

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 2 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 ~~and~~ 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) > 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	76 000
4	Tyke	62000	1500	67500

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

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	Dashboard	IT	
4	Website	Marketing	60 000
5	HR Portal	HR	50 000