Exercise 2 (SQL Aggregate Functions)

Q1

```
SELECT DISTINCT department
FROM students;
```

department
IT
HR
Finance

Q2

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

Output:

department	avg_age
IT	20.5
HR	22.0
Finance	23.0

Q3

```
SELECT department, COUNT(*) AS student_count
FROM students
GROUP BY department
HAVING student_count > 1;
```

department	student_count
IT	2
HR	2

Q4

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

output

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

Q5

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

output

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

Q6

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

output

department	total_credits
IT	11

Q7

```
SELECT course_id, course_name, department, credits
FROM courses
WHERE credits <> 4;
```

Output

course_id	course_name	department	credits
101	SQL Basics	IT	3
104	Excel	Finance	2
105	Statistics	HR	3

Q8

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

Output

course_id	course_name	credits
102	Python	4
103	Data Science	4
101	SQL Basics	3

Q9

```
SELECT max(grade) AS max_grade,
       min(grade) AS min_grade,
       AVG(grade) AS avg_grade
From Enrollments;
```

Output

max_grade	min_grade	avg_grade
90	78	84.6

Q10

```
SELECT course_id, COUNT(*) AS enrollment_count
FROM Enrollments
GROUP BY course_id;
```

course_id	enrollment_count
101	1
102	1
103	1
104	1
105	1

Q11

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

Output

department	total_salary	total_bonus
IT	122000	10500
HR	109000	7500
Finance	70000	6000

Q12

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

output

department	avg_salary
IT	61000
Finance	70000

Q13

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

output

employee_id	name	salary	bonus	total_compensation
3	Spike	70000	6000	76000
4	Tyke	62000	5500	67500

Q14

```
SELECT department,
       SUM(budget) AS total_budget,
       AVG(budget) AS avg_budget
FROM Project
GROUP BY department
HAVING AVG(budget) > 70000;
```

output

department	total_budget	avg_budget
IT	270000	135000
Finance	80000	80000

Q15

```
SELECT project_id, project_name, department, budget
FROM Projects
WHERE budget BETWEEN 50000 AND 120000 AND
      department <> 'Marketing';
```

output

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

---- END ----