EXERCISE 2 : AGGREGATE FUNCTIONS & SQL OPERATORS

QUESTION 1 : List all distinct department in the student table

```
SELECT DISTINCT Department
From Students;
```

Department
IT
HR
Finance

Question 2 : Get the average age of Students per department

```
SELECT AVG(Age) AS Average_Age,
       Department
From Students
GROUP BY Department;
```

Average Age	Department
21	IT
22	HR
23	Finance

Question 3 : Show departments with more than 1 Student

```
SELECT Department,
       Count(Student) AS Student_Count
FROM Students
GROUP BY Department
Having Count(student) > 1
```

Department	Student_Count
IT	2
HR	2

Question 4 : Get all students whose age is between 21 & 23

```
SELECT Student_id, name
       age, department
From Students
Where Age between 21 AND 23;
```

Student_id	Name	Age	Department
3	Charlie	21	IT
2	Bob	22	HR
5	Eve	22	HR
4	Diana	23	Finance

Question 5 : List all students in the IT OR HR department who are older than 21

```
SELECT Student_id, NAME,
       Age, Department
FROM Student
WHERE Age > 21 AND
      Department = IT
      OR Department = HR;
```

Student_id	Name	Age	Department
2	BOB	22	HR
5	EVE	22	HR

Question 6 : Show total credits per ~~Cred~~ department only for departments with more than 5 total credits

```
SELECT Department,
       Sum(Credits) AS Total_Credits
FROM Courses
GROUP BY Department
Having Sum(Credits) > 5;
```

Department	Total Credits
IT	11

Question 7 : List all courses that do not have 4 Credits

```
SELECT Course_id, Course_name,
       Department, Credits
FROM Courses
Where Credits != 4
```

Course_id	Course_name	Department	Credits
101	SQL Basics	IT	3
104	Excel	Finance	2
105	Statistics	HR	3

Question 8 : Show the top 3 Courses by Credits in descending Order

```
SELECT Course_id, Course_name,
       Credits
FROM Courses
ORDER BY Credits DESC
Limit 3;
```

Course_id	Course_name	Credits
103	Data Science	4
102	Python	4
105	Statistics	3

Question 9 : Get Max, Min & Avg grade across all enrollments

```
SELECT Min(Grade) AS Min_Grade
       Max(Grade) AS Max_Grade
       Avg(Grade) AS Avg_Grade
FROM Enrollments;
```

Min_Grade	Max_Grade	Avg_Grade
78	90	85

Question 10 : Count how many enrollments exist per Course

```
SELECT Course_id,
       Count(enrollments) AS Enrollment_Co
FROM Enrollments
GROUP BY Course_id;
```

Course_id	Enrollment Count
101	1
102	1
103	1
104	1
105	1

Question 11 : Find total salary and total bonus per department

```
SELECT Department,
       Sum(Salary) AS Total_Salary,
       Sum(bonus) AS Total_bonus
FROM Salaries
GROUP BY Department
```

Department	Total Salary	Total bonus
IT	120 000	10500
HR	109 000	7500
Finance	70000	5000

Question 12 : Show department where average Salary is above 55 000

```
SELECT Avg(salary) AS Average_Salary,
       Department
FROM Salaries
GROUP BY Department
Having Avg(salary) > 55000;
```

Average_Salary	Department
61 000	IT
54 500	HR

Question 13: List employees whose salary, bonus is greater than 60 000

```
SELECT Employee_id, Name,
       Salary, bonus,
   Sum(Salary + bonus) AS Total_compensation
FROM Salaries
GROUP BY Employee_id, Name,
         Salary, bonus
HAVING Sum(Salary + bonus) > 60 000
```

Employee_id	Name	Salary	bonus	Total compensation
1	Tom	60000	6000	66 000
3	Spike	70000	6000	76000
4	Tyke	62000	5500	67500

Question 14: Show total & Average budget per departm
Only include departments with average budget above 70 000.

```
SELECT Department,
       Sum(budget) AS Total_budget,
       AVG(budget) AS Average_budget
FROM Projects
GROUP BY Department
HAVING AVG(budget) > 70 000;
```

Department	Total_budget	Average_budget
Finance	80 000	80 000
IT	270 000	135 000

Question is : List all projects with budget between 50 000 & 120 000, Exclude the Marketing department

```
SELECT Project_id, Project_name,
       Department, budget
FROM Projects
Where Department is not 'Marketing'
      AND Budget Between 50 000
      AND 120 000;
```

Project_id	Project name	Department	budget
1	AI App	IT	120 000
2	Payroll System	Finance	50 000
~~3~~	~~Dashboard~~	~~IT~~	
4	Website	Marketing	60 000
5	HR Portal	HR	50 000