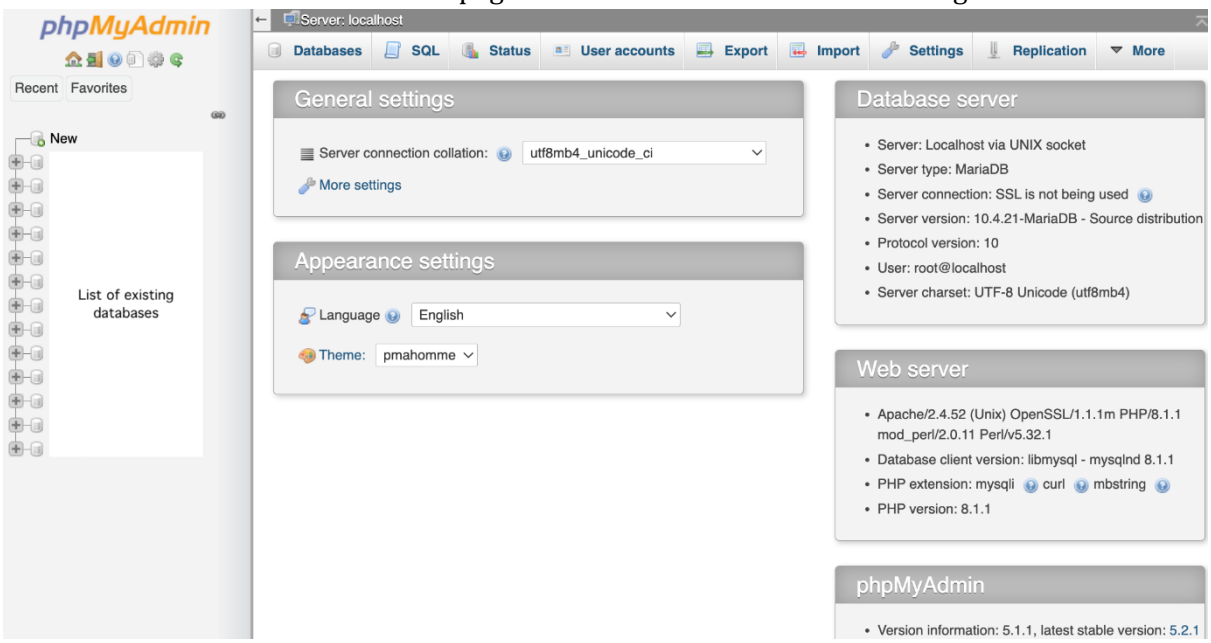
Lecture – 3

Contents:

- MySQL (Manual Operations using phpMyAdmin)
  - Create database
  - Create table
  - Insert data into table
  - Drop table
  - Alter table
- Data Types in MySQL
- Constraints in MySQL
- Import and Export Database

2.1 Create Database:

You may access phpMyAdmin via the XAMPP manager / controller, click Go to Application button to access XAMPP dashboard. The main page should look similar to the following



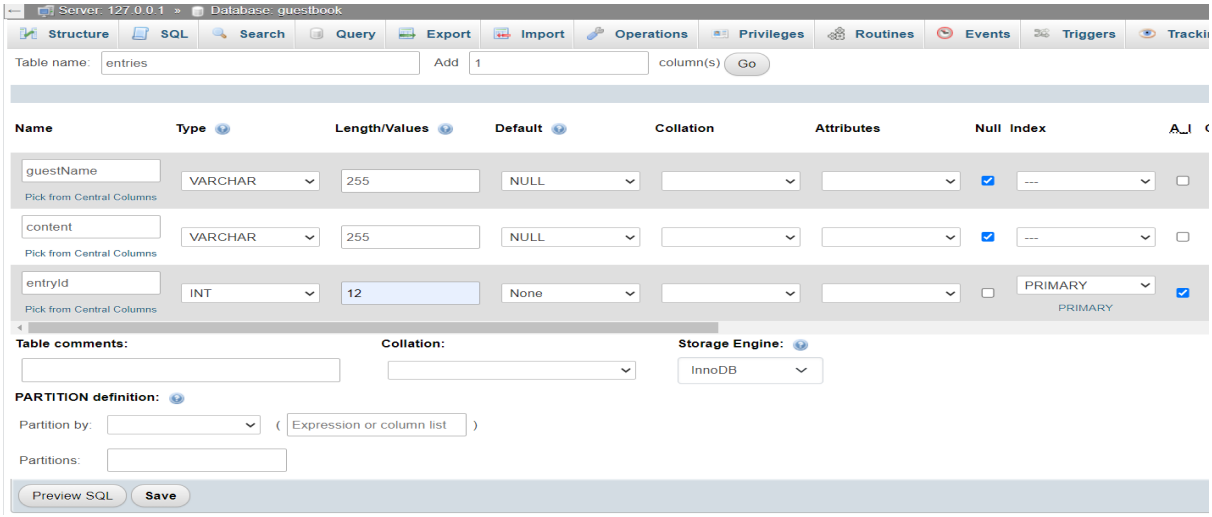
Let's create a guestbook database. To create a database, there are several options.
You may use the Create database feature.

- On the phpMyAdmin screen, select the Databases tab. Alternatively, you may click the New link on the left panel.
- Under the Create database, enter a Database name
- Click the Create button

Let's create a table named entries. To create a table, there are several options. You may use the Create table feature.

- On the phpMyAdmin screen, select the guestbook database.
- Select the Structure tab.
- Under the Create table, enter a table name and the number of columns.
- Click the Go button. This will prompt you to enter the column information.

Then we will find the table entity input and corresponding datatypes and other options



students table:

id	name	roll	phone	cgpa	date_of_birth
1	Rakib	121	0177...45	3.5	19-Jul-90
2	Abir	122	0167..34	3	23-Jan-93
3	Shamim	123	0189...12	3.75	21-Feb-89
4	Abir	124	0155..32	2.5	22-Nov-00

Department:

id	name	location	hod	phone
1	CSE	4th Floor	MMA	019...
2	Physics	3rd Floor	SR	013...
3	English	1st Floor	MAH	017....

Customer Table:

customer_id	customer_name	phone
1	Md. Zahid	+8801757576
2	Md. Rahim	+8801757576
3	Asif Rahman	+8801757576

Product Table:

product_id	product_name	price	Expire_date	tax	reviews
1	chips	10	12-01-2024	5	Very Good
2	Pen	5	11-03-2025	6	Good
3	Paper	15	09-09-2026	5	Bad

Delete Product table:

Alter/Rename product table:

2.2 Data types

1. Numeric Data Types:
- INT(size): Integer, with a specified display width (e.g., INT(10)).
- TINYINT: Very small integer.
- SMALLINT: Small integer.
- MEDIUMINT: Medium-sized integer.
- BIGINT: Large integer.
- DECIMAL(precision, scale): Fixed-point decimal numbers.
- FLOAT(precision, scale): Single-precision floating-point numbers.
- DOUBLE(precision, scale): Double-precision floating-point numbers.

2. Date and Time Data Types:
- DATE: Date in the format YYYY-MM-DD.
- TIME: Time in the format HH:MM:SS.
- DATETIME: Date and time combination in the format YYYY-MM-DD HH:MM:SS.

- TIMESTAMP: Timestamp, typically used for recording when a row was inserted or updated.
- YEAR: Year in 4-digit format (e.g., 2022).

3. String Data Types:
- CHAR(size): Fixed-length character string.
- VARCHAR(size): Variable-length character string, with a maximum size specified.
- TEXT: Variable-length string with a maximum length of 65,535 characters.
- BLOB: Binary large object for storing large binary data.
- ENUM(value1, value2, ...): Enumeration, allowing only one of a set of predefined values.
- SET(value1, value2, ...): Set of values, allowing multiple values to be chosen from a predefined set.

4. Miscellaneous Data Types:
- BOOLEAN: Synonym for TINYINT(1), representing true/false values.
- BIT(size): Bit-field type.
- JSON: JSON data type, storing JSON-encoded data.
- GEOMETRY: Spatial data type for storing geometric shapes.
- UUID: Universally unique identifier.

Home work:
Create the following database.

- Student Management System *(sms)*
- Tables
  - *departments (id, name, location, hod, phone)*
  - *students (id, name, roll, phone, address, date_of_birth)*
  - *teachers (id, name, designation, salary, joining_date, role, phone)*

2.3 constraints

The following constraints are commonly used in SQL:

- NOT NULL - Ensures that a column cannot have a NULL value
- UNIQUE - Ensures that all values in a column are different
- PRIMARY KEY - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table
- FOREIGN KEY - Prevents actions that would destroy links between tables
- CHECK - Ensures that the values in a column satisfies a specific condition
- DEFAULT - Sets a default value for a column if no value is specified
- CREATE INDEX - Used to create and retrieve data from the database very quickly

2.4 Foreign Key

The FOREIGN KEY constraint is used to prevent actions that would destroy links between tables. A FOREIGN KEY is a field (or collection of fields) in one table, that refers to the PRIMARY KEY in another table.

The table with the foreign key is called the child table, and the table with the primary key is called the referenced or parent table.

Look at the following two tables:

P_id	P_name	P_price	Expire-date	Tax	Reviews
1	chips	10	12-01-2024	5	Very Good
2	Pen	5	11-03-2025	6	Good
3	Paper	15	09-09-2026	5	Bad

c_id	c_name	p_id
1	Md. Zahid	3
2	Md. Rahim	1
3	Asif Rahman	2

2.5.1 Import Database

2.5.2 Export Database