Rajshahi University of Engineering & Technology

Department of Electrical and Computer Engineering

Course Code: ECE 2216

Course Title: Data Base Systems Sessional

Lab Report No : 01

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Submitted To	**Submitted By**
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Experiment no: 01

Experiment name: Creating a Database in XAMPP and implementing basic SQL queries.

Objectives:

- To understand basic SQL commands
  (CREATE, INSERT, ALTER, UPDATE, RENAME, DELETE, WHERE, MODIFY, SET, TRUNCATE, DROP)
- To understand the difference between DDL and DML.

Theory:

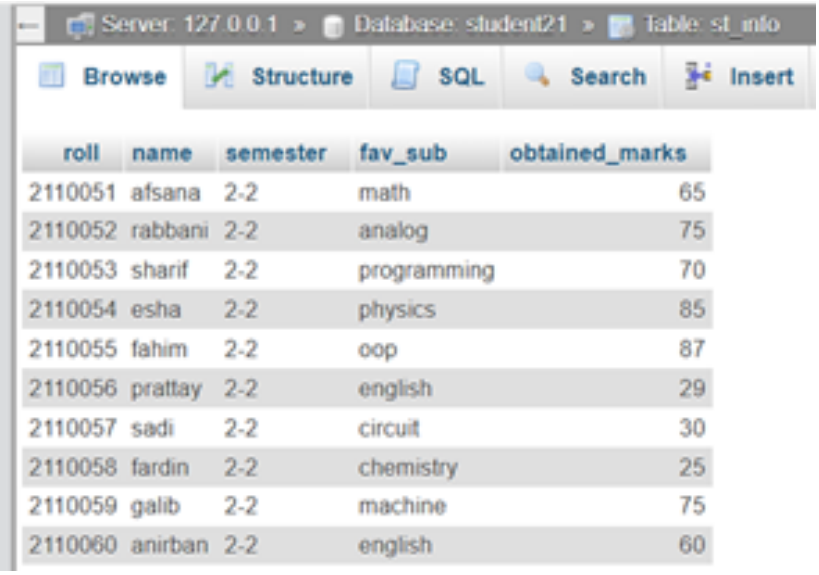
A database is an organized collection of data or a type of data store based on the use of a database management system (DBMS), the software that interacts with end users, applications, and the database itself to capture and analyze the data.[1] SQL (Structured Query Language) is a standard programming language specifically designed for managing and manipulating relational databases. XAMPP is a free and open-source cross-platform web server solution stack package. It allows developers to create local web servers to test and develop websites or web applications on their own systems without needing access to an internet-connected server. phpMyadmin is a web-based tool that helps manage databases, particularly MySQL/MariaDB, using a graphical user interface (GUI). It allows users to create databases, manage tables, execute SQL queries, and import/export data without needing command-line interactions.[2]

Task-1 : Create a database and table (for 10 students)

Code:

```
>CREATE DATABASE student21;
>CREATE TABLE st_info (roll INT(255), name TEXT(255), semester VARCHAR(255),fav_sub TEXT(255),obtained_marks INT(255));
>SELECT * FROM `st_info`
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110051','afsana','2-2','math','65');
>SELECT * FROM `st_info`
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110052','rabbani','2-2','analog','75');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110053','sharif','2-2','programming','70');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110054','esha','2-2','physics','85');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110055','fahim','2-2','oop','87');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110056','prattay','2-2','english','29');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110057','sadi','2-2','circuit','30');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110058','fardin','2-2','chemistry','25');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110059','galib','2-2','machine','75');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110060','anirban','2-2','english','60');
```

Output:



roll	name	semester	fav_sub	obtained_marks
2110051	afsana	2-2	math	65
2110052	rabbani	2-2	analog	75
2110053	sharif	2-2	programming	70
2110054	esha	2-2	physics	85
2110055	fahim	2-2	oop	87
2110056	prattay	2-2	english	29
2110057	sadi	2-2	circuit	30
2110058	fardin	2-2	chemistry	25
2110059	galib	2-2	machine	75
2110060	anirban	2-2	english	60

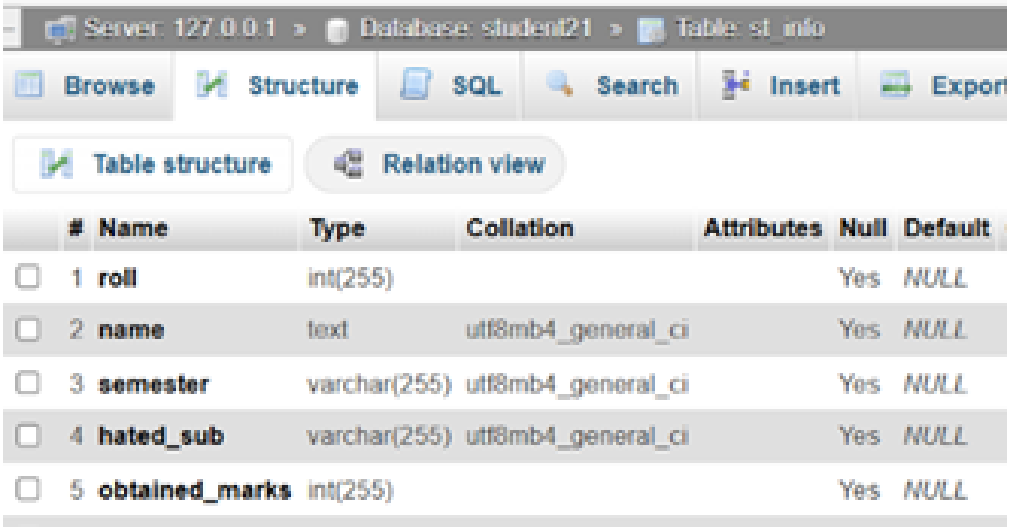
Details : Using CREATE command we created a database and table. And using the INSERT command we inserted data into the table.

Task-2 : Change a specific column name and data type.

Code:

```
>SELECT * FROM `st_info`
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110052','rabbani','2-2','analog','75');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110053','sharif','2-2','programming','70');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110054','esha','2-2','physics','85');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110055','fahim','2-2','oop','87');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110056','prattay','2-2','english','29');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110057','sadi','2-2','circuit','30');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110058','fardin','2-2','chemistry','25');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110059','galib','2-2','machine','75');
>INSERT INTO st_info (roll,name,semester,fav_sub,obtained_marks) VALUES ('2110060','anirban','2-2','english','60');
>SELECT * FROM `st_info`
>ALTER TABLE st_info CHANGE COLUMN fav_sub hated_sub TEXT(255);
>ALTER TABLE st_info MODIFY COLUMN hated_sub VARCHAR(255);
```

Output:



#	Name	Type	Collation	Attributes	Null	Default
1	roll	int(255)			Yes	NULL
2	name	text	utf8mb4_general_ci		Yes	NULL
3	semester	varchar(255)	utf8mb4_general_ci		Yes	NULL
4	hated_sub	varchar(255)	utf8mb4_general_ci		Yes	NULL
5	obtained_marks	int(255)			Yes	NULL

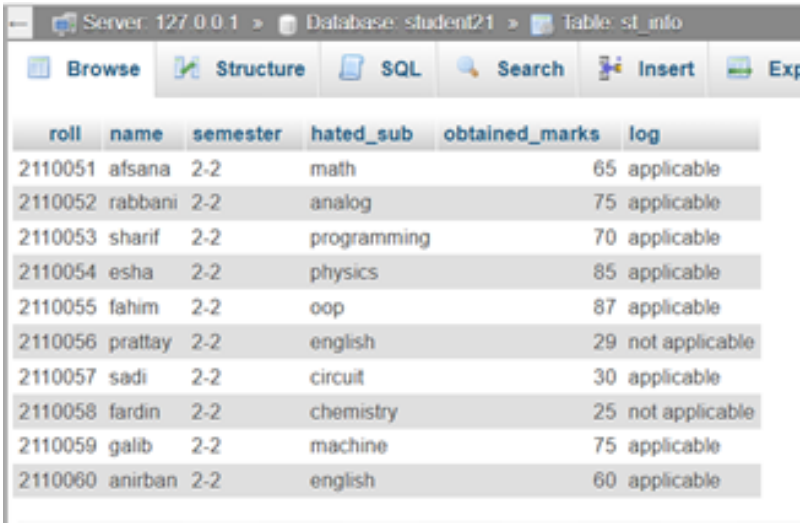
Details : Using the ALTER & CHANGE command we changed the name of the column from "fav_sub" to "hated_sub". Using the MODIFY command we changed the data type from " TEXT" to "VARCHAR".

Task-3 : Add a new column named as log. Set the value applicable for the condition (>=30) not applicable for the condition (<30).

Code:

```
>ALTER TABLE st_info ADD COLUMN log TEXT(255);
>SELECT * FROM `st_info`
>UPDATE st_info SET log='applicable' WHERE obtained_marks>=30;
>SELECT * FROM `st_info`
>UPDATE st_info SET log='not applicable' WHERE obtained_marks<30;
>SELECT * FROM `st_info`
```

Output:



roll	name	semester	hated_sub	obtained_marks	log
2110051	afsana	2-2	math	65	applicable
2110052	rabbani	2-2	analog	75	applicable
2110053	sharif	2-2	programming	70	applicable
2110054	esha	2-2	physics	85	applicable
2110055	fahim	2-2	oop	87	applicable
2110056	prattay	2-2	english	29	not applicable
2110057	sadi	2-2	circuit	30	applicable
2110058	fardin	2-2	chemistry	25	not applicable
2110059	galib	2-2	machine	75	applicable
2110060	anirban	2-2	english	60	applicable

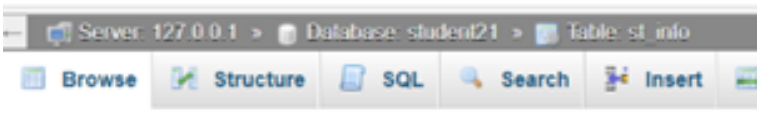
Details : we added a new column named “log” using the ADD command. Using the UPDATE,SET & WHERE command we set the value applicable and not applicable for the given condition.

Task-4 : Delete the students info whose marks are below 30.

Code:

```
>SELECT * FROM `st_info`
>DELETE FROM st_info WHERE obtained_marks<30;
>SELECT * FROM `st_info`
```

Output:



roll	name	semester	hated_sub	obtained_marks	log
2110051	afsana	2-2	math	65	applicable
2110052	rabbani	2-2	analog	75	applicable
2110053	sharif	2-2	programming	70	applicable
2110054	esha	2-2	physics	85	applicable
2110055	fahim	2-2	oop	87	applicable
2110057	sadi	2-2	circuit	30	applicable
2110059	galib	2-2	machine	75	applicable
2110060	anirban	2-2	english	60	applicable

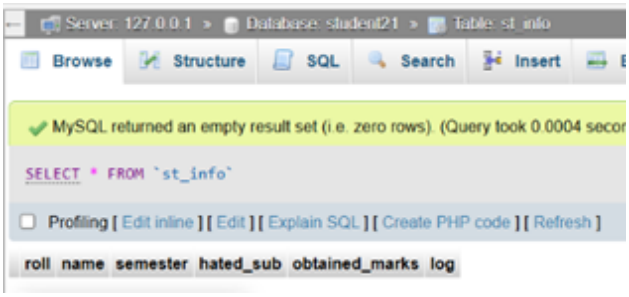
Details : Using the DELETE command we deleted student info for particular condition.

*** Truncate Command:**

Code:

```
>SELECT * FROM `st_info`
>TRUNCATE TABLE st_info;
>SELECT * FROM `st_info`
>
```

Output:



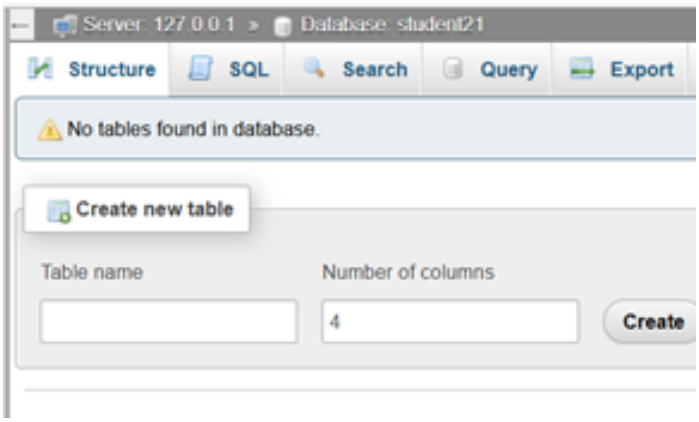
Details : The TRUNCATE command deletes all the information from a table.

*** Drop Command:**

Code:

```
>TRUNCATE TABLE st_info;
>SELECT * FROM `st_info`
>DROP TABLE st_info;
```

Output:



Details : The DROP command deletes the table.

Discussion :

In this task we understood the concept of Database and working principle of XAMPP. We learned about the difference between DDL and DML through the basic commands. DDL stands for Data Definition Language and refers to SQL commands used to create, modify, and delete database structures such as tables, indexes, and views. Examples of DDL statements include CREATE, ALTER, DROP and TRUNCATE. DML stands for Data Manipulation Language and refers to SQL commands used to insert, update, and delete data within a database. Examples of DML statements include INSERT, UPDATE, and DELETE.

Reference :

[1] T. M. . Connolly and C. E. . Begg, *Database Systems – A Practical Approach to Design Implementation and Management*, 6th ed. Pearson, 2014.

[2] "CS4750 - Database Systems." Accessed: Sep. 23, 2024. [Online]. Available: https://www.cs.virginia.edu/~up3f/cs4750/supplement/DB-setup-xampp.html