Exercise 2: SQL Aggregate Functions & SQL Operators

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Question 1

```
SELECT DISTINCT department
FROM Students;
```

department
IT
HR
Finance

Question 2

```
SELECT department,
       AVG (age) AS avg_age
FROM Students
GROUP BY department;
```

Department	Avg_age
IT	20.5
HR	22.0
Finance	23.0

Question 3

```
SELECT department, COUNT (*) AS Student_count
From Students
GROUP BY department
HAVING COUNT (*) > 1 ;
```

department	Student_count
IT	2
HR	2

Question 4

```
SELECT sid, name, age, department
FROM Students
WHERE age BETWEEN 21 AND 23;
```

sid	name	age	department
2	Bob	22	HR
3	Charlie	21	IT
4	Diana	23	Finance
5	Eve	22	HR

Question 5

```
SELECT Student.sid, name, age, department
FROM Students
WHERE department IN ('IT', 'HR')
AND age > 21;
```

Student_sid	name	age	department
2	Bob	22	HR
5	Eve	22	HR

Question 6

```
SELECT departme,
       Sum (credits) AS total_credits
FROM Courses
GROUP By department
HAVING Sum (credits) > 5
```

department	total_credits
IT	11

Question 7

```
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

```
SELECT course_id, course_name, credits
FROM Courses
ORDER BY credits DESC
LIMIT 3;
```

course_id	Course_name	Credits
102	Python	4
103	Data Science	4
101	SQL Basics	3

Question 9

```
SELECT MAX (grade) AS max_grade,
       MIN (grade) AS min_grade,
       AVG (grade) AS avg_grade,
FROM enrolment;
```

Max_grade	Min_grade	Avg_grade
90	78	84.6

Question 10

```
SELECT Course_id,
       COUNT(*) AS
FROM enrolments
GROUP BY Course_id;
```

Course_id	Enrolment_count
101	1
102	1
103	1
104	1
105	1

Question 11

```
SELECT department,
       Sum(salary) AS total_salary,
       Sum(bonus) AS total_bonus
FROM Salaries
GROUP BY department;
```

department	total_salary	total_bonus
IT	122 000	10500
HR	109 000	7 500
Finance	70 000	6000

Question 12

```
SELECT department,
       AVG(salary) AS avg_salary
FROM Salaries
GROUP BY department
HAVING AVG(salary) > 55000
```

departments	avg_salary
IT	61 000
Finance	70000

Question 13

```
SELECT employee_id
       name,
       Salary,
       bonus,
       (Salary + bonus) AS total_Compensation
FROM Salaries
WHERE (Salary + bonus) > 60000;
```

employee_id	name	Salary	bonus	total_compensation
1	Tom	60000	5000	65000
2	Spike	70000	6000	76000
3	Tyke	62000	5500	67500

Question 14

```
SELECT department
       Sum (budget) AS totatal_budget
       Avg (budget) as avg_budget
FROM Projects
GROUP BY department
HAVING Avg (budget) > 70000
```

department	total_budget	avg_budget
IT	27000	135000
Finance	80000	80000

Question 15

```
SELECT project_id,
       project_name,
       department,
       budget
From projects
```

WHERE budget BETWEEN 50000 AND 120000
AND department <> 'marketing';

project_id	project_name	department	budget
1	AI App	IT	120000
2	Payroll System	Finance	80000
3	HR Portal	HR	50000