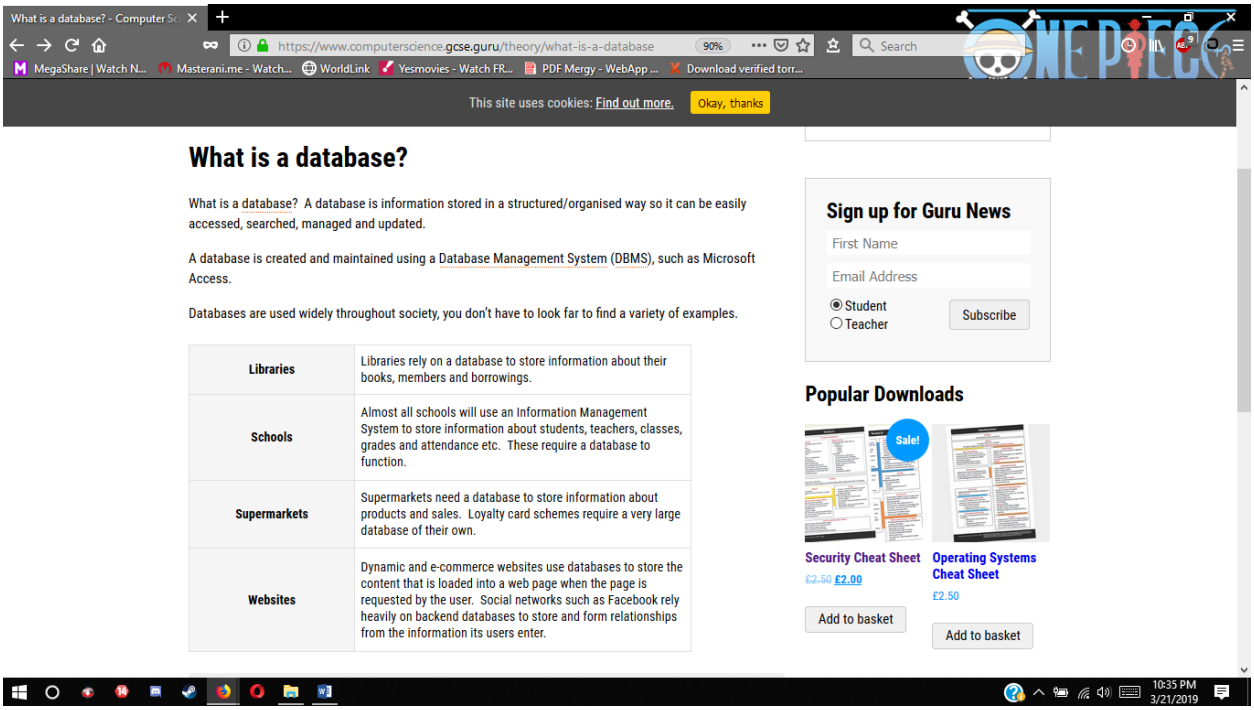

Figure 36 What is a database? - Computer Science GCSE GURU

2. https://www.techopedia.com/definition/27752/data-dictionary

It helped me understand the flexibility of database and how it stores values, Names of tables and their columns, Name of indexes and the other index are interlinked with each other using foreign keys and primary keys.

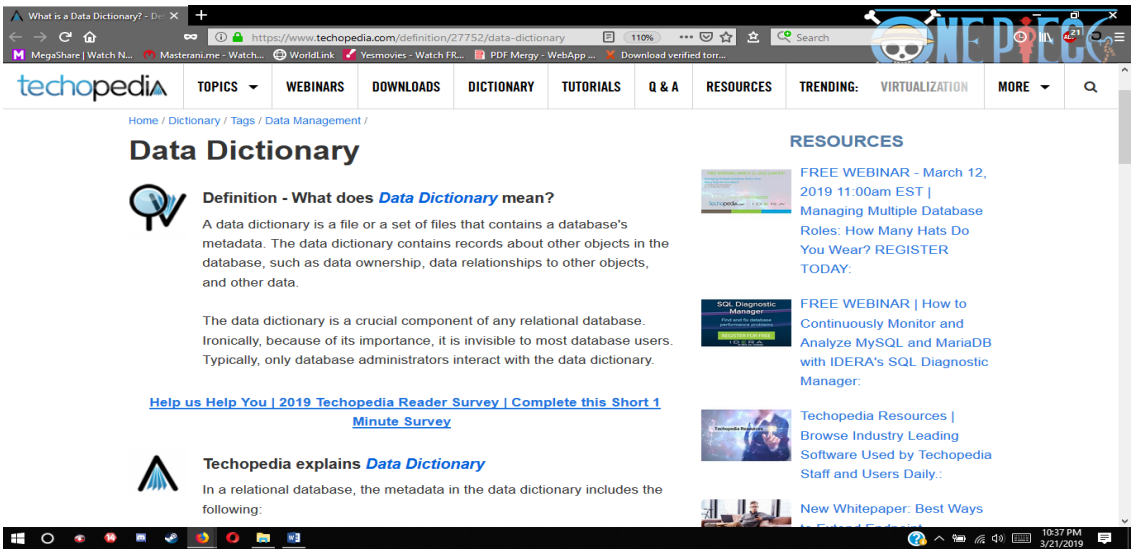

Figure 37 What is a Data Dictionary? - Definition from Techopedia

3.https://www.essentialsql.com/what-is-the-difference-between-a-primary-key-and-a-foreign-key/

The use of primary and foreign key in database is an important point to note, its use and the difference between the two keys was thoroughly explained in this website. The function of these keys and their implementation while doing MYSQL in XAMPP was explained as well.

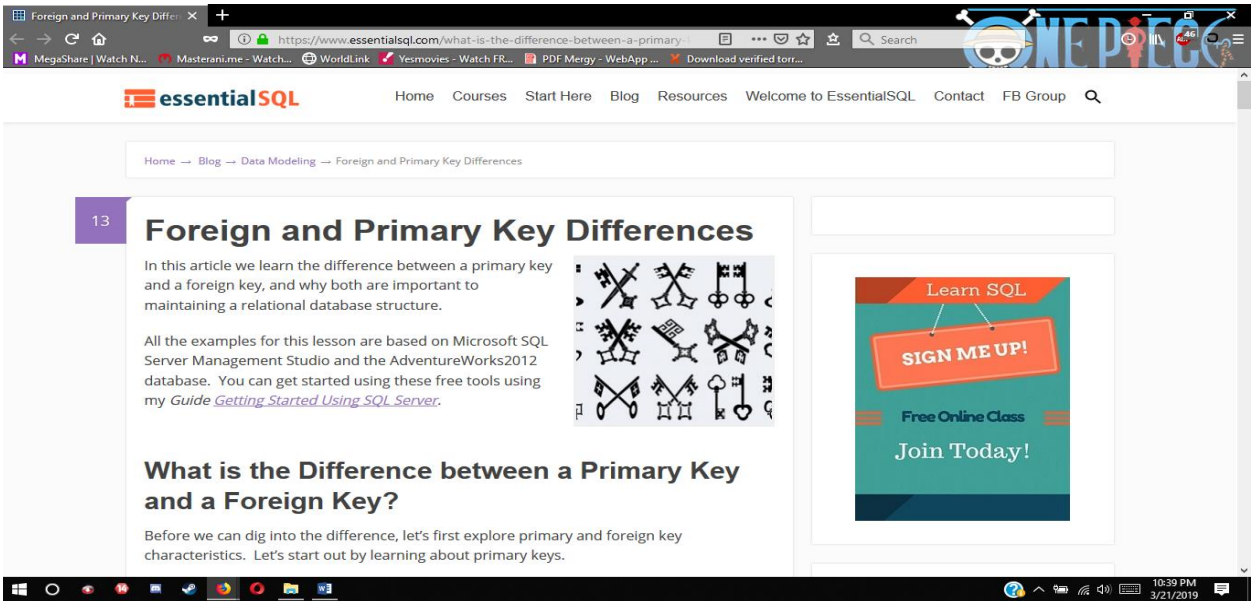

Figure 38 Foreign and Primary Key Differences - Essential SQL

4. https://www.quora.com/What-is-XAMPP-and-how-to-use-it

Through this website I learnt how to use XAMPP. Basic knowledge on how to create a database, I learnt from this website. Basic commands and their syntax is what I learnt from this website.

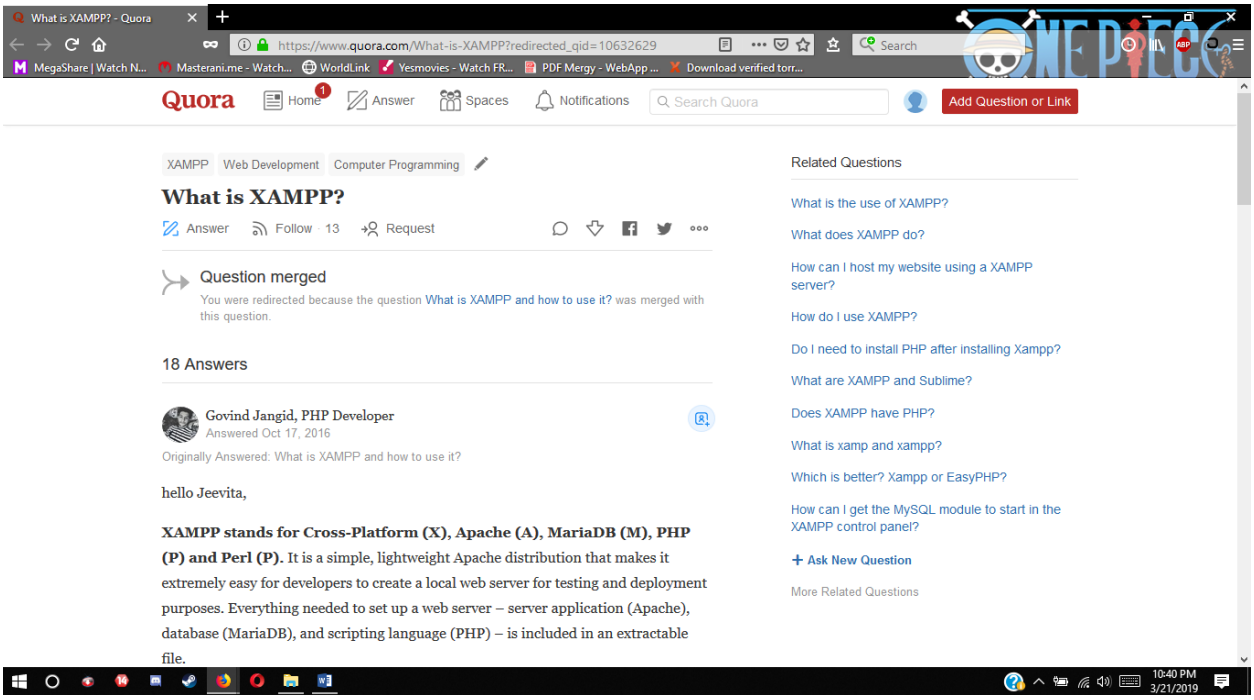

Figure 39 What is XAMPP? - Quora

5. https://www.studytonight.com/dbms/database-normalization.php

I learnt a lot about Normalization through this website. It let me know about the normal forms formed after normalization. Through this website, I learnt how raw data from un-normalized form is normalized to 1 Normal Form to 2 Normal Form and then to 3 Normal Form. 3 Normal Form is made for the data to be organized and well maintained.

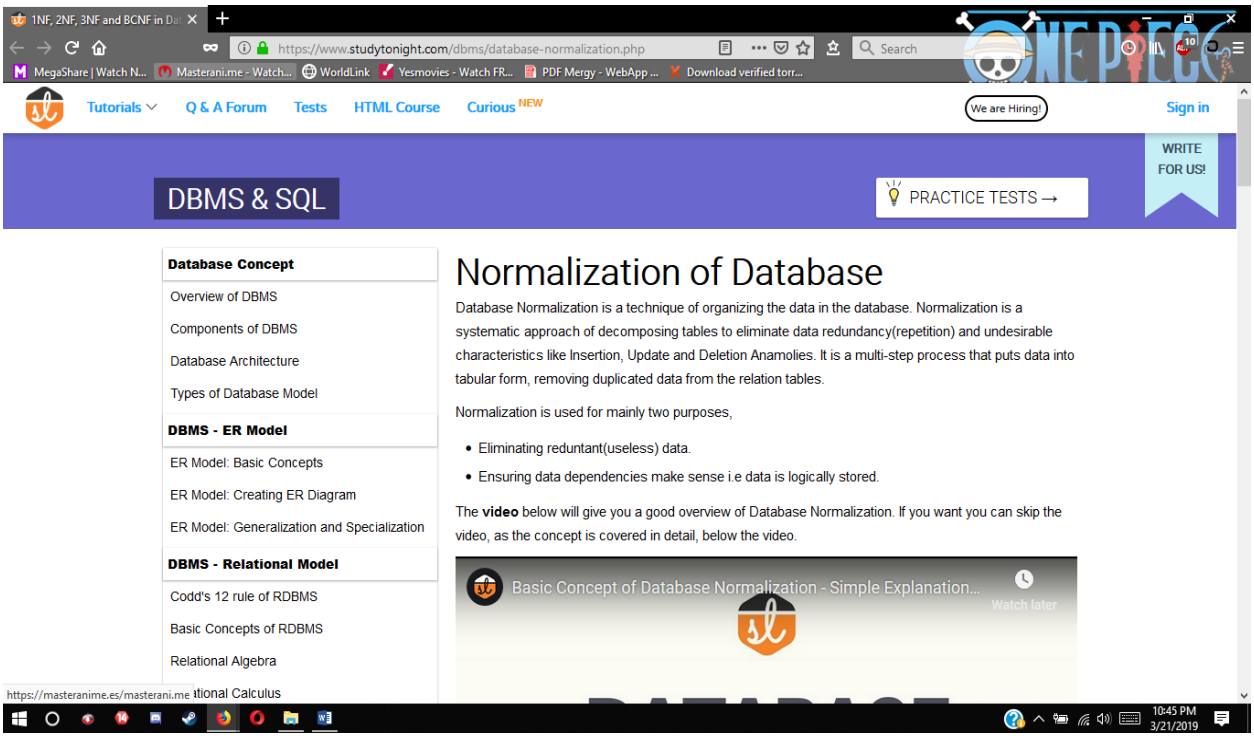

Figure 40 1NF, 2NF, 3NF and BCNF in Database Normalization | Studytonight

Conclusion:

This coursework turned out to be rather interesting than I had imagined. At the beginning of the coursework I was somewhat pissed because I only had around 40% knowledge on database management system. As I went through the project and surfed through the internet, I came across a huge amount of knowledge on database management system. Slowly, things turned out more interesting and I started enjoying the coursework. I had a very few knowledges on Entity Relation Diagram and Relation Diagram, in fact I thought they were the same, but I was wrong, and I realised it through the help of this coursework.

I created a database regarding an Organic Product Company namely Saboo Nepal which produced organic materials like organic soap, organic handwash, organic shampoo, etc. The database management system I made would seem to be very helpful for the company to maintain the records of huge transaction that would take place in the company. I learnt more than I had imagined with this coursework. I had so many doubts at the beginning of this coursework. But with the help of my friends, teachers and the internet I have cleared almost all my doubts. The most responsible person for my progress is Mr. Bibek Raj Joshi as he stood by me at times I was in trouble and helped me overcome my doubts regarding the foreign key. I gained vast knowledge on the primary keys, foreign keys, NOT NULL, Auto_Increment and Unique fields.

At the end of this project I was very intrigued to meet such projects related to database management system. I hope to encounter with such projects furthermore in the future as this was a lesson well learnt, a knowledge well worn. I am thankful for the coursework being provided to us and hope to unveil more in the future. Thank You.

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