SQL

Exercise 2 : Aggregate Functions

①
```
SELECT DISTINCT department
FROM students;
```

```
Department
IT
HR
Finance
```

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
```

③
```
SELECT department
       COUNT(*) AS Student-count
FROM students
GROUP BY department
HAVING COUNT(*) >1;
```

```
department   student-count
IT           2
HR           2
```

5 ④
```
SELECT  Student_id,
        name,
        age,
        department
FROM  students
WHERE  (department IN (IT, HR)) AND  age > 21;
```

```
student_id   nam   age   departmnt
2            Bob   22    HR
5            Eve   22    HR
```

4 ⑤
```
SELECT  Student-id,
        name,
        age
        department.
FROM students
WHERE  age BETWEEN  21 AND  23;
```

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

⑥
```
SELECT department.
       SUM(credits) AS total_credits
FROM  courses
GROUP BY  department
HAVING  SUM (credits) >5;
```

```
department   total credits
IT           11
```

SQL

Exercise 2: Aggregate Functions

1
```
SELECT DISTINCT department
FROM students;
```

Department
IT
HR
Finance

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

3
```
SELECT department
       COUNT(*) AS Student-count
FROM students
GROUP BY department
HAVING COUNT(*) >1;
```

department	student-count
IT	2
HR	2

5 4
```
SELECT student_id,
       name,
       age,
       department
FROM students
WHERE (department IN (IT, HR)) AND age > 21;
```

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

4 5
```
SELECT student-id,
       name.
       age
       department.
FROM students
WHERE age BETWEEN 21 AND 23;
```

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

6
```
SELECT department.
       SUM(credits) AS total_credits
FROM courses
GROUP BY department
HAVING SUM (credits) >5;
```

department	total credits
IT	11

(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

(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

(9)

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

max grade	min grade	avg grade
96	78	84.6

(10)

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

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

(11)

```
SELECT department,
    SUM (salary) AS total_salary,
    SUM (bonus) AS total_bonus
FROM salaries
GROUP BY department;
```

department	total salary	total_bonus
It	122000	10500
HR	109000	7500
Finance	90000	6000

(12)

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

department	avg-salary
IT	61000
Finance	70000

(13)

```
SELECT employee_id,
       name,
       salary,
       bonus,
       (salary + bonus) AS total_compensation
FROM salaries
WHERE (salary + bonus) > 50000;
```

employee-id	name	salary	bonus	total_compensation
1	Tom	60000	5000	65000
3	Spike	70000	6000	76000
4	Tyke	62000	55000	675000

(14)

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

department	total budget	Avg budget
IT	270000	135000
Finance	80000	80000

(15)

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

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