

## EXERCISE 2 : AGGREGATE FUNCTIONS & SQL OPERATOR

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 ~~each~~ 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-Count  
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	70 000	6000

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) > 55 000;

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	76 000
4	Tyke	62000	5500	67 500

Question 14: Show total & Average budget per department  
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

① Question 15 : 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	80 000
3	<del>Dashboard</del>	<del>IT</del>	
4	Website	Marketing	60 000
5	HR Portal	HR	50 000