SQL Practice Project – Real-World Queries, Functions, Procedures & Analysis

Today I practiced and revised SQL using an Employee Database.
I covered basic to advanced queries, date functions, aggregate functions,
user-defined functions (UDFs), and stored procedures.
Sharing my work here for others learning SQL."

use collage;

1.Write a query to get all employee detail from "EmployeeDetail" table

SELECT * FROM employee_records;

Output:

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29
7	Mason Brown	48	UK	Finance	Assistant	58227.95	2021-08-24
8	Mason Anderson	45	USA	Finance	Manager	147839.1	2021-01-08
9	Sophia Wilson	40	Brazil	Marketing	Developer	126394.86	2018-12-20

2.Write a query to get only "employeeName" column from "EmployeeDetail" table

select Employee_Name from employee_records;

Employee_Name
Daniel Taylor
Ethan Brown
Sophia Martinez
Ethan Martinez
Mia Brown
Ava Moore
Mason Brown
Mason Anderson
Sophia Wilson

employee_records 17 ×

3.Write a query to get employeeName in upper case.

select Employee_Name,upper(Employee_Name) from employee_records;

Employee_Name	upper(Employee_Name)
Daniel Taylor	DANIEL TAYLOR
Ethan Brown	ETHAN BROWN
Sophia Martinez	SOPHIA MARTINEZ
Ethan Martinez	ETHAN MARTINEZ
Mia Brown	MIA BROWN
Ava Moore	AVA MOORE
Mason Brown	MASON BROWN
Mason Anderson	MASON ANDERSON

4.Write a query to get employeeName in lower case.

select Employee_Name,lower(Employee_Name) from employee_records;

Employee_Name	lower(Employee_Name)
Daniel Taylor	daniel taylor
Ethan Brown	ethan brown
Sophia Martinez	sophia martinez
Ethan Martinez	ethan martinez
Mia Brown	mia brown
Ava Moore	ava moore
Mason Brown	mason brown
Mason Anderson	mason anderson
Sophia Wilson	sophia wilson

5.Write a query for combine employeeName and Country(also -- include hypen between employeeName & Country)

select concat(Employee_Name,'-',Country) from employee_records;

	concat(Employee_Name,'-',Country)
▶	Daniel Taylor-UK
	Ethan Brown-India
	Sophia Martinez-Japan
	Ethan Martinez-Germany
	Mia Brown-Australia
	Ava Moore-Japan
	Mason Brown-UK
	Mason Anderson-USA
	Sophia Wilson-Brazil

6.List all employees who work in the Finance department.

select Employee_Name,Department from employee_records where Department='Finance';

	Employee_Name	Department
▶	Sophia Martinez	Finance
	Mason Brown	Finance
	Mason Anderson	Finance
	Sophia Brown	Finance
	Lucas Thomas	Finance
	Sophia Davis	Finance
	Emma Anderson	Finance
	Lily Taylor	Finance
	Ethan Martinez	Finance

7.Find employees older than 40 years.

select Employee_Name,Age from employee_records where Age>40;

	Employee_Name	Age
▶	Ethan Brown	44
	Sophia Martinez	51
	Ethan Martinez	47
	Mason Brown	48
	Mason Anderson	45
	Logan Taylor	45
	Ava Hernandez	47
	Lily Taylor	42
	Lily Jackson	42

8. Show all employees from India.

select Employee_Name,Country from employee_records where Country='India';

	Employee_Name	Country
▶	Ethan Brown	India
	Ava Martinez	India
	Lily Jackson	India
	Emma Anderson	India
	Mason Wilson	India
	Mia Taylor	India
	Logan Martinez	India
	Lily Taylor	India

9.List employees ordered by salary in descending order.

select Employee_Name,Salary from employee_records order by Salary desc;

Employee_Name	Salary
Mason Taylor	149996.39
Lucas Martinez	149995
Ethan Moore	149994.4
Ava Wilson	149989.6
Mason Wilson	149989.17
Logan Hernandez	149988.02
Mia Brown	149987.06
Mia Moore	149984.83
Daniel Thomas	149983.66

10.Show top 3 highest-paid employees.

select Employee_Name from employee_records order by Salary desc limit 3;

Employee_Name
Mason Taylor
Lucas Martinez
Ethan Moore

11.Find the total salary expense of the company.

select sum(Salary) as Total_Salary from employee_records;

Total_Salary
2694784278.3000035

12. Find the average salary of the HR department.

select Department,avg(Salary) as avg_salary from employee_records where Department='HR';

Result Grid | Filter Rows:

Department	avg_salary
HR	89930.38315916379

13. Show number of employees in each department.

select Department,count(Employee_ID) as Total_Employees from employee_records group by Department;

Department	Total_Employees
HR	4976
Marketing	5007
Finance	4938
Support	4990
Sales	5019
Engineering	5070

14. Find average salary by country.

select Country,avg(Salary) as avg_salary from employee_records group by Country;

Country	avg_salary
UK	89171.82666997686
India	89895.77297487421
Japan	90774.06483750841
Germany	90254.79791585737
Australia	90156.98937090432
USA	90283.86912706419
Brazil	89112.84116852416

15. Find employees who joined in the year 2018.

select * from employee_records where year(Joining_Date)=2018;

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29
9	Sophia Wilson	40	Brazil	Marketing	Developer	126394.86	2018-12-20
10	Ava Martinez	40	India	Sales	Manager	119828.28	2018-05-18
23	Sophia Moore	60	Japan	Engineering	Consultant	145005.3	2018-11-09
44	Daniel Martinez	49	Japan	Engineering	Manager	142496.06	2018-09-23
47	Lily Taylor	51	India	Finance	Manager	40256.17	2018-12-01

16.Find number of years each employee has been working (experience).

```
DELIMITER $$

CREATE FUNCTION experiance1(join_date DATE)

RETURNS INT

DETERMINISTIC

BEGIN

RETURN YEAR(CURDATE()) - YEAR(join_date); END $$

DELIMITER ;

select *,experiance1(Joining_Date) as experiance from employee_records;
```

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date	experiance
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04	2
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13	7
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30	10
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17	10
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22	6
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29	7
7	Mason Brown	48	UK	Finance	Assistant	58227.95	2021-08-24	4
8	Mason Anderson	45	USA	Finance	Manager	147839.1	2021-01-08	4
9	Sophia Wilson	40	Brazil	Marketing	Developer	126394.86	2018-12-20	7

17.Show employees who joined in the last 5 years.

```
select * from employee_records where Joining_Date>=date_sub(current_date(),interval 5 year);
```

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04
7	Mason Brown	48	UK	Finance	Assistant	58227.95	2021-08-24
8	Mason Anderson	45	USA	Finance	Manager	147839.1	2021-01-08
11	Lily Brown	24	Australia	Support	Analyst	52673.56	2024-08-22
13	Logan Taylor	45	USA	Sales	Assistant	97261.76	2024-07-03
15	Ava Hernandez	47	Mexico	Sales	Assistant	87494.81	2021-09-07
16	Lily Taylor	42	Brazil	Marketing	Consultant	67741.4	2021-10-11
19	Ethan Davis	39	Australia	HR	Consultant	88609.78	2021-12-04
20	Lily Hernandez	55	USA	Support	Analyst	75824.9	2021-03-01

18. Find employees earning more than the company average salary.

select * from employee_records where Salary>(select avg(Salary) from employee_records);

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29
8	Mason Anderson	45	USA	Finance	Manager	147839.1	2021-01-08
9	Sophia Wilson	40	Brazil	Marketing	Developer	126394.86	2018-12-20
10	Ava Martinez	40	India	Sales	Manager	119828.28	2018-05-18
13	Logan Taylor	45	USA	Sales	Assistant	97261.76	2024-07-03
14	Mason Hernandez	34	Mexico	Marketing	Executive	144619.82	2017-11-12
18	Daniel Anderson	44	Canada	Engineering	Consultant	113240.58	2017-02-20

19.Find the 2nd highest salary.

select Salary from employee_records order by Salary desc limit 1 offset 1;

Salary
149995

20.Find department with the minimum salary.

select Department,min(Salary) as Minimum_salary

from employee_records group by Department;

	Department	Minimum_salary
▶	HR	30021.75
	Marketing	30024.84
	Finance	30019.6
	Support	30048.3
	Sales	30017.91
	Engineering	30004.78

21.Get all employee details from EmployeeDetail table whose "Name" starts with 'a'

select * from employee_records where Employee_Name like 'a%';

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29
10	Ava Martinez	40	India	Sales	Manager	119828.28	2018-05-18
15	Ava Hernandez	47	Mexico	Sales	Assistant	87494.81	2021-09-07
53	Ava Wilson	22	USA	Finance	Assistant	122422.5	2022-02-08
61	Ava Jackson	28	Mexico	Engineering	Consultant	125007.69	2024-06-07
71	Ava Martinez	32	Japan	HR	Manager	95259.86	2022-10-14
81	Ava Brown	38	Brazil	Finance	Analyst	37605.06	2024-07-30
90	Ava Brown	46	Mexico	HR	Executive	101642.66	2015-03-25
94	Ava Martinez	22	Japan	Support	Analyst	108792.93	2017-09-04

22. Get all unique "Department" from EmployeeDetail table.

select distinct(Department) from employee_records;

	Department
▶	HR
	Marketing
	Finance
	Support
	Sales
	Engineering

23. Show "JoiningDate" in "dd mmm yyyy" format, ex- "15 Feb 2013"

select *,date_format(Joining_Date,'%d-%b-%Y') as formated_date from employee_records;

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date	formated_date
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04	04-Jun-2023
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13	13-Jan-2018
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30	30-Apr-2015
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17	17-Jun-2015
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22	22-Feb-2019
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29	29-Sep-2018

24. Get only Year part of "JoiningDate".

select *,year(Joining_Date) from employee_records;

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date	year(Joining_Date)
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04	2023
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13	2018
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30	2015
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17	2015
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22	2019
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29	2018
7	Mason Brown	48	UK	Finance	Assistant	58227.95	2021-08-24	2021
8	Mason Anderson	45	USA	Finance	Manager	147839.1	2021-01-08	2021

25.Get all employee details table whose joining year is 2021.

select * from employee_records where year(Joining_Date)=2021;

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
7	Mason Brown	48	UK	Finance	Assistant	58227.95	2021-08-24
8	Mason Anderson	45	USA	Finance	Manager	147839.1	2021-01-08
15	Ava Hernandez	47	Mexico	Sales	Assistant	87494.81	2021-09-07
16	Lily Taylor	42	Brazil	Marketing	Consultant	67741.4	2021-10-11
19	Ethan Davis	39	Australia	HR	Consultant	88609.78	2021-12-04
20	Lily Hernandez	55	USA	Support	Analyst	75824.9	2021-03-01

26. Categorize employees based on salary

select Employee_Name,Salary,

```
case
when Salary>=100000 then 'HIGH'
   when Salary>=50000 then 'Medium'
   else 'LOW'
end as salary_category
from employee_records;
```

Employee_Name	Salary	salary_category
Daniel Taylor	142278.32	HIGH
Ethan Brown	98549.2	Medium
Sophia Martinez	85565.84	Medium
Ethan Martinez	34513.67	LOW
Mia Brown	45339.72	LOW
Ava Moore	90973.25	Medium
Mason Brown	58227.95	Medium
Mason Anderson	147839.1	HIGH
Sophia Wilson	126394.86	HIGH

27. Label employees as 'Senior' if age > 40 else 'Junior'.

```
select Employee_Name,
case
when Age>40 then 'Senior'
   else 'Junior'
end as EMP_Status
from employee_records;
```

Employee_Name	EMP_Status
Daniel Taylor	Junior
Ethan Brown	Senior
Sophia Martinez	Senior
Ethan Martinez	Senior
Mia Brown	Junior
Ava Moore	Junior
Mason Brown	Senior
Mason Anderson	Senior
Sophia Wilson	Junior

28. Which country has the highest-paid employees?

```
select country from employee_records

where Salary=(select max(Salary) from employee_records);
```

Result Grid

country
Germany

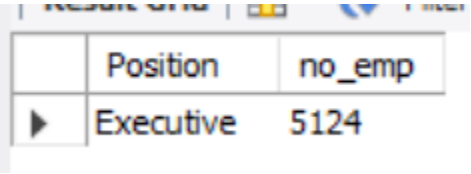
29.Which department has the lowest average salary?

```
select department,avg(Salary) as avg_salary from employee_records group by department
order by avg_salary limit 1;
```

department	avg_salary
Sales	88854.22691771285

30. Which position has maximum number of employees?

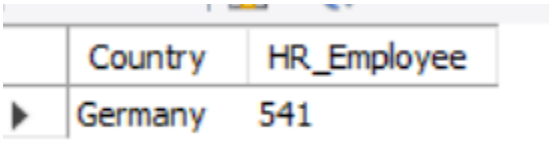
select Position,count(Employee_ID) as no_emp from employee_records group by Position order by no_emp desc limit 1;



Position	no_emp
Executive	5124

31. Which country has the most employees in HR?

select Country,count(*) as HR_Employee from employee_records where department='HR' group by Country order by HR_Employee desc limit 1;



Country	HR_Employee
Germany	541

32. Write the query to get the department and department wise total(sum) salary

select department, sum(Salary) from employee_records group by department;

department	sum(Salary)
HR	447493586.599999
Marketing	449799112.2899996
Finance	442083864.85000116
Support	452339208.21999884
Sales	445959364.90000075
Engineering	457109141.43999946

33. Create a function that takes Salary as input and returns the 10% bonus amount.

DELIMITER $$

create function bonus(salary_bonus decimal(10,2))

returns decimal(10,2)

deterministic

```
begin
return salary_bonus*0.10;
end $$
DELIMITER ;
select *,bonus(Salary) from employee_records;
```

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date	bonus(Salary)
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04	14227.83
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13	9854.92
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30	8556.58
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17	3451.37
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22	4533.97
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29	9097.33

34. Create a function that takes the age and returns the age group:

"Young" (< 30) -- "Mid Age" (30–45) -- "Senior" (> 45)

```
DELIMITER $$
create function age_group(age int)
returns varchar(50)
deterministic
begin
return
case
when age<30 then "Young"
when age>30 and age<45 then "Mid-Age"
else "Senior"
end;
 end $$
```

DELIMITER ;

select *, age_group(Age) from employee_records;

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date	age_group(Age)
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04	Young
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13	Mid-Age
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30	Senior
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17	Senior
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22	Mid-Age
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29	Mid-Age
7	Mason Brown	48	UK	Finance	Assistant	58227.95	2021-08-24	Senior

35. Create a function that checks if the employee is international (not from India) -- and return "Foreign Employee" or "Domestic Employee".

DELIMITER $$

create function Foreign_Domestic(check_country varchar(20))

returns varchar(20)

deterministic

begin

return

case

when check_country="India" then "Domestic Employee"

else "Foreign Employee"

end;

end $$

DELIMITER ;

select *,Foreign_Domestic(Country) from employee_records;

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date	Foreign_Domestic(Country)
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04	Foreign Employee
2	Ethan Brown	44	India	Marketing	Executive	98549.2	2018-01-13	Domestic Employee
3	Sophia Martinez	51	Japan	Finance	Developer	85565.84	2015-04-30	Foreign Employee
4	Ethan Martinez	47	Germany	Support	Analyst	34513.67	2015-06-17	Foreign Employee
5	Mia Brown	32	Australia	Support	Consultant	45339.72	2019-02-22	Foreign Employee
6	Ava Moore	35	Japan	HR	Executive	90973.25	2018-09-29	Foreign Employee

36. Create a function that returns all employees from a specific country (input parameter: country name).

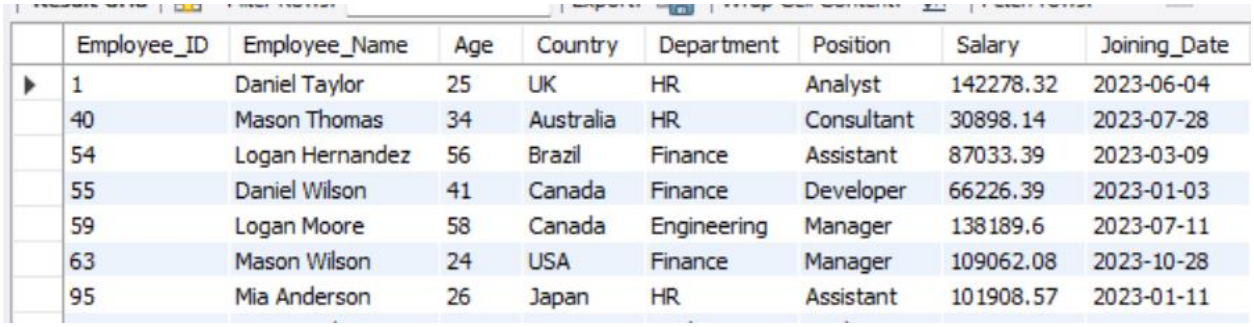
```
DELIMITER $$

create procedure return_emp1(in country_name varchar(20))

begin

select Employee_Name,Country from employee_records

where country=country_name;

end $$

DELIMITER ;

call return_emp1('India');
```

Employee_Name	Country
Ethan Brown	India
Ava Martinez	India
Lily Jackson	India
Emma Anderson	India
Mason Wilson	India
Mia Taylor	India
Logan Martinez	India

37. Create a function that returns all employees who joined in a given year.

```
DELIMITER $$

create procedure emp_by_date2(in join_date int)
```

```
begin

select * from employee_records

where year(Joining_Date)=join_date;

end $$

DELIMITER ;

call emp_by_date2(2023);
```



Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
1	Daniel Taylor	25	UK	HR	Analyst	142278.32	2023-06-04
40	Mason Thomas	34	Australia	HR	Consultant	30898.14	2023-07-28
54	Logan Hernandez	56	Brazil	Finance	Assistant	87033.39	2023-03-09
55	Daniel Wilson	41	Canada	Finance	Developer	66226.39	2023-01-03
59	Logan Moore	58	Canada	Engineering	Manager	138189.6	2023-07-11
63	Mason Wilson	24	USA	Finance	Manager	109062.08	2023-10-28
95	Mia Anderson	26	Japan	HR	Assistant	101908.57	2023-01-11

38.Create a procedure to find the minimum and maximum salary of a department passed as a parameter.

```
DELIMITER $$

create procedure max_min1(in dept varchar(20))

begin

select department,max(Salary),min(Salary)

   from employee_records where department=dept

   group by department;

end $$

DELIMITER ;

call max_min1('Sales');
```

	department	max(Salary)	min(Salary)
▶	Sales	149996.39	30017.91

39. Create a function that returns a list of employees -- who joined on the same month and year as an input date.

```
DELIMITER $$

create procedure employees_same_month_year(in join_date date)

begin

select * from employee_records

where month(Joining_Date)=month(join_date) and year(Joining_Date)=year(join_date);

end $$

DELIMITER ;

call employees_same_month_year('2022-05-10');
```

Employee_ID	Employee_Name	Age	Country	Department	Position	Salary	Joining_Date
134	Ava Davis	30	France	Finance	Executive	107049.35	2022-05-17
358	Sophia Wilson	22	UK	Marketing	Analyst	123267.61	2022-05-23
449	Ethan Jackson	45	UK	Marketing	Analyst	120370.09	2022-05-14
502	Mia Brown	35	Australia	Marketing	Executive	81661.58	2022-05-13
694	Daniel Wilson	29	Japan	Finance	Developer	137635.36	2022-05-16
725	Emma Moore	42	Brazil	Support	Manager	56754.83	2022-05-06