Department of Computer Science and Engineering

Course Code: CSE370	Credits: 1.5
Course Name: Database Systems	Semester: Summer 2024

Lab 01

Part A: Setting Up and Connecting to the MySQL Server

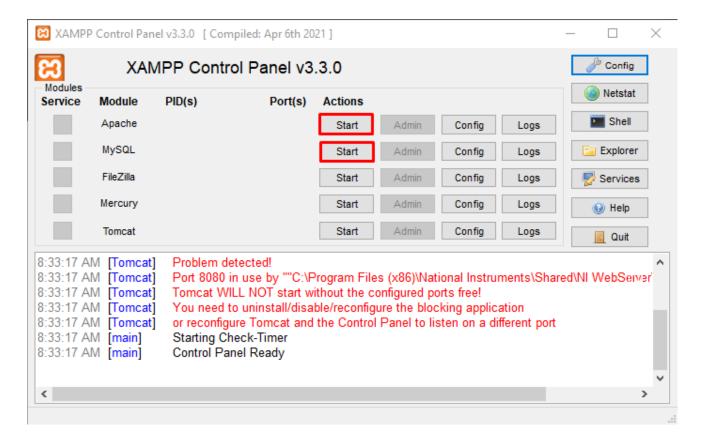
Activity List for Part A

Step 1: Go to https://www.apachefriends.org/index.html and download XAMPP for your OS.



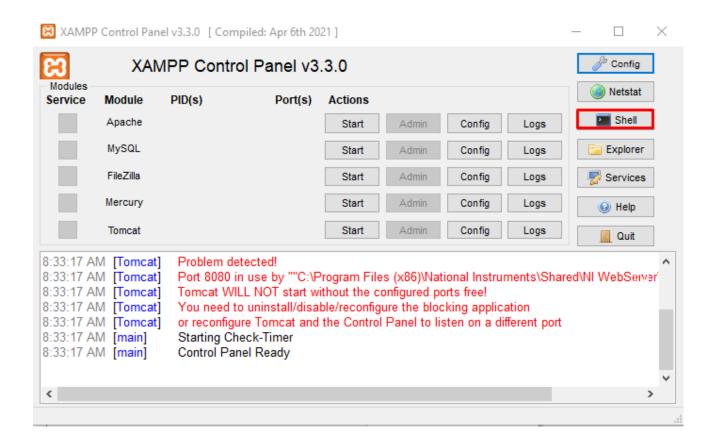
Step 2: Install XAMPP according to the installation guide.

Step 3: Open the XAMPP control panel after installation.



Open the control panel and click the start buttons (highlighted in red) beside Apache and MySQL.

Step 4: Click on the "shell" button on the right of the window



Step 5: Connect to the MySQL server

After clicking on the shell, you should see a black window. Type in the following command:

mysql -u root -p

When you are asked for a password, don't type anything just press enter. **The default password for xampp is an empty string.**

Part B: An Introduction to MySQL Queries

Syntax error in a query might cause the mysql> prompt not to appear after executing the query.

Solutions:

- i. Typing one of the following may solve the problem
 - 1. ');
 - 2. `);
 - 3. `;
 - 4. ';
 - 5. Or log out with ctrl+c and log in again

Activity List for Part B

- All commands are shown in the red boxes.
- In the green box, write the response you see after entering each query. Also, write the query for cases where you had to make changes.
- The part of the query in bold italic are variables, the rest are keywords. Sometimes, you might need to change the variables as per requirement.
- All new queries should be typed in the command window after mysql>

A Server can have multiple databases, for example, a movie database and a car rental database. So how can you view the list of all databases?	SHOW DATABASES;	
If you want to start a new project you should create your own database. After creating check if the new database is in the list now.	CREATE DATABASE DB_Name ;	
Before storing or manipulating any data, you HAVE to select the database you want to work on. All new command will take effect in selected database.	USE DB_Name ;	

All data are stored in tables. Each table will represent 1 entity, for example students_info, the column of the table will be attributes of the students(e.g. student_id, name, department, cgpa, grad_date) and each row will have information about 1 single student. Each attribute has a pre-defined data type such as int, char etc.

CREATE TABLE Lab_Grades
(

std_id char(4),
name varchar(30),
major char(3),
section char(1),
days_present int,
project_marks double,
cgpa decimal(3,2),
submission_date date
);

You can have many tables in database, e.g student_info, teacher_info, course_info etc. So how to view the list of all tables?

SHOW TABLES;

You might want to check the structure of a table e.g. what columns are there, what are the data types etc.

DESCRIBE Table_Name;

std_id	name	major	section	days_present	project_marks	cgpa	submission_date
s001	Abir	CS	1	10	18.5	3.91	2018-09-15
s002	Nafis	CSE	1	12	20	3.86	2018-08-15
s003	Tasneem	CS	1	8	18	3.57	2018-09-18
s004	Nahid	ECE	2	7	16.5	3.25	2018-08-20
s005	Arafat	CS	2	11	20	4.0	2018-09-13
s006	Tasneem	CSE	1	12	17.5	3.7	2018-08-15
s007	Muhtadi	ECE	1	10	19	3.67	2018-09-16
S008	Farhana	CSE	2	6	15	2.67	2018-08-16
s009	Naima	CSE	2	12	20	3.7	2018-08-14

Link for Table Data: https://docs.google.com/document/d/1XGp65Cd1KR6u6K61EraK6FpQrfAt5ZnonwvQvuWGK2U

Now you want to insert the data above in the table you created. There are two commands: a long version and a shorter one! Insert all the data above in the table.

INSERT INTO Table_Name (std_id,name,major, section, days_present,project_marks,cgpa, submission_date) values ('s001','Abir','CS','1',10, 18.5, 3.91,'2018-09-15');

INSERT INTO *Table_Name* values ('s001','Abir','CS','1', 10, 18.5, 3.91,'2018-09-15');

So now you want to view all the data you inserted? For that we will use the select query. More on SELECT * FROM Table_Name; that later!

Part C: SQL Alter, Update, Delete & Basic Select Queries

Task 1: Modifying Columns of a Table:

Add column project_title in the table	ALTER TABLE <i>Lab_Grades</i> add <i>project_title</i> char(10);
The data type for Project_title should be varchar(50)	ALTER TABLE <i>Lab_Grades</i> MODIFY COLUMN <i>project_title</i> varchar(50);
Now let's delete the column Project_title	ALTER TABLE Lab_Grades DROP COLUMN project_title;
How will you change the name of a contract the second	olumn from submission_date to sub_date? [Google it!]
sk 2: Updating Wrong Data: Oops! Arafat's major is actually CSE, so update the value in the table	UPDATE <i>Lab_Grades</i> SET major = 'CSE' WHERE name = 'Arafat';
Nahid's name is misspelled and also his project marks should be updated to 16.	UPDATE <i>Lab_Grades</i> SET <i>name</i> ='Naheed', project_marks =16 where std_id = 's004';
 What will happen if the where clause Lab_Grades set Major = 'CSE';? [Don't tr 	e is not included in the update query, e.g . if you typed Update y it now, just write the answer]
sk 3: Deleting Data:	
Naima dropped out of the course. So, delete her data from the table.	DELETE FROM Lab_Grades WHERE Name= 'Naima';

What would have happened if there w	vas another student named Naima?
Delete the data of everyone who was less than 8 days present.	DELETE FROM <i>Lab_Grades</i> WHERE <i>days_present</i> < 8;
nsk 4: Deleting Table or Database [DO NOT 1	FRY NOW]:
So now if you want to delete a table or database you need the following commands	DROP TABLE Table_Name; DROP DATABASE DB_Name
sk 5: Retrieving Data from Table:What is the [select * from Lab_grades	s;] command used for?
Let's say you want to retrieve only the student id, name and project marks.	SELECT std_id, name, project_marks FROM Lab_Grades;
Retrieve the name and total marks of students out of 25 (project + attendance)	SELECT name, project_marks+days_present*5/12 AS total_marks FROM Lab_Grades;
	is known as an alias. Check out what happens if you remove the ove command. State the difference below.
	at the Upper() and Lower() functions mean. 2), LOWER(name) from Lab_Grades;
	s the difference and why is the distinct keyword used?
SELECT major FROM Lab_Gr	select distinct major from Lab_Grades;

SELECT * FROM Lab Grades ORDER BY name; name. You can use the order by keyword Was it sorted in ascending or descending order? How can you sort in the opposite order?[Hint: check next command] Sort all details according to name and then by SELECT * FROM Lab_Grades ORDER BY name DESC, submission date. There are two students submission_date ASC; named Tasneem, observe what happens. Now, you want to view the name and project SELECT name,project_marks FROM Lab_Grades WHERE marks for only CSE students. major='CSE'; Retrieve the names, days present and marks of students whose project marks are greater than 17 Retrieve the name and marks of students SELECT name,project_marks FROM Lab_Grades WHERE whose marks is between 17 and 19 project_marks BETWEEN 17 and 19; Retrieve the details of students who are SELECT * FROM Lab_Grades WHERE major in ('CSE', 'CS'); majoring in either CS or CSE What is the "in" keyword in the above query? In the where clause, you can write the same command using the "or" and "=" operators. Try to figure it out! Retrieve the details of the students who SELECT * FROM Lab_Grades WHERE project_marks>18 and submitted their project in August and whose submission_date BETWEEN '2018-08-01' and '2018-08-31'; marks is greater than 18 How can you find the students whose Submission_date is not in August?

Now you want to view all the details sorted by

Retrieve the details of students whose name start with 'a'

Retrieve the details of students whose name contains at least 2 a's

SELECT * FROM Lab_Grades WHERE name like 'a%';

SELECT * FROM Lab_Grades WHERE name LIKE '%a%a%';

Try the following command and explain what happens: Select * from Lab_Grades where Name like 'a___'; [There are 3 underscores]

Task 6: Basic Select Quiz

Go to https://sqlzoo.net/wiki/SELECT_Quiz and answer the Quiz to test your knowledge of basic select queries.