Lab Sheet 4

IT1090 – Information Systems and Data Modeling **Semester 2**

Objective: At the end of this lab session you should be able to write the SELECT command with GROUP BY clause for single table queries.

Section 1

The GROUP BY clause in SQL is used to arrange identical data into logical groups. You can do manipulations of the data in those groups with the help of Aggregate functions.

Syntax of a SQL query which includes a GROUP BY clause is as follows. GROUP BY clause should follow the conditions mentioned in the WEHERE clause if any, and it should precede the ORDER BY clause if any.

Syntax:

```
SELECT column1, function_name(column2)
FROM table_name
WHERE condition
GROUP BY column1, column2
ORDER BY column1, column2;
```

Example:

Display the number of students from each course.

First, you can check the Student table by using the following simple query. Then you can view the full Student table as given in figure 1.

```
SELECT *
FROM Student;
```

Results Messages

	SID	Sname	Address	dob	NIC	CID
1	CN18384756	Kamal	No122, Rose street, matale	1994-05-02	946785467v	CSNE
2	CN19465738	Sampath	No173, New kandy Road, kaduwella	1996-11-20	968764567v	CSNE
3	CS18223645	kalani	No08 , Gamini Road, Anuradhapura	1996-10-11	968564857v	CS
4	CS18234867	Damith	No125 , 1st street, kurunegala	1996-02-15	968763456v	CS
5	DS18234876	Pubudu	No678 , 3rd new lane, Maharahgama	1994-11-08	948763759v	DS
6	DS18375688	Kamani	No10 , new street, jaffna	1994-03-05	948763456v	DS
7	IS18758649	Jayni	No111, Perera street, kurunegala	1998-09-07	982359856v	ISE
8	IS19234876	Dulina	No124 , 2nd street, colombo10	1998-12-08	983485764v	ISE
9	IT18234568	Ann	No12, Kings street, colombo	1996-11-11	961234587v	IT
10	IT19275687	Rayan	No14, flower street, colombo12	1994-01-10	945673456v	IT
11	SE19238567	Malith	No08, st.thomas street, Kandy	1992-12-20	922356785v	SE
12	SE20284567	Pooja	No15, lakshmi Road, jaffna	1996-08-07	965678645v	SE

Figure 1: Result from the query

Now you have to instruct the DBMS to create logical groups by considering the similarity of the values in the CID column in the Student table. You can use the GROUP BY clause to do that. Then DBMS will generate logical groups as given in figure 2. And for each logical group generated SELECT clause will output a separate result as given in figure 3.

```
SELECT CID, COUNT(SID)
FROM Student
GROUP BY CID;
```

Results Messages

	SID	Sname	Address	dob	NIC	CID
1	CN18384756	Kamal	No122, Rose street, matale	1994-05-02	946785467v	CSNE
2	CN19465738	Sampath	No173, New kandy Road, kaduwella	1996-11-20	968764567v	CSNE
3	CS18223645	kalani	No08 , Gamini Road, Anuradhapura	1996-10-11	968564857v	CS
4	CS18234867	Damith	No125 , 1st street, kurunegala	1996-02-15	968763456v	CS
5	DS18234876	Pubudu	No678 , 3rd new lane, Maharahgama	1994-11-08	948763759v	DS
6	DS18375688	Kamani	No10 , new street, jaffna	1994-03-05	948763456v	DS
7	IS18758649	Jayni	No111, Perera street, kurunegala	1998-09-07	982359856v	ISE
8	IS19234876	Dulina	No124 , 2nd street, colombo10	1998-12-08	983485764v	ISE
9	IT18234568	Ann	No12, Kings street, colombo	1996-11-11	961234587v	IT
10	IT19275687	Ravan	No14, flower street, colombo12	1994-01-10	945673456v	IT
11	SE19238567	Malith	No08, st.thomas street, Kandy	1992-12-20	922356785v	SE
12	SE20284567	Pooja	No15, lakshmi Road, jaffna	1996-08-07	965678645v	SE

Figure 2: Logical groups created by the GROUP BY clause based on the CID column value

200 %

Results Messages

	CID	(No column na...
1	CS	2
2	CSNE	2
3	DS	2
4	ISE	2
5	IT	2
6	SE	2

Figure 3: Result of the query

Section 2

Exercises

a. What is the number of Modules offered by each course?

b. How many students are there for each course? Rename the count as 'Number of Student'.

c. What is the number of Modules offered by each course in each academic year?

d. What is the number of Modules in Semester 02 only?

e. Sort the results of Question (d.) according to the ascending order of CID.