United International University

Department of CSE

CSE 222: Database Management System Laboratory

Lab Sheet

Experiment No. 3

Aggregation

1. **Introduction**

   An aggregate function performs a calculation on multiple values and returns a single value. For example, you can use the AVG() aggregate function that takes multiple numbers and returns the average value of the numbers.

2. **Lab Equipment/Required Software**
   a. XAMPP (https://www.apachefriends.org/download.html)

3. **Objective**
   a. Get familiar with the concepts of aggregation in SQL.
   b. Learn different types of aggregation functions.
   c. Learn about grouping before aggregation.

4. **Workflow**
   a. Download necessary software if required (Section - 2).
   b. Follow the examples of SQL queries shown in class.
   c. Practice the give problems in the lab sheet.

5. **SQL Statements**

[Ref: https://www.mysqltutorial.org/]

JOIN	Variant	Example

Aggregation Functions	AVG, COUNT, MIN, MAX, SUM*	`SELECT COUNT(COUNTRY_ID) FROM countries;`
		
		`*all aggregate functions mentioned ignore NULL values except for the COUNT function.`

	Wildcard	`SELECT COUNT(*) FROM employees;`
Group By	-	`SELECT categoryid, SUM(unitsinstock) FROM products GROUP BY categoryid;`
Having Clause	-	`SELECT orderid, SUM(unitPrice * quantity) Total FROM orderdetails GROUP BY orderid HAVING total > 12000;`

6. **Hand's on Practice**
   a. Write a query to list the number of jobs available in the employees table.
   b. Write a query to get the total salaries payable to employees.

c. Write a query to get the minimum salary from employees table.
d. Write a query to get the maximum salary of an employee working as a
e. Programmer. (Hint: JOIN jobs table)
f. Write a query to get the average salary and number of employees working in the department 90.
g. Write a query to get the highest, lowest, sum, and average salary of all employees.
h. Write a query to get the number of employees with the same job.
i. Write a query to get the difference between the highest and lowest salaries.
j. Write a query to find the manager ID and the salary of the lowest-paid employee for that manager.
k. Write a query to get the department ID and the total salary payable in each department.

7. **Exercise**
   https://www.w3resource.com/mysql-exercises/aggregate-function-exercises/

8. **Reference**
   a. https://www.mysqltutorial.org/mysql-aggregate-functions.aspx
   b. https://www.zentut.com/sql-tutorial/sql-aggregate-functions/