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Class : IUP CS B – Database Lab

Assignment 5 - Data Manipulation Languages 3

A. Create database with the following student table data:

On the previous assignment, we have already created the database named *student*. Thus, we can reuse it to manipulate the data and answer the questions below.

Table Output:

Showing rows 0 - 19 (20 total, Query took 0.0003 seconds.)

```
SELECT * FROM `student`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

←T→	number	NIM	name	cityAddress	age	IPK	department
Edit Copy Delete	1	12345	Adi	Jakarta	17	2.5	Math
Edit Copy Delete	2	12346	Ani	Yogyakarta	20	2.1	Math
Edit Copy Delete	3	12347	Ari	Surabaya	18	2.5	Computer
Edit Copy Delete	4	12348	Ali	Banjarmasin	20	3.5	Computer
Edit Copy Delete	5	12349	Abi	Medan	17	3.7	Computer
Edit Copy Delete	6	12350	Budi	Jakarta	19	3.8	Computer
Edit Copy Delete	7	12351	Boni	Yogyakarta	20	3.2	Computer
Edit Copy Delete	8	12352	Bobi	Surabaya	17	2.7	Computer
Edit Copy Delete	9	12353	Beni	Banjarmasin	18	2.3	Computer
Edit Copy Delete	10	12354	Cepi	Jakarta	20	2.2	NULL
Edit Copy Delete	11	12355	Coni	Yogyakarta	22	2.6	NULL
Edit Copy Delete	12	12356	Ceki	Surabaya	21	2.5	Math
Edit Copy Delete	13	12357	Dodi	Jakarta	20	3.1	Math
Edit Copy Delete	14	12358	Didi	Yogyakarta	19	3.2	Physics
Edit Copy Delete	15	12359	Deri	Surabaya	19	3.3	Physics
Edit Copy Delete	16	12360	Eli	Jakarta	20	2.9	Physics
Edit Copy Delete	17	12361	Endah	Yogyakarta	18	2.8	Physics
Edit Copy Delete	18	12362	Feni	Jakarta	17	2.7	NULL
Edit Copy Delete	19	12363	Farah	Yogyakarta	18	3.5	NULL
Edit Copy Delete	20	12364	Fandi	Surabaya	19	3.4	NULL

b. Create *SQL query* for:

1. Show city address column without any duplicate

```sql
SELECT cityAddress
FROM student
GROUP BY cityAddress;
```

←T→	cityAddress
Edit Copy Delete	Banjarmasin
Edit Copy Delete	Jakarta
Edit Copy Delete	Medan
Edit Copy Delete	Surabaya
Edit Copy Delete	Yogyakarta

Other than using SELECT DISTINCT, we also can use GROUP BY since this query will group multiple data into one distinct value.

2. Show maximum ipk from student from Jakarta

```sql
SELECT MAX(IPK) 'Highest GPA', cityAddress 'City Address'
FROM student
GROUP BY cityAddress
HAVING cityAddress = 'Jakarta';
```

Highest GPA	City Address
3.8	Jakarta

3. Show minimum ipk from Computer department student

```sql
SELECT MIN(IPK) 'Lowest GPA', department 'Department'
FROM student
GROUP BY department
HAVING department = "Computer";
```

Lowest GPA	Department
2.3	Computer

4. Show number of students in Computer department

```sql
SELECT COUNT(*) 'Total Students'
FROM student
GROUP BY department
HAVING department = 'Computer';
```

Total Students
7

5. Show average ipk from math department student

```sql
SELECT AVG(IPK) 'Average GPA', department 'Department'
FROM student
GROUP BY department
HAVING department = 'Math';
```

Average GPA	Department
2.55000	Math

6. Show data number of student on each department

```sql
SELECT COUNT(NIM) 'Total Student', department 'Department'
FROM student
GROUP BY department
HAVING department IS NOT NULL;
```

Total Student	Department
7	Computer
4	Math
4	Physics

We omit null value since there is no such department named NULL.

7. Show data number of student from different city

```sql
SELECT COUNT(*) 'Total Students', cityAddress 'City'
FROM student
GROUP BY cityAddress;
```

Total Students	City
2	Banjarmasin
6	Jakarta
1	Medan
5	Surabaya
6	Yogyakarta

8. Show data number of student group by city address with age under 20 years

```sql
SELECT COUNT(*) 'Total Students', cityAddress 'City'
FROM student
WHERE age < 20
GROUP BY cityAddress
```

Total Students	City
1	Banjarmasin
3	Jakarta
1	Medan
4	Surabaya
3	Yogyakarta