

# Islington College



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## INFORMATION SYSTEM (CC4002NI)

### Coursework 2

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Date: 30<sup>th</sup> March 2017

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# Proposal

## Introduction to the organization

The organization for which I am creating the database is a law firm which I created and thought of, named Shah Associates and Attorney. This law firm has associates and attorney and its owner are all the employee of this firm in a partnership. They have many clients who are represented by a particular attorney. But the cases of those clients are sometimes handled by two employees. Every case has a decision made, some are lost and won whereas some are settled with a better offer from both side and payments for fighting the case is hundred thousand for a case won, seventy thousand for a case settled and thirty thousand for a case lost. All these records must be kept in order to maintain a proper record keeping of this firm.

## Statement of problem or need

Every organization has their own collection of information which they protect and keep for the future use or for proper processing of those information without any confusion or delay. This Project displays a database or information of a law firm named “Shah Associates and Attorney”. A law firm has many records that they need to keep such as their client’s information, the cases that they have fought for their clients and by which of their employees. All these data are required by the company to be kept for future use so a database needs to be created to keep them in a proper way and logical manner.

## Objectives

The main Objective of this project is to create a database that a law firm can use to store the information of their employee, clients, case and its details and all the payments made to the law firm directly or indirectly. Creating database will help them access data easily and very quickly. I just have to make a prototype of a database that a law firm can use.

## Time factor and management

After the coursework was handed out I first researched about the potential ideas of organization that existed or did not and for which it would be easy and simple to create a prototype database. The deadline for this coursework is Week 24 of the semester and before the deadline in Week 20 I will research about the normalization of tables and how to relate one table to another. In Week 21 I will start collecting all information about creating a database using MySQL and all the right syntax for creating tables, entering values and assigning the fields of the table proper type and keys. In Week 22 I will finish up making tables in excel sheet and make 2NF or Second Normal Form ready for entering in MySQL and finish up making the ER Diagram and Tabular ER diagram showing the relational tables with the help of primary and foreign key. In Week 23 I will start the coding for making the database and take screenshots of every coding I write for documentation purposes. I will finish up till testing part and will. In Week 24 I will write a conclusion and read my documentation again for the mistakes and the possibilities where I can improve.

## Contents

Introduction.....	1
Discussion and Analysis .....	2
Model .....	4
Un-Normalized Table:.....	4
Normalization:.....	4
1NF Table: .....	4
2NF Table: .....	5
Entity Relational Diagram: .....	7
Tabular Relation Diagram:.....	9
Database .....	9
Creating and Using Database: .....	9
Creating and Describing the tables: .....	10
Displaying Created Tables in Database:.....	12
Data Dictionary .....	13
Test Data .....	15
Employee Table: .....	15
Clients Table: .....	16
Cases Table: .....	17
Case Details Table:.....	18
Payments Table: .....	19
Queries .....	20
Research.....	22
Testing: .....	26
Test 1:.....	26
Test 2:.....	26
Test 3:.....	27
Test 4:.....	28
Test 5:.....	28
Test 6:.....	29
Conclusion .....	30
References.....	31

## Table of tables:

Table 1 Data Dictionary of database .....	14
---	----

## Table of Figures

Figure 1 XAMPP Control Panel .....	2
Figure 2 MYSQL in shell .....	3
Figure 3 Un-normalized table 1 .....	4
Figure 4 Un-normalized table 2 .....	4
Figure 5 1NF table of Un-normalized table 1 .....	5
Figure 6 1NF table of Un-normalized table 2 .....	5
Figure 7 2NF:Employee table .....	6
Figure 8 2NF:Clients Table .....	6
Figure 9 2NF:Cases Table .....	6
Figure 10 2NF:Case Details Table.....	7
Figure 11 2NF:Payments Table .....	7
Figure 12 Entity Relation Diagram.....	8
Figure 13Tabular Entity Relation Diagram .....	9
Figure 14 Creating and Using Database .....	10
Figure 15 Creating Employee table .....	10
Figure 16 Description of Employee table .....	10
Figure 17 Creating Clients table .....	10
Figure 18 Description of Clients table .....	10
Figure 19 Creating Cases table .....	11
Figure 20 Description of Cases table .....	11
Figure 21 Creating Case Details table .....	11
Figure 22 Description of case details table .....	11
Figure 23 Creating the payments table .....	12
Figure 24 Description of payments table .....	12
Figure 25 Displaying created tables on the database .....	12
Figure 26 Inserting Values in the employee table .....	15
Figure 27 Displaying the values in the table.....	15
Figure 28 Inserting values in Clients table .....	16
Figure 29 Displaying values in Clients table .....	16
Figure 30 Inserting Value in cases table-1.....	17
Figure 31 Inserting values in cases table-2 .....	17
Figure 32 Displaying values in cases table .....	17
Figure 33 Inserting values in case details table .....	18
Figure 34 Displaying the values of case details table .....	18
Figure 35 Inserting values in payments table .....	19
Figure 36 Displaying values in payments table .....	19
Figure 37 Queries: Output 1 .....	20

Figure 38 Queries: Output 2 .....	20
Figure 39 Queries: Output 3 .....	20
Figure 40 Queries: Output 4 .....	21
Figure 41 Queries: Output 5 .....	21
Figure 42 Queries: Output 6 .....	21
Figure 43 Research 1 .....	22
Figure 44 Research 2 .....	22
Figure 45 Research 3 .....	23
Figure 46 Research 4 .....	23
Figure 47 Research 5 .....	24
Figure 48 Research 6 .....	24
Figure 49 Research 7 .....	25
Figure 50 Research 8 .....	25
Figure 51 Test 1 Error.....	26
Figure 52 Test 1 Error Solution .....	26
Figure 53 Test 2 Error.....	26
Figure 54 Test 2 Error Solution .....	26
Figure 55 Test 3 Error.....	27
Figure 56 Test 3 Error Solution .....	27
Figure 57 Test 4 Error.....	28
Figure 58 Test 4 Error Solution .....	28
Figure 59 Test 5 Error.....	28
Figure 60 Test 5 Error Solution .....	28
Figure 61 Error 6.....	29
Figure 62 Error 6 Solution .....	29

## Introduction

The capacity to gather and dissect a lot of information is a developing issue among mainstream researchers. The developing crevice amongst information and clients calls for imaginative instruments that address the difficulties confronted by enormous information volume, speed and assortment. There have been numerous current advances in database innovation attempting to take care of these issues. In any case, these new database advancements have accompanied their own difficulties around setup, administration and assigning registering assets. SQL (Structured Query Language) databases (Codd 1970), (Stonebraker 1976) have been the accepted interface to databases since the 1980s and are the bedrock of electronic exchanges far and wide. (IEEE, 2015)

Creating a database for an- organization is the main purpose of this project. The Organization that I choose to create a database upon it is imaginary creation, it is a law firm named 'Shah Associates and Attorney'. This law firm is a small organization consisting of few attorney and associates. They handle cases only of their clients that are with them. There are records that needed to be kept for this organization, so to keep this records of this law firm a database must be created. There are five tables in the database of this law firm. First is table of all the employee which consist of their ID, first name, last name and their position. The second table is of the clients that they work with and it consists of Client's ID, their name and the employee who represents the client. The third table is of the record of the cases of the clients which consists of Case number, Title and Case Handler. The Fourth table is of Case details which consists of the Case number, its outcome, starting date and closing date and the invoice number for the charge. Every organization has financial part and in mine it is payments made by the clients to the employee who handled their case which is shown in the last table which consists of the bill number, client who paid, the amount and paid to whom.

There are different ways to keep records that are needed by an organization. Suppose this law firm is keeping records using Traditional Recordkeeping. In this method the records are kept manually in the papers using registers. And there may be different registers for different fields of record like the records of employee and clients maybe in different registers so to make sure there is no confusion the fields like the employee who represents the clients are recorded using their name. But in my Database the record keeping is easy as I can use the employee ID in case of their name and relate these two fields using keys. I am trying to say that creating a database for this firm is making them easy to access their records and in a proper and more efficient manner. In the same time, it also consumes less manual work and the storage capacity and time factor are the most important thing as it saves a lot of time and storage. (Bench-Capon, 1997)

## Discussion and Analysis

This project was about creating a database for an organization and I made up an imaginary organization which is a law firm named Shah Associates and Attorney. This Organization just needed to keep records of its employee, clients, cases, case details and the payments made to their employee by their clients. First of all, tables such as Un-normalized table, First Normal Form and Second Normal Form were created using MS-excel and the primary keys and foreign keys were assigned to some specific fields for relating the tables to each other. After this I used Libreoffice Draw for creating Entity Relation Diagram and Visio for creating Tabular Entity Relational Diagram. Then I used MySQL for creating database, bundled with XAMPP. XAMPP is basically used for the convenience of the user as it is hard to install Apache web server, MariaDB, PHP and Perl, so XAMPP is just the easy way for installing all those and is configured with all those (Apache Friends, 2017).

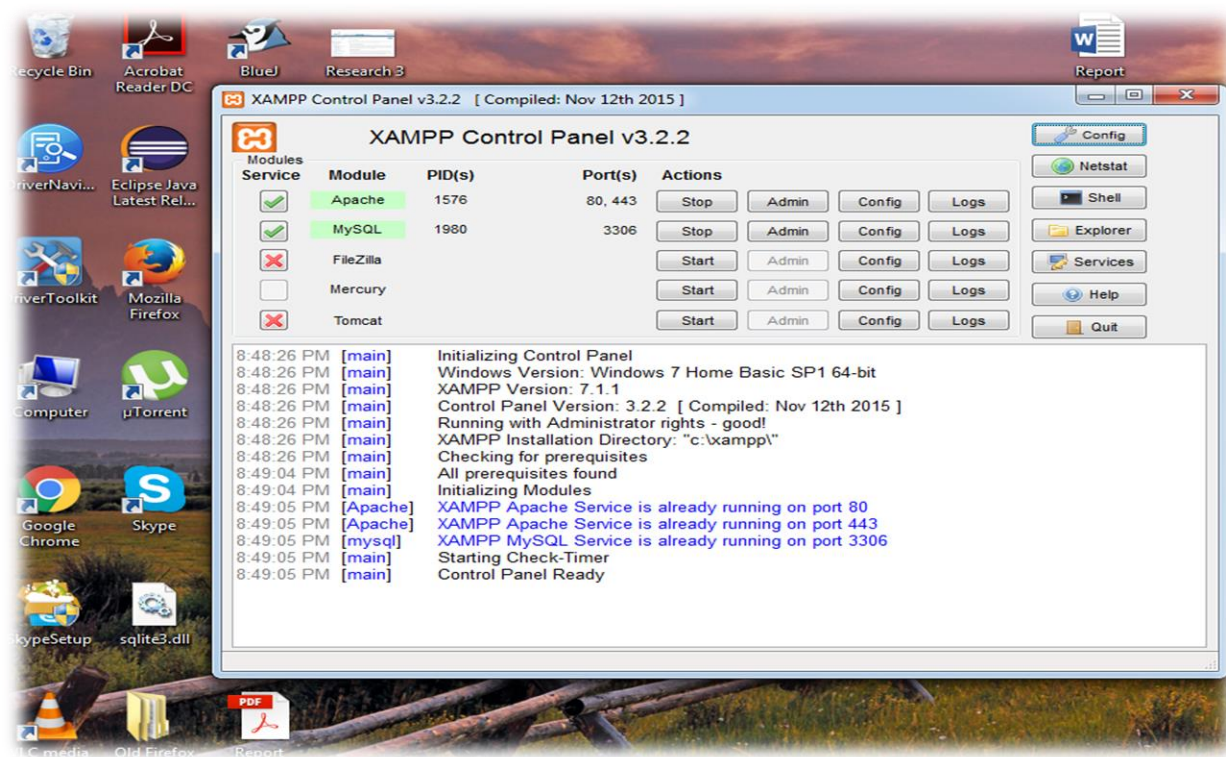


Figure 1 XAMPP Control Panel

The above figure shows the control panel of XAMPP and the Apache and MYSQL services being run.

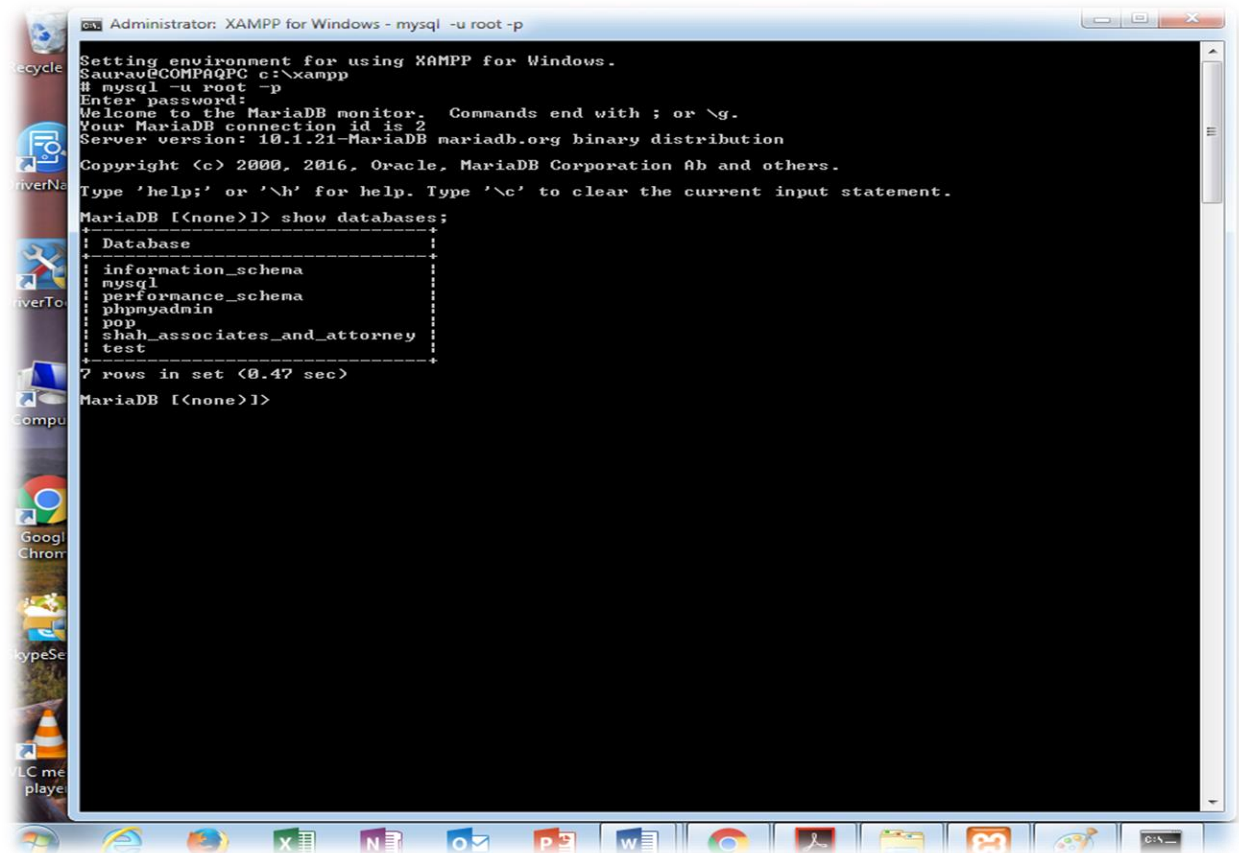


Figure 2 MYSQL in shell

Coding for creating database was done using shell and opening MySQL as shown in the above figure.



## Model

### Un-Normalized Table:

Employee_ID	Case_Handler	Position	Case_No	Title	Case_Of	Name
E2,E3	Mike Ross and Louis Litt	Attorney	PBS 1	Conspiracy of Committing Fraud	C3	Mr. Patrick Bikram Shah
E6	Daniel Hardman	Attorney	PBS 2	Frozen Bank Account	C2	People's Bank
E1	Harvey Specter	Attorney	PBS 3	Perjury	C10	Miss Donna Paulsen
E4	Jessica Pearson	Attorney	PBS 4	Takeover of Dell	C5	Acer
E9,E8	Prayash Shah and Jenny Griffith	Attorney,Associate	PBS 5	Trademark Copyright	C4	Nepal Food and Beverage
E3,E5	Louis Lit and Rachel Zane	Attorney,Associate	PBS 6	Insurance	C6	Honda
E9,E10	Prayash Shah and Pratik Shah	Attorney,Associate	PBS 7	Takeover of Tata	C7	Mercedes
E3,E5	Louis Lit and Rachel Zane	Attorney,Associate	PBS 8	Insurance	C9	Ambe Housing
E1,E10	Harvey Specter and Pratik Shah	Attorney,Associate	PBS 9	Takeover of Hyundai	C1	Ford
E1,E4	Jessica Pearson and Harvey Specter	Attorney	PBS 10	Idea Collision	C8	Google

Figure 3 Un-normalized table 1

SN	Outcome	Starting_Date	Closed_Date	Bill_No	Paid_By	Amount\$	Paid_To
PBS 1	Won	Jan 1 <sup>st</sup> ,2016	Jan 20 <sup>th</sup> ,2016	IN1	C3	\$100,000.00	E2 and E3
PBS 2	Settled	Jan 25 <sup>th</sup> ,2016	Feb 1 <sup>st</sup> ,2016	IN2	C2	\$70,000.00	E6
PBS 3	Won	Feb 16 <sup>th</sup> ,2016	Mar 20 <sup>th</sup> ,2016	IN3	C10	\$100,000.00	E1
PBS 4	Settled	Aug 25 <sup>th</sup> ,2016	Sept 25 <sup>th</sup> ,2016	IN4	C5	\$70,000.00	E4
PBS 5	Won	Sept 28 <sup>th</sup> ,2016	Oct 15 <sup>th</sup> ,2016	IN5	C4	\$100,000.00	E9 and E8
PBS 6	Lost	Oct 20 <sup>th</sup> ,2016	Nov 16 <sup>th</sup> ,2016	IN6	C6	\$30,000.00	E3 and E5
PBS 7	Settled	Nov 21 <sup>st</sup> ,2016	Dec 20 <sup>th</sup> ,2016	IN7	C7	\$70,000.00	E9 and E10
PBS 8	Lost	Dec 27 <sup>th</sup> ,2016	Jan 14 <sup>th</sup> ,2017	IN8	C9	\$30,000.00	E3 and E5
PBS 9	Settled	Jan 20 <sup>th</sup> ,2017	Feb 14 <sup>th</sup> ,2017	IN9	C1	\$70,000.00	E1 and E10
PBS 10	Won	Feb 18 <sup>th</sup> ,2017	Mar 15 <sup>th</sup> ,2017	IN10	C8	\$100,000.00	E4 and E1

Figure 4 Un-normalized table 2

### Normalization:

This is the process of organizing the data in a database in a proper and effective way. Data Dependency and reducing data are two important objectives of normalization and this two process reduces the space consumed by the database and ensures that the values or data are stored in a proper set of rules or in a logical manner. In this database I have used 1NF and 2NF (Chapple, 2017).

### 1NF Table:

1NF (First Normal Form) was introduced by Edgar F. Codd in his 1970s classical paper (Ghosh, 1991). This is the basic process of normalization where data are kept in such an order that they are not repeated in a row but they can be repeated in the column. The rules are that every cell of that table must contain single value but must be unique records (Guru99, 2017).

Employee_ID	Case_Handler	Position	Case_No	Title	Case_Of	Name
E2	Mike Ross	Attorney	PBS 1	Conspiracy of Committing Fraud	C3	Mr.Patrick Bikram Shah
E3	Louis Lit	Attorney	PBS 1	Conspiracy of Committing Fraud	C3	Mr.Patrick Bikram Shah
E6	Daniel Hardman	Attorney	PBS 2	Frozen Bank Account	C2	People's Bank
E1	Harvey Specter	Attorney	PBS 3	Perjury	C10	Miss.Donna Paulsen
E4	Jessica Pearson	Attorney	PBS 4	Takeover of Dell	C5	Acer
E9	Prayash Shah	Attorney	PBS 5	Trademark Copyright	C4	Nepal Food and Beverage
E8	Jenny Griffith	Associate	PBS 5	Trademark Copyright	C4	Nepal Food and Beverage
E3	Louis Lit	Attorney	PBS 6	Insurance	C6	Honda
E5	Rachel Zane	Associate	PBS 6	Insurance	C6	Honda
E9	Prayash Shah	Attorney	PBS 7	Takeover of Tata	C7	Mercedes
E10	Pratik Shah	Associate	PBS 7	Takeover of Tata	C7	Mercedes
E3	Louis Lit	Attorney	PBS 8	Insurance	C9	Ambe Housing
E5	Rachel Zane	Associate	PBS 8	Insurance	C9	Ambe Housing
E1	Harvey Specter	Attorney	PBS 9	Takeover of Hyundai	C1	Ford
E10	Pratik Shah	Associate	PBS 9	Takeover of Hyundai	C1	Ford
E1	Harvey Specter	Attorney	PBS 10	Idea Collision	C8	Google
E4	Jessica Pearson	Attorney	PBS 10	Idea Collision	C8	Google

Figure 5 1NF table of Un-normalized table 1

SN	Outcome	Starting_Date	Closed_Date	Bill_No	Paid_By	Amount\$	Paid_To
PBS 1	Won	Jan 1 <sup>st</sup> ,2016	Jan 20 <sup>th</sup> ,2016	IN1	C3	\$100,000.00	E2
PBS 1	Won	Jan 1 <sup>st</sup> ,2016	Jan 20 <sup>th</sup> ,2016	IN1	C3	\$100,000.00	E3
PBS 2	Settled	Jan 25 <sup>th</sup> ,2016	Feb 1 <sup>st</sup> ,2016	IN2	C2	\$70,000.00	E6
PBS 3	Won	Feb 16 <sup>th</sup> ,2016	Mar 20 <sup>th</sup> ,2016	IN3	C10	\$100,000.00	E1
PBS 4	Settled	Aug 25 <sup>th</sup> ,2016	Sept 25 <sup>th</sup> ,2016	IN4	C5	\$70,000.00	E4
PBS 5	Won	Sept 28 <sup>th</sup> ,2016	Oct 15 <sup>th</sup> ,2016	IN5	C4	\$100,000.00	E8
PBS 5	Won	Sept 28 <sup>th</sup> ,2016	Oct 15 <sup>th</sup> ,2016	IN5	C4	\$100,000.00	E9
PBS 6	Lost	Oct 20 <sup>th</sup> ,2016	Nov 16 <sup>th</sup> ,2016	IN6	C6	\$30,000.00	E3
PBS 6	Lost	Oct 20 <sup>th</sup> ,2016	Nov 16 <sup>th</sup> ,2016	IN6	C6	\$30,000.00	E5
PBS 7	Settled	Nov 21 <sup>st</sup> ,2016	Dec 20 <sup>th</sup> ,2016	IN7	C7	\$70,000.00	E9
PBS 7	Settled	Nov 21 <sup>st</sup> ,2016	Dec 20 <sup>th</sup> ,2016	IN7	C7	\$70,000.00	E10
PBS 8	Lost	Dec 27 <sup>th</sup> ,2016	Jan 14 <sup>th</sup> ,2017	IN8	C9	\$30,000.00	E3
PBS 8	Lost	Dec 27 <sup>th</sup> ,2016	Jan 14 <sup>th</sup> ,2017	IN8	C9	\$30,000.00	E5
PBS 9	Settled	Jan 20 <sup>th</sup> ,2017	Feb 14 <sup>th</sup> ,2017	IN9	C1	\$70,000.00	E1
PBS 9	Settled	Jan 20 <sup>th</sup> ,2017	Feb 14 <sup>th</sup> ,2017	IN9	C1	\$70,000.00	E10
PBS 10	Won	Feb 18 <sup>th</sup> ,2017	Mar 15 <sup>th</sup> ,2017	IN10	C8	\$100,000.00	E1
PBS 10	Won	Feb 18 <sup>th</sup> ,2017	Mar 15 <sup>th</sup> ,2017	IN10	C8	\$100,000.00	E4

Figure 6 1NF table of Un-normalized table 2

## 2NF Table:

2NF (Second Normal Form) is the process of normalization which is after First Normal Form in which there should be a relational attribute to relate to other tables (Studytonight, 2016).

Employee_ID	First_Name	Last_Name	Position
E1	Harvey	Specter	Attorney
E2	Mike	Ross	Attorney
E3	Louis	Lit	Attorney
E4	Jessica	Pearson	Attorney
E5	Rachel	Zane	Associate
E6	Daniel	Hardman	Attorney
E7	Travis	Tanner	Associate
E8	Jenny	Griffith	Associate
E9	Prayash	Shah	Attorney
E10	Pratik	Shah	Associate

Figure 7 2NF:Employee table

Client_ID	Name	Representative
C1	Ford	E1
C2	People's Bank	E6
C3	Mr.Patrick Bikram Shah	E2
C4	Nepal Food and Beverage	E9
C5	Acer	E4
C6	Honda	E3
C7	Mercedes	E9
C8	Google	E4
C9	Ambe Housing	E3
C10	Miss.Donna Paulsen	E1

Figure 8 2NF:Clients Table

Case_No	Case_Of	Title	Case_Handler
PBS 1	C3	Conspiracy of Committing Fraud	Mike Ross and Louis Litt
PBS 2	C2	Frozen Bank Account	Daniel Hardman
PBS 3	C10	Perjury	Harvey Specter
PBS 4	C5	Takeover of Dell	Jessica Pearson
PBS 5	C4	Trademark Copyright	Prayash Shah and Jenny Griffith
PBS 6	C6	Insurance	Louis Lit and Rachel Zane
PBS 7	C7	Takeover of Tata	Prayash Shah and Pratik Shah
PBS 8	C9	Insurance	Louis Lit and Rachel Zane
PBS 9	C1	Takeover of Hyundai	Harvey Specter and Pratik Shah
PBS 10	C8	Idea Collision	Jessica Pearson and Harvey Specter

Figure 9 2NF:Cases Table

SN	Outcome	Starting_Date	Closed_Date	Invoice_No
PBS 1	Won	Jan 1 <sup>st</sup> ,2016	Jan 20 <sup>th</sup> ,2016	IN1
PBS 2	Settled	Jan 25 <sup>th</sup> ,2016	Feb 1 <sup>st</sup> ,2016	IN2
PBS 3	Won	Feb 16 <sup>th</sup> ,2016	Mar 20 <sup>th</sup> ,2016	IN3
PBS 4	Settled	Aug 25 <sup>th</sup> ,2016	Sept 25 <sup>th</sup> ,2016	IN4
PBS 5	Won	Sept 28 <sup>th</sup> ,2016	Oct 15 <sup>th</sup> ,2016	IN5
PBS 6	Lost	Oct 20 <sup>th</sup> ,2016	Nov 16 <sup>th</sup> ,2016	IN6
PBS 7	Settled	Nov 21 <sup>st</sup> ,2016	Dec 20 <sup>th</sup> ,2016	IN7
PBS 8	Lost	Dec 27 <sup>th</sup> ,2016	Jan 14 <sup>th</sup> ,2017	IN8
PBS 9	Settled	Jan 20 <sup>th</sup> ,2017	Feb 14 <sup>th</sup> ,2017	IN9
PBS 10	Won	Feb 18 <sup>th</sup> ,2017	Mar 15 <sup>th</sup> ,2017	IN10

Figure 10 2NF:Case Details Table

Bill_No	Paid_By	Amount\$	Paid_To
IN1	C3	\$100,000.00	E2 and E3
IN2	C2	\$70,000.00	E6
IN3	C10	\$100,000.00	E1
IN4	C5	\$70,000.00	E4
IN5	C4	\$100,000.00	E9 and E8
IN6	C6	\$30,000.00	E3 and E5
IN7	C7	\$70,000.00	E9 and E10
IN8	C9	\$30,000.00	E3 and E5
IN9	C1	\$70,000.00	E1 and E10
IN10	C8	\$100,000.00	E4 and E1

Figure 11 2NF:Payments Table

## Entity Relational Diagram:

Entity Relational Diagram shows and explains the database. This below diagram shows the relation between tables with the help of attributes of each table. Primary and foreign key are used

to show the relationship between one table to another. (Sa, 1984)



Figure 12 Entity Relation Diagram

## Tabular Relation Diagram:

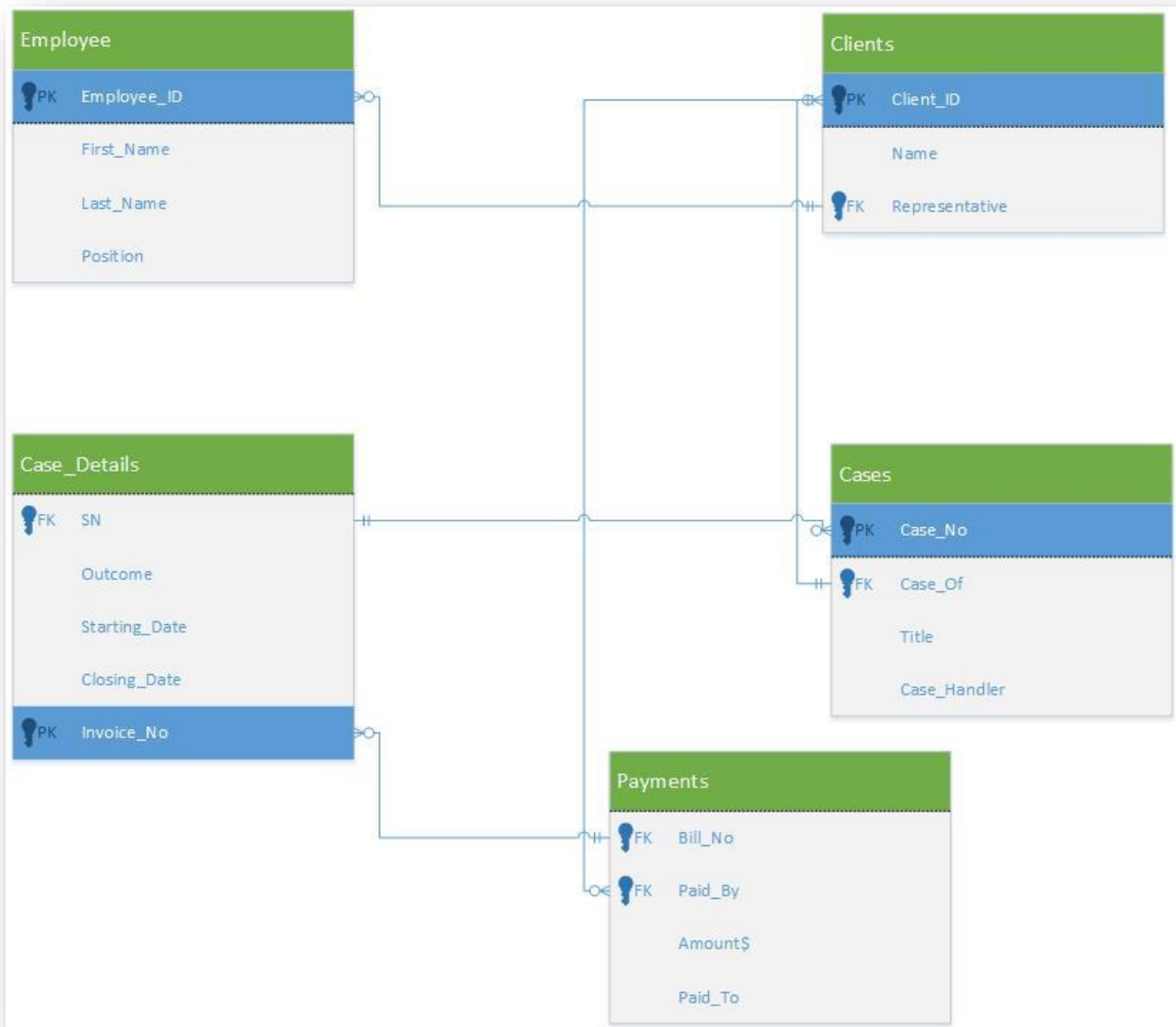


Figure 13 Tabular Entity Relation Diagram

This above Figure 2 shows the same thing like Figure 1 the relationship between tables. This figure is the conversion of ER Diagram into a tabular relational diagram which shows the concept of keys in more proper and logical way.

## Database

### Creating and Using Database:

For creating a new database the code is:

```
CREATE DATABASE Shah_Associates_and_Attorney;
```

For using the created database in MySQL:  
USE Shah\_Associates\_and\_Attorney;

```
MariaDB [(none)]> create database Shah_Associates_and_Attorney;
Query OK, 1 row affected (0.02 sec)

MariaDB [(none)]> use Shah_Associates_and_Attorney
Database changed
```

Figure 14 Creating and Using Database

## Creating and Describing the tables:

### Employee Table:

After Creating the database for Shah Associates and Attorney, I created table named employee as shown in the figure below with its attributes.

```
MariaDB [Shah_Associates_and_Attorney]> create table Employee(Employee_ID varchar(25) not null,First_Name varchar(255) not null,Last_Name varchar(255) not null,Position varchar(255) not null,PRIMARY KEY(Employee_ID));
Query OK, 0 rows affected (0.30 sec)
```

Figure 15 Creating Employee table

```
MariaDB [shah_associates_and_attorney]> describe employee;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Employee_ID | varchar(25)   | NO   | PRI  | NULL    |       |
| First_Name  | varchar(255)  | NO   |      | NULL    |       |
| Last_Name   | varchar(255)  | NO   |      | NULL    |       |
| Position    | varchar(255)  | NO   |      | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

Figure 16 Description of Employee table

The above figure is the description of the table employee and its attributes, the figure shows the types and the key that are assigned to the fields.

### Clients Table:

```
MariaDB [Shah_Associates_and_Attorney]> create table Clients(Client_ID varchar(25) PRIMARY KEY not null,Name varchar(255) not null,Representative varchar(25) not null, FOREIGN KEY(Representative) REFERENCES employee(Employee_ID));
Query OK, 0 rows affected (0.48 sec)
```

Figure 17 Creating Clients table

The above figure shows the creation of Clients table with its fields.

```
MariaDB [shah_associates_and_attorney]> describe clients;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Client_ID  | varchar(25)   | NO   | PRI  | NULL    |       |
| Name       | varchar(255)  | NO   |      | NULL    |       |
| Representative | varchar(25)   | NO   | MUL  | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.02 sec)
```

Figure 18 Description of Clients table

The above figure shows the fields and its type and keys that were added to the table.

#### Cases Table:

```
MariaDB [Shah_Associates_and_Attorney]> create table Cases(Case_No varchar(25) PRIMARY KEY not null,Case_Of varchar(25) not null,Title varchar(255) not null,Case_Handler varchar(255) not null, FOREIGN KEY(Case_Of) REFERENCES clients(Client_ID));
Query OK, 0 rows affected (0.30 sec)
```

Figure 19 Creating Cases table

The above figure shows the creation of table for the Cases with its different fields.

```
MariaDB [shah_associates_and_attorney]> describe cases;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Case_No | varchar(25) | NO | PRI | NULL | |
| Case_Of | varchar(25) | NO | MUL | NULL | |
| Title | varchar(255) | NO | | NULL | |
| Case_Handler | varchar(255) | NO | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

Figure 20 Description of Cases table

The above figure is the description of the Cases table with its fields type and the keys.

#### Case Details Table:

```
MariaDB [Shah_Associates_and_Attorney]> create table Case_Details(SN varchar(25) not null,Outcome varchar(255) not null,Starting_Date varchar(255) not null,Closing_Date varchar(255) not null,Invoice_No varchar(25) PRIMARY KEY not null, FOREIGN KEY(SN) REFERENCES cases(Case_No));
Query OK, 0 rows affected (0.32 sec)
```

Figure 21 Creating Case Details table

Above Figure shows the creation of table case details with the fields that must be created.

```
MariaDB [shah_associates_and_attorney]> describe case_details;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| SN | varchar(25) | NO | MUL | NULL | |
| Outcome | varchar(255) | NO | | NULL | |
| Starting_Date | varchar(255) | NO | | NULL | |
| Closing_Date | varchar(255) | NO | | NULL | |
| Invoice_No | varchar(25) | NO | PRI | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.02 sec)
```

Figure 22 Description of case details table

The Figure 28 shows the description of the case details table.



### Payments Table:

```
MariaDB [Shah_Associates_and_Attorney]> create table Payments(Bill_No varchar(25) not null,Paid_By varchar(25) not null,Amount$ int(15) not null,Paid_To varchar(100) not null, FOREIGN KEY(Bill_No) REFERENCES case_details(Invoice_No), FOREIGN KEY(Paid_By) REFERENCES clients(Client_ID));
Query OK, 0 rows affected (0.50 sec)
```

Figure 23 Creating the payments table

The above figure shows the payments table being created.

```
MariaDB [shah_associates_and_attorney]> describe payments;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Bill_No | varchar(25) | NO | MUL | NULL | |
| Paid_By | varchar(25) | NO | MUL | NULL | |
| Amount$ | int(15) | NO | | NULL | |
| Paid_To | varchar(100) | NO | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

Figure 24 Description of payments table

The above figure is the description of the table payment that has been created in the database.

### Displaying Created Tables in Database:

For Displaying all the tables that are available in the database the code is:

```
USE Shah_Associates_and_Attorney;
SHOW TABLES;
```

```
MariaDB [(none)]> use shah_associates_and_attorney;
Database changed
MariaDB [shah_associates_and_attorney]> show tables;
+-----+
| Tables_in_shah_associates_and_attorney |
+-----+
| case_details |
| cases |
| clients |
| employee |
| payments |
+-----+
5 rows in set (0.00 sec)
```

Figure 25 Displaying created tables on the database

## Data Dictionary

This section of report contains data dictionary which describes the tables that are in the database of Shah Associates and Attorney. Data Dictionary is a set readable tables that will describe the whole database which includes the schema objects of my database such as tables, fields, type, length, keys and the description of the fields. (Oracle Corporation., 2002)

Table Name	Fields	Description	Type	Key	Null	Length
Employee Table	Employee_ID	It represents an employee.	VARCHAR	Primary Key	Not Null	25
	First_Name	First name of employee.	VARCHAR		Not Null	255
	Last_Name	Last name of employee.	VARCHAR		Not Null	255
	Position	Job or post of the employee.	VARCHAR		Not Null	255
Clients Table	Client_ID	It represents an client.	VARCHAR	Primary Key	Not Null	25
	Name	Name of the Client.	VARCHAR		Not Null	255
	Representative	Id of employee who represents the client.	VARCHAR	Foreign Key	Not Null	25
Cases	Case_No	Represents the case.	VARCHAR	Primary Key	Not Null	25
	Case_Of	Client's ID	VARCHAR	Foreign Key	Not Null	25
	Title	Name of case.	VARCHAR		Not Null	255
	Case_Handler	Employee ID who handled it.	VARCHAR		Not Null	255
Case Details	SN	Case number.	VARCHAR	Foreign Key	Not Null	25
	Outcome	Result of the case	VARCHAR		Not Null	255
	Starting_Date	Case started on.	VARCHAR		Not Null	255
	Closing_Date	Case closed on.	VARCHAR		Not Null	255
	Invoice_No	Invoice No of the charged amount.	VARCHAR	Primary Key	Not Null	25
Payments Table	Bill_No	Invoice Number.	VARCHAR	Foreign Key	Not Null	25
	Paid_By	Client's ID	VARCHAR	Foreign Key	Not Null	25

	Amount\$	Total Money.	INT		Not Null	15
	Paid_To	Case handlers ID.	VARCHAR		Not Null	100

Table 1 Data Dictionary of database

## Test Data

### Employee Table:

```
MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E1', 'Harvey', 'Specter', 'Attorney');
Query OK, 1 row affected (0.07 sec)

MariaDB [Shah_Associates_and_Attorney]> select * from employee;
+-----+-----+-----+-----+
| Employee_ID | First_Name | Last_Name | Position |
+-----+-----+-----+-----+
| E1          | Harvey    | Specter   | Attorney |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E2', 'Mike', 'Ross', 'Attorney');
Query OK, 1 row affected (0.07 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E3', 'Louis', 'Lit', 'Attorney');
Query OK, 1 row affected (0.06 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E4', 'Jessica', 'Pearson', 'Attorney');
Query OK, 1 row affected (0.06 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E5', 'Rachel', 'Zane', 'Associate');
Query OK, 1 row affected (0.04 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E6', 'Daniel', 'Hardman', 'Attorney');
Query OK, 1 row affected (0.07 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E7', 'Travis', 'Tanner', 'Associate');
Query OK, 1 row affected (0.07 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E8', 'Jenny', 'Griffith', 'Associate');
Query OK, 1 row affected (0.06 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E9', 'Prayash', 'Shah', 'Attorney');
Query OK, 1 row affected (0.06 sec)

MariaDB [Shah_Associates_and_Attorney]> insert into employee(Employee_ID, First_Name, Last_Name, Position) values('E10', 'Pratik', 'Shah', 'Associate');
Query OK, 1 row affected (0.08 sec)

MariaDB [Shah_Associates_and_Attorney]>
```

Figure 26 Inserting Values in the employee table

After creating the employee table, the data are inserted in the table as shown in the above figure.

```
MariaDB [shah_associates_and_attorney]> select * from employee;
+-----+-----+-----+-----+
| Employee_ID | First_Name | Last_Name | Position |
+-----+-----+-----+-----+
| E1          | Harvey    | Specter   | Attorney |
| E10         | Pratik     | Shah      | Associate |
| E2          | Mike      | Ross      | Attorney |
| E3          | Louis     | Lit       | Attorney |
| E4          | Jessica   | Pearson   | Attorney |
| E5          | Rachel    | Zane      | Associate |
| E6          | Daniel    | Hardman   | Attorney |
| E7          | Travis    | Tanner    | Associate |
| E8          | Jenny     | Griffith  | Associate |
| E9          | Prayash   | Shah      | Attorney |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Figure 27 Displaying the values in the table

The above figure is displaying the table employee after the values were inserted into it.

## Clients Table:

```
MariaDB [shah_associates_and_attorney]> select * from clients;
+-----+-----+-----+
| Client_ID | Name | Representative |
+-----+-----+-----+
| C1        | Ford | E1             |
+-----+-----+-----+
1 row in set (0.00 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C2','Peoples_Bank','E6');
Query OK, 1 row affected (0.08 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C3','Mr.Patrick Bikram Shah','E2');
Query OK, 1 row affected (0.06 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C4','Nepal Food and Beverage','E9');
Query OK, 1 row affected (0.07 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C5','Acer','E4');
Query OK, 1 row affected (0.09 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C6','Honda','E3');
Query OK, 1 row affected (0.06 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C7','Mercedes','E9');
Query OK, 1 row affected (0.06 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C8','Google','E4');
Query OK, 1 row affected (0.06 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C9','Ambe Housing','E3');
Query OK, 1 row affected (0.06 sec)

MariaDB [shah_associates_and_attorney]> insert into clients(Client_ID,Name,Representative) values('C10','Miss.Donna Paulsen','E1');
Query OK, 1 row affected (0.06 sec)
```

Figure 28 Inserting values in Clients table

After creating the table clients, the values were inserted as shown in the above figure.

```
MariaDB [shah_associates_and_attorney]> select * from clients;
+-----+-----+-----+
| Client_ID | Name | Representative |
+-----+-----+-----+
| C1        | Ford | E1             |
| C10       | Miss.Donna Paulsen | E1             |
| C2        | Peoples_Bank | E6             |
| C3        | Mr.Patrick Bikram Shah | E2             |
| C4        | Nepal Food and Beverage | E9             |
| C5        | Acer | E4             |
| C6        | Honda | E3             |
| C7        | Mercedes | E9             |
| C8        | Google | E4             |
| C9        | Ambe Housing | E3             |
+-----+-----+-----+
10 rows in set (0.00 sec)
```

Figure 29 Displaying values in Clients table

After inserting the value, the above figure shows the table being displayed after the value were inserted into the fields of the clients table.

## Cases Table:

```
> insert into Cases(Case_No,Case_Of,Title,Case_Handler)
'PBS1','C3','Conspiracy of Committing Fraud','Mike Ross and Louis Lit');
```

Figure 30 Inserting Value in cases table-1

The above figure shows inserting values for one row in the cases table.

```
insert into Cases values('PBS2','C2','Frozen Bank Account','Daniel Hardman');
μ affected (0.19 sec)

insert into Cases values('PBS3','C10','Perjury','Harvey Specter');
μ affected (0.06 sec)

insert into Cases values('PBS4','C5','Takeover of Dell','Jessica Pearson');
μ affected (0.08 sec)

insert into Cases values('PBS5','C4','Trademark Copyright','Prayash Shah and Jenny Griffith');
μ affected (0.08 sec)

insert into Cases values('PBS6','C6','Insurance','Louis Lit and Rachel Zane');
μ affected (0.08 sec)

insert into Cases values('PBS7','C7','Takeover of Tata','Prayash Shah and Pratik Shah');
μ affected (0.09 sec)

insert into Cases values('PBS8','C9','Insurance','Louis Lit and Rachel Zane');
μ affected (0.09 sec)

insert into Cases values('PBS9','C1','Takeover Of Hyundai','Harvey Specter and Pratik Shah');
μ affected (0.08 sec)

insert into Cases values('PBS10','C8','Idea Collision With Yahoo','Jessica Pearson and Harvey Specter');
μ affected (0.08 sec)
```

Figure 31 Inserting values in cases table-2

As before this above figure is showing the example of inserting values of the Cases table.

```
MariaDB [shah_associates_and_attorney]> select * from cases;
+-----+-----+-----+-----+
| Case_No | Case_Of | Title | Case_Handler |
+-----+-----+-----+-----+
| PBS1 | C3 | Conspiracy of Committing Fraud | Mike Ross and Louis Lit |
| PBS10 | C8 | Idea Collision with Yahoo | Jessica Pearson and Harvey Specter |
| PBS2 | C2 | Frozen Bank Account | Daniel Hardman |
| PBS3 | C10 | Perjury | Harvey Specter |
| PBS4 | C5 | Takeover of Dell | Jessica Pearson |
| PBS5 | C4 | Trademark Copyright | Prayash Shah and Jenny Griffith |
| PBS6 | C6 | Insurance | Louis Lit and Rachel Zane |
| PBS7 | C7 | Takeover of Tata | Prayash Shah and Pratik Shah |
| PBS8 | C9 | Insurance | Louis Lit and Rachel Zane |
| PBS9 | C1 | Takeover of Hyundai | Harvey Specter and Pratik Shah |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Figure 32 Displaying values in cases table

After inserting the value, the above figure shows the table with the values inserted in it.

## Case Details Table:

```

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS3','Won','Feb 16th,2016','Mar 20th,2016','IN3');
Query OK, 1 row affected (0.06 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS4','Settled','Aug 16th,2016','Sept 25th,2016','IN4');
Query OK, 1 row affected (0.08 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS5','Won','Sept 28th,2016','Oct 15th,2016','IN5');
Query OK, 1 row affected (0.08 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS6','Lost','Oct 20th,2016','Nov 16th,2016','IN6');
Query OK, 1 row affected (0.07 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS7','Settled','Nov 21st,2016','Dec 20th,2016','IN7');
Query OK, 1 row affected (0.07 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS8','Lost','Dec 27th,2016','Jan 14th,2017','IN8');
Query OK, 1 row affected (0.07 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS9','Settled','Jan 20th,2017','Feb 14th,2017','IN9');
Query OK, 1 row affected (0.07 sec)

MariaDB [shah_associates_and_attorney]> insert into case_details(SN,Outcome,Starting_Date,Closing_Date,Invoice_No) values('PBS10','Won','Feb 18th,2017','Mar 15th,2017','IN10');
Query OK, 1 row affected (0.06 sec)

```

Figure 33 Inserting values in case details table

The above figure shows some of the values being inserted in the case details table.

```

MariaDB [shah_associates_and_attorney]> select * from case_details;
+-----+-----+-----+-----+-----+
| SN    | Outcome | Starting_Date | Closing_Date | Invoice_No |
+-----+-----+-----+-----+-----+
| PBS1  | Won     | Jan 1st,2016  | Jan 20th,2016 | IN1       |
| PBS10 | Won     | Feb 18th,2017 | Mar 15th,2017 | IN10      |
| PBS2  | Settled | Jan 25th,2016 | Feb 1st,2016  | IN2       |
| PBS3  | Won     | Feb 16th,2016 | Mar 20th,2016 | IN3       |
| PBS4  | Settled | Aug 16th,2016 | Sept 25th,2016 | IN4       |
| PBS5  | Won     | Sept 28th,2016 | Oct 15th,2016 | IN5       |
| PBS6  | Lost    | Oct 20th,2016 | Nov 16th,2016 | IN6       |
| PBS7  | Settled | Nov 21st,2016 | Dec 20th,2016 | IN7       |
| PBS8  | Lost    | Dec 27th,2016 | Jan 14th,2017 | IN8       |
| PBS9  | Settled | Jan 20th,2017 | Feb 14th,2017 | IN9       |
+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)

```

Figure 34 Displaying the values of case details table

The above figure is the table with the values that have been inserted.

## Payments Table:

```
MariaDB [shah_associates_and_attorney1] select * from payments;
+-----+-----+-----+-----+
| Bill_No | Paid_By | Amount$ | Paid_To |
+-----+-----+-----+-----+
| IN1     | C3      | 100     | E2 and E3 |
| IN2     | C2      | 700000  | E6        |
| IN3     | C10     | 100     | E1        |
| IN4     | C5      | 700000  | E4        |
| IN5     | C4      | 100     | E9 and E8 |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

MariaDB [shah_associates_and_attorney1] insert into payments(Bill_No,Paid_By,Amount$,Paid_To) values
('IN6','C6','30,000','E3 and E5');
Query OK, 1 row affected, 1 warning (0.02 sec)

MariaDB [shah_associates_and_attorney1] insert into payments(Bill_No,Paid_By,Amount$,Paid_To) values
('IN7','C7','70,000','E9 and E10');
Query OK, 1 row affected, 1 warning (0.06 sec)

MariaDB [shah_associates_and_attorney1] insert into payments(Bill_No,Paid_By,Amount$,Paid_To) values
('IN8','C9','30,000','E3 and E5');
Query OK, 1 row affected, 1 warning (0.06 sec)

MariaDB [shah_associates_and_attorney1] insert into payments(Bill_No,Paid_By,Amount$,Paid_To) values
('IN9','C1','70,000','E1 and E10');
Query OK, 1 row affected, 1 warning (0.07 sec)

MariaDB [shah_associates_and_attorney1] insert into payments(Bill_No,Paid_By,Amount$,Paid_To) values
('IN10','C8','100,000','E4 and E1');
Query OK, 1 row affected, 1 warning (0.06 sec)
```

Figure 35 Inserting values in payments table

Above figure shows how values were inserted in payments table.

```
MariaDB [shah_associates_and_attorney1] SELECT * FROM payments;
+-----+-----+-----+-----+
| Bill_No | Paid_By | Amount$ | Paid_To |
+-----+-----+-----+-----+
| IN1     | C3      | 100000  | E2 and E3 |
| IN2     | C2      | 700000  | E6        |
| IN3     | C10     | 100000  | E1        |
| IN4     | C5      | 700000  | E4        |
| IN5     | C4      | 100000  | E9 and E8 |
| IN6     | C6      | 300000  | E3 and E5 |
| IN7     | C7      | 700000  | E9 and E10 |
| IN8     | C9      | 300000  | E3 and E5 |
| IN9     | C1      | 700000  | E1 and E10 |
| IN10    | C8      | 100000  | E4 and E1 |
+-----+-----+-----+-----+
10 rows in set (0.05 sec)
```

Figure 36 Displaying values in payments table

This above figure is the output of table that shows all the values entered in the payments table.



## Queries

1. Display all the data from the table Case Details.

```
SELECT * FROM case_details;
```

```
MariaDB [shah_associates_and_attorney]> select * from case_details;
+-----+-----+-----+-----+-----+
| SN      | Outcome | Starting_Date | Closing_Date | Invoice_No |
+-----+-----+-----+-----+-----+
| PBS1    | Won     | Jan 1st,2016  | Jan 20th,2016 | IN1       |
| PBS10   | Won     | Feb 18th,2017 | Mar 15th,2017 | IN10      |
| PBS2    | Settled | Jan 25th,2016 | Feb 1st,2016  | IN2       |
| PBS3    | Won     | Feb 16th,2016 | Mar 20th,2016 | IN3       |
| PBS4    | Settled | Aug 16th,2016 | Sept 25th,2016 | IN4       |
| PBS5    | Won     | Sept 28th,2016 | Oct 15th,2016 | IN5       |
| PBS6    | Lost    | Oct 20th,2016 | Nov 16th,2016 | IN6       |
| PBS7    | Settled | Nov 21st,2016 | Dec 20th,2016 | IN7       |
| PBS8    | Lost    | Dec 27th,2016 | Jan 14th,2017 | IN8       |
| PBS9    | Settled | Jan 20th,2017 | Feb 14th,2017 | IN9       |
+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Figure 37 Queries: Output 1

2. Display the case number and its result.

```
SELECT SN,Outcome FROM case_details;
```

```
MariaDB [shah_associates_and_attorney]> SELECT SN,Outcome FROM case_details;
+-----+-----+
| SN      | Outcome |
+-----+-----+
| PBS1    | Won     |
| PBS10   | Won     |
| PBS2    | Settled |
| PBS3    | Won     |
| PBS4    | Settled |
| PBS5    | Won     |
| PBS6    | Lost    |
| PBS7    | Settled |
| PBS8    | Lost    |
| PBS9    | Settled |
+-----+-----+
10 rows in set (0.12 sec)
```

Figure 38 Queries: Output 2

3. Display the minimum value of the column Amount\$ of table Payments.

```
SELECT MIN(Amount$) AS Amount$ FROM payments;
```

```
MariaDB [shah_associates_and_attorney]> SELECT MIN(Amount$) AS Amount$ FROM payments;
+-----+
| Amount$ |
+-----+
| 300000  |
+-----+
1 row in set (0.06 sec)
```

Figure 39 Queries: Output 3

4. Display table employee in ascending order by the column first name.

```
SELECT * FROM employee ORDER BY First_Name ASC;
```

```
MariaDB [shah_associates_and_attorney]> SELECT * FROM employee ORDER BY First_Name ASC;
```

Employee_ID	First_Name	Last_Name	Position
E6	Daniel	Hardman	Attorney
E1	Harvey	Specter	Attorney
E8	Jenny	Griffith	Associate
E4	Jessica	Pearson	Attorney
E3	Louis	Lit	Attorney
E2	Mike	Ross	Attorney
E10	Pratik	Shah	Associate
E9	Prayash	Shah	Attorney
E5	Rachel	Zane	Associate
E7	Travis	Tanner	Associate

```
10 rows in set (0.08 sec)
```

Figure 40 Queries: Output 4

- Display two tables cases and case\_details together.  
 SELECT \* FROM employee INNER JOIN clients WHERE  
 employee.Employee\_ID=clients.representative;

```
MariaDB [shah_associates_and_attorney]> SELECT * FROM employee INNER JOIN clients WHERE employee.Employee_ID=clients.representative;
```

Employee_ID	First_Name	Last_Name	Position	Client_ID	Name	Representative
E1	Harvey	Specter	Attorney	C1	Ford	E1
E1	Harvey	Specter	Attorney	C10	Miss.Donna Paulsen	E1
E6	Daniel	Hardman	Attorney	C2	Peoples_Bank	E6
E2	Mike	Ross	Attorney	C3	Mr.Patrick Bikram Shah	E2
E9	Prayash	Shah	Attorney	C4	Nepal Food and Beverage	E9
E4	Jessica	Pearson	Attorney	C5	Acer	E4
E3	Louis	Lit	Attorney	C6	Honda	E3
E9	Prayash	Shah	Attorney	C7	Mercedes	E9
E4	Jessica	Pearson	Attorney	C8	Google	E4
E3	Louis	Lit	Attorney	C9	Ambe Housing	E3

```
10 rows in set (0.05 sec)
```

Figure 41 Queries: Output 5

- Display the clients whose name starts with 'A' from client table.  
 SELECT \* FROM clients WHERE name LIKE "A%";

```
MariaDB [shah_associates_and_attorney]> SELECT * FROM clients WHERE name LIKE "A%";
```

Client_ID	Name	Representative
C5	Acer	E4
C9	Ambe Housing	E3

```
2 rows in set (0.00 sec)
```

Figure 42 Queries: Output 6

## Research

Knowledge is gained only when we read or study about something somewhere. Even to create an idea there must be a part of knowledge that led us to that idea of ours. A lot of research and findings were necessary while doing this project and I gained a lot of knowledge that I needed to complete my documentation and this assessment and I even gained some extra knowledge that was not necessary for this project.

In this section I am going to show some of the research I did and what did I gain from it. The below Figure shows the site where I gained knowledge about Data Dictionary for making one in my documentation and what it is and how is it useful. Data Dictionary is table where all the details of the fields or attributes of tables that are included in the database are described with the type, length, keys and default values. (Oracle Corporation., 2002)

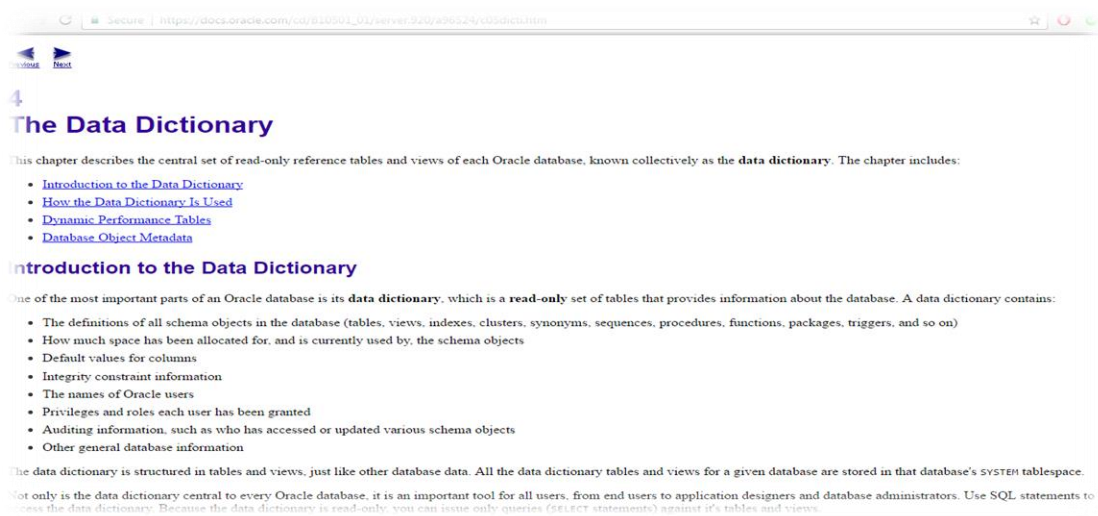


Figure 43 Research 1



Figure 44 Research 2

The above figure is a digital library where I logged in for looking up e-books, journals, conference proceedings. I accessed this library using the username password given by London Metropolitan University.

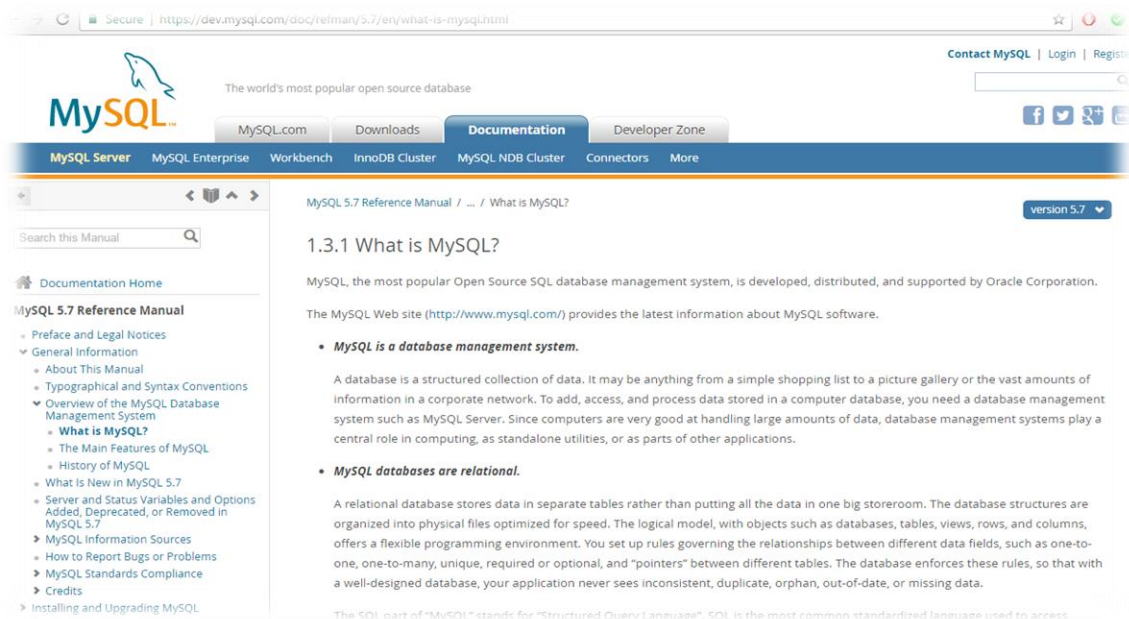


Figure 45 Research 3

The above Figure is the site where I learned that My SQL is a database management system, it is an open source which is very fast and reliable and using it is easy. This works in embedded system and also in a client or server system. (Oracle Corporation, 2017)

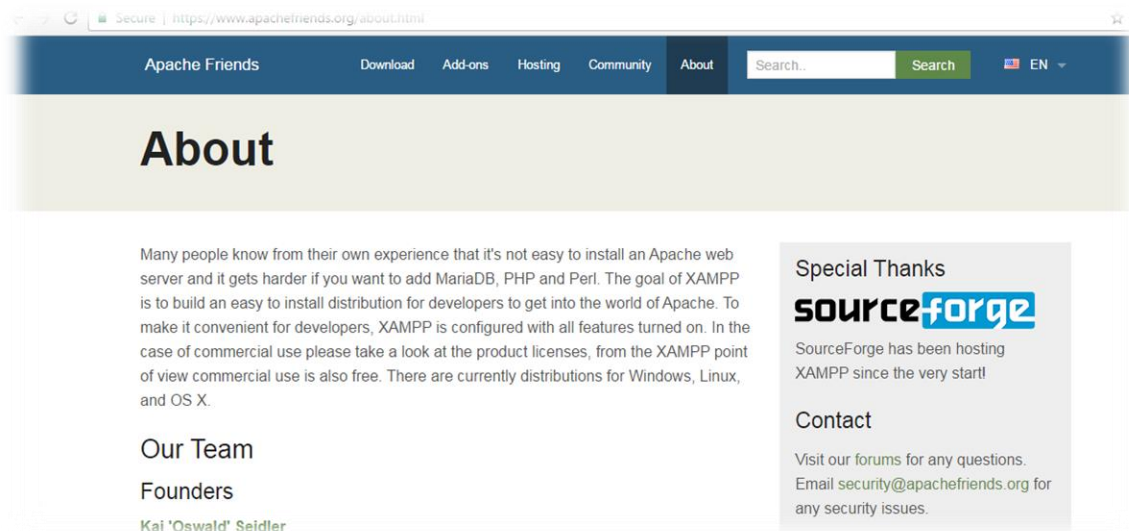


Figure 46 Research 4

The above figure is the site where I learned about XAMPP.

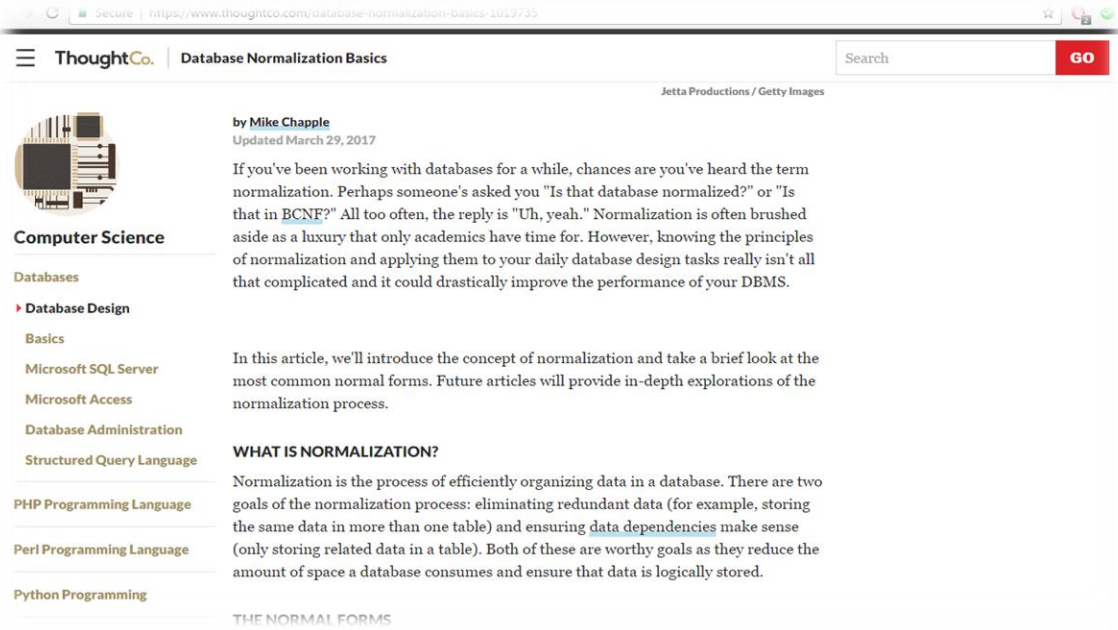


Figure 47 Research 5

www.guru99.com/database-normalization.html#2

ROBERT PHIL | 5 AVENUE | Clash of the Titans | Mr.

*Names are common. Hence you need name as well Address to uniquely identify a record.*

Hence we require both Full Name and Address to uniquely identify a record. This is a composite key.

Let's move into second normal form 2NF

**2NF (Second Normal Form) Rules**

- Rule 1- Be in 1NF
- Rule 2- Single Column Primary Key

It is clear that we can't move forward to make our simple database in 2<sup>nd</sup> Normalization form unless we partition the table above.

MEMBERSHIP ID	FULL NAMES	PHYSICAL ADDRESS	SALUTATION
1	Janet Jones	First Street Plot No 4	Ms.
2	Robert Phil	3 <sup>rd</sup> Street 34	Mr.
3	Robert Phil	5 <sup>th</sup> Avenue	Mr.

Table 1

MEMBERSHIP ID	MOVIES RENTED
1	Pirates of the Caribbean
1	Clash of the Titans
2	Forgetting Sarah Marshal
2	Daddy's Little Girls
3	Clash of the Titans

Table 2

We have divided our 1NF table into two tables viz. Table 1 and Table2. Table 1 contains member information. Table 2 contains information on movies rented.

Figure 48 Research 6



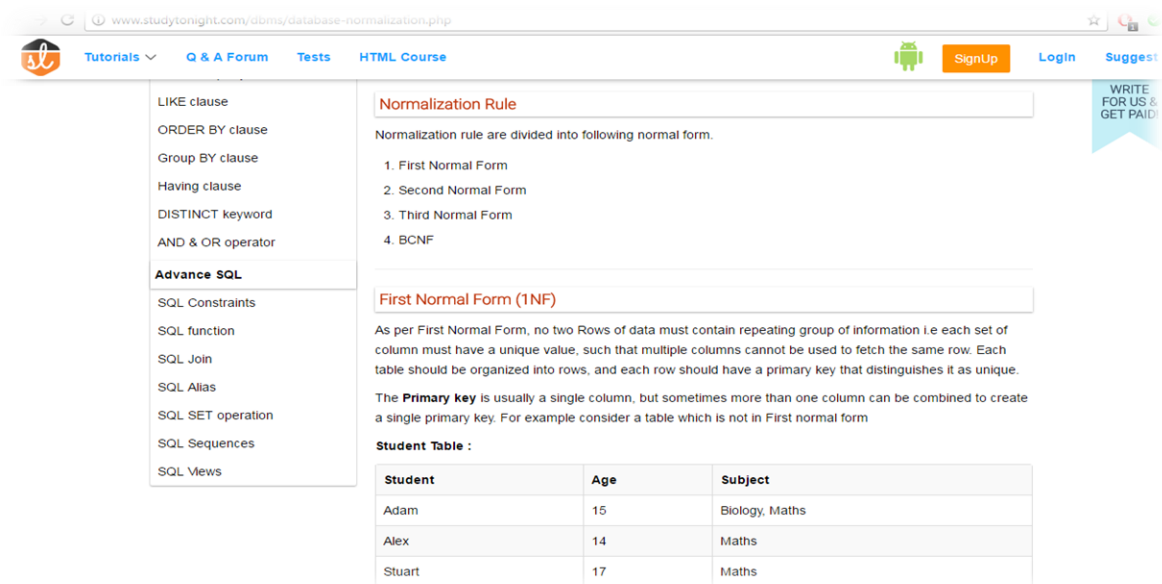


Figure 49 Research 7

The above Figure Research 45,46 and 47 are the website where I learned about Normalization and its importance while creating a database. In this project I just had to use 2 forms of normalization which are First Normal Form (1NF) and the other one which Second Normal Form (2NF) which can be done only after creating 1NF table from Un-normalized table.

As I mentioned I created a database on an imaginary law firm that I made up and for that idea to come up was because of a TV Show named Suits. The Figure 48 shows the website of this TV Show. I have taken the name of characters of this show for my employee table and also in client table. But all my cases or clients are not created from this show as I have inserted some values on my own. (NBCUNIVERSAL, 2017)

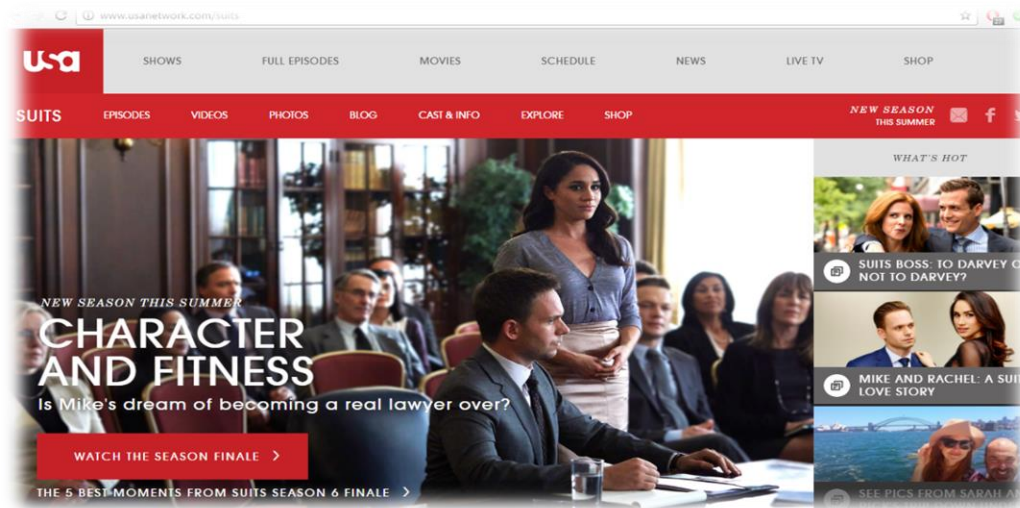


Figure 50 Research 8

## Testing:

### Test 1:

```
MariaDB [Shah_Associates_and_Attorney]> create table Case(Case_No varchar(25) PR  
IMARY KEY not null,Case_Of varchar(25) not null,Title varchar(255) not null,Cas  
e_Handler varchar(255) not null, FOREIGN KEY(Case_Of) REFERENCES clients(Client_I  
D));  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that  
corresponds to your MariaDB server version for the right syntax to use near 'Cas  
e(Case_No varchar(25) PRIMARY KEY not null,Case_Of varchar(25) not null,Title' a  
t line 1
```

Figure 51 Test 1 Error

```
MariaDB [Shah_Associates_and_Attorney]> create table Cases(Case_No varchar(25) P  
RIMARY KEY not null,Case_Of varchar(25) not null,Title varchar(255) not null,Cas  
e_Handler varchar(255) not null, FOREIGN KEY(Case_Of) REFERENCES clients(Client_  
ID));  
Query OK, 0 rows affected (0.30 sec)  
  
MariaDB [Shah_Associates_and_Attorney]> describe cases;  
+-----+-----+-----+-----+-----+-----+  
| Field      | Type      | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| Case_No    | varchar(25) | NO   | PRI | NULL    |      |  
| Case_Of    | varchar(25) | NO   | MUL | NULL    |      |  
| Title      | varchar(255) | NO   |     | NULL    |      |  
| Case_Handler | varchar(255) | NO   |     | NULL    |      |  
+-----+-----+-----+-----+-----+-----+  
4 rows in set (0.01 sec)
```

Figure 52 Test 1 Error Solution

Test No.	1
Action	Creating cases table.
Expected Result	To keep records of the cases.
Actual Result	Table name was a command of MySQL.
Conclusion	Changed the name of the table from case to cases as table name cannot be a command of MySQL.

### Test 2:

```
MariaDB [(none)]> create database Shah Associates and Attorney;  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that  
corresponds to your MariaDB server version for the right syntax to use near 'Ass  
ociates and Attorney' at line 1
```

Figure 53 Test 2 Error

```
MariaDB [(none)]> create database Shah_Associates_and_Attorney;  
Query OK, 1 row affected (0.02 sec)
```

Figure 54 Test 2 Error Solution

Test No.	2
Action	Creating Database.
Expected Result	Creation of Database.
Actual Result	Spaces cannot be used while naming a database.
Conclusion	To remove the spacing I used hyphen in between words so that there would be no spacing while naming the database and after doing this the problem was solved.

### Test 3:

```

+-----+-----+-----+-----+
| Bill_No | Paid_By | Amount$ | Paid_To |
+-----+-----+-----+-----+
| IN1     | C3      | 100     | E2 and E3 |
| IN2     | C2      | 70000   | E6        |
| IN3     | C10     | 100     | E1        |
| IN4     | C5      | 70000   | E4        |
| IN5     | C4      | 100     | E9 and E8 |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

MariaDB [shah_associates_and_attorney]> insert into payments(Bill_No,Paid_By,Amount$,Paid_To) values
('IN6','C6','30,000','E3 and E5');
Query OK, 1 row affected, 1 warning (0.02 sec)

```

Figure 55 Test 3 Error

```

MariaDB [shah_associates_and_attorney]> UPDATE payments SET Amount$=100000 WHERE Bill_No='IN10';
Query OK, 1 row affected (0.06 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [shah_associates_and_attorney]> select * from payments;
+-----+-----+-----+-----+
| Bill_No | Paid_By | Amount$ | Paid_To |
+-----+-----+-----+-----+
| IN1     | C3      | 100000   | E2 and E3 |
| IN2     | C2      | 70000    | E6        |
| IN3     | C10     | 100000   | E1        |
| IN4     | C5      | 70000    | E4        |
| IN5     | C4      | 100000   | E9 and E8 |
| IN6     | C6      | 30000    | E3 and E5 |
| IN7     | C7      | 70000    | E9 and E10 |
| IN8     | C9      | 30000    | E3 and E5 |
| IN9     | C1      | 70000    | E1 and E10 |
| IN10    | C8      | 100000   | E4 and E1 |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)

```

Figure 56 Test 3 Error Solution

Test No.	3
Action	Inserting value in the payment table.
Expected Result	Proper value inserted in the table.
Actual Result	Used comma while entering value of amount section. i.e. '30,000'
Conclusion	Entered the value of amounts without using comma. i.e. '30000'



## Test 4:

```
MariaDB [Shah_Associates_and_Attorney]> SELECT * FROM employee WHERE Position=Associate;
ERROR 1054 (42S22): Unknown column 'Associate' in 'where clause'
MariaDB [Shah_Associates_and_Attorney]> _
```

Figure 57 Test 4 Error

```
MariaDB [Shah_Associates_and_Attorney]> SELECT * FROM employee WHERE Position='Associate';
+-----+-----+-----+-----+
| Employee_ID | First_Name | Last_Name | Position |
+-----+-----+-----+-----+
| E10         | Pratik    | Shah     | Associate |
| E5          | Rachel    | Zane     | Associate |
| E7          | Travis    | Tanner   | Associate |
| E8          | Jenny     | Griffith | Associate |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

Figure 58 Test 4 Error Solution

Test No.	4
Action	Displaying all the associates from the employee table.
Expected Result	All data of associates displayed.
Actual Result	Did not use single quotation mark while writing Associates.
Conclusion	In the second figure above I used the quotation mark and the error was solved.

## Test 5:

```
MariaDB [Shah_Associates_and_Attorney]> display * from cases;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your
MariaDB server version for the right syntax to use near 'display * from cases' at line 1
```

Figure 59 Test 5 Error

```
MariaDB [Shah_Associates_and_Attorney]> select * from cases;
+-----+-----+-----+-----+
| Case_No | Case_Of | Title | Case_Handler |
+-----+-----+-----+-----+
| PBS1    | C3      | Conspiracy of Committing Fraud | Mike Ross and Louis Lit |
| PBS10   | C8      | Idea Collision with Yahoo | Jessica Pearson and Harvey Specter |
| PBS2    | C2      | Frozen Bank Account | Daniel Hardman |
| PBS3    | C10     | Perjury | Harvey Specter |
| PBS4    | C5      | Takeover of Dell | Jessica Pearson |
| PBS5    | C4      | Trademark Copyright | Prayash Shah and Jenny Griffith |
| PBS6    | C6      | Insurance | Louis Lit and Rachel Zane |
| PBS7    | C7      | Takeover of Tata | Prayash Shah and Pratik Shah |
| PBS8    | C9      | Insurance | Louis Lit and Rachel Zane |
| PBS9    | C1      | Takeover of Hyundai | Harvey Specter and Pratik Shah |
+-----+-----+-----+-----+
10 rows in set (0.09 sec)
```

Figure 60 Test 5 Error Solution

Test No.	5
Action	Displaying all the values inserted in cases table.
Expected Result	All data of cases table.
Actual Result	Error in SQL Syntax
Conclusion	In the second figure above instead of using display I used select and the result was displayed without any error.

## Test 6:

```
MariaDB [shah_associates_and_attorneyl> describe table case_details;  
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your  
MariaDB server version for the right syntax to use near 'table case_details' at line 1
```

Figure 61 Error 6

```
MariaDB [shah_associates_and_attorneyl> describe case_details;  
+-----+-----+-----+-----+-----+-----+  
| Field      | Type      | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| SN         | varchar(25) | NO   | MUL | NULL     |       |  
| Outcome    | varchar(255) | NO   |     | NULL     |       |  
| Starting_Date | varchar(255) | NO   |     | NULL     |       |  
| Closing_Date | varchar(255) | NO   |     | NULL     |       |  
| Invoice_No  | varchar(25) | NO   | PRI | NULL     |       |  
+-----+-----+-----+-----+-----+-----+  
5 rows in set (1.17 sec)
```

Figure 62 Error 6 Solution

Test No.	6
Action	Description of table case details.
Expected Result	Description of the fields of case details table.
Actual Result	Error SQL Syntax.
Conclusion	While writing code for description I just had to use describe and tablename not describe table and tablename.

## Conclusion

Assessment is not just about learning the topic related to it, while doing an assessment I got learn about management of time and division of task as per the deadline of submission, and facing the obstacles head on thinking logically. The topic that is related to this assessment was taught by my teacher in the class so it was not something new that I was doing it by my own research and findings. Lectures, tutorial and lab classes that was held related to this topic helped a lot for thinking and creating the idea and path for completing this course work.

In this coursework I learned a lot about database management system and its uses. I learned about relational model, data dictionary, creating queries for the database I created as well as database forms. I learned a lot about the primary key and foreign key and its uses, MySQL coding which was bundled with XAMPP. I learned how the database is created using proper set of rules and making a database easily accessible and logical. Representing the whole model of the database should be done by Entity Relational Diagram which was a new topic that I conquered while working on this course work. No one is perfect in their first try so I had many errors while creating tables in the shell and plus my absence for four days in middle due to personal reason affected me as I was not able to code smoothly but I researched and learned it from the lecture slides that was provided by my teacher and completed and learned the codes properly.

Thus, it was a great opportunity to work alone and explore my weakness and strength while doing a coursework or a project and completing it on time.

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