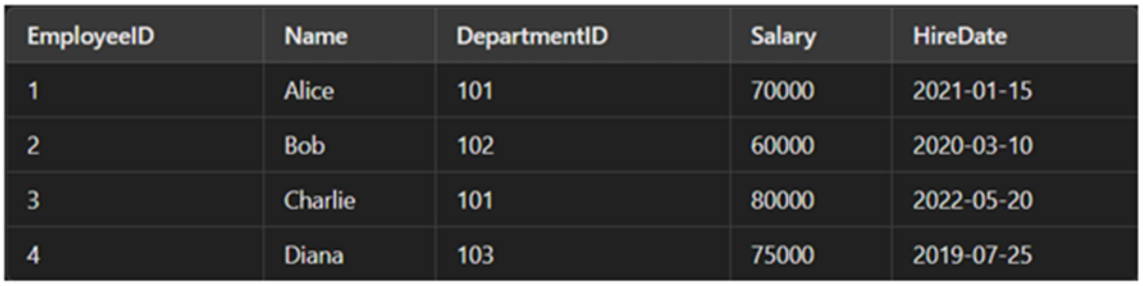
SQLite3 Exercises

Scenario: Employee Management System

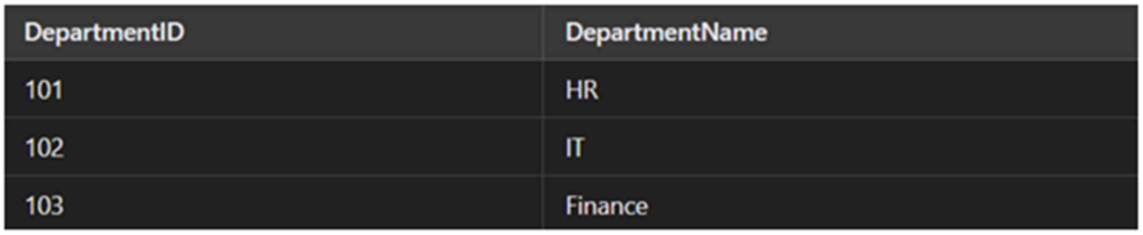
A company maintains a database with two tables:

- **Employees**: Stores information about employees.



EmployeeID	Name	DepartmentID	Salary	HireDate
1	Alice	101	70000	2021-01-15
2	Bob	102	60000	2020-03-10
3	Charlie	101	80000	2022-05-20
4	Diana	103	75000	2019-07-25

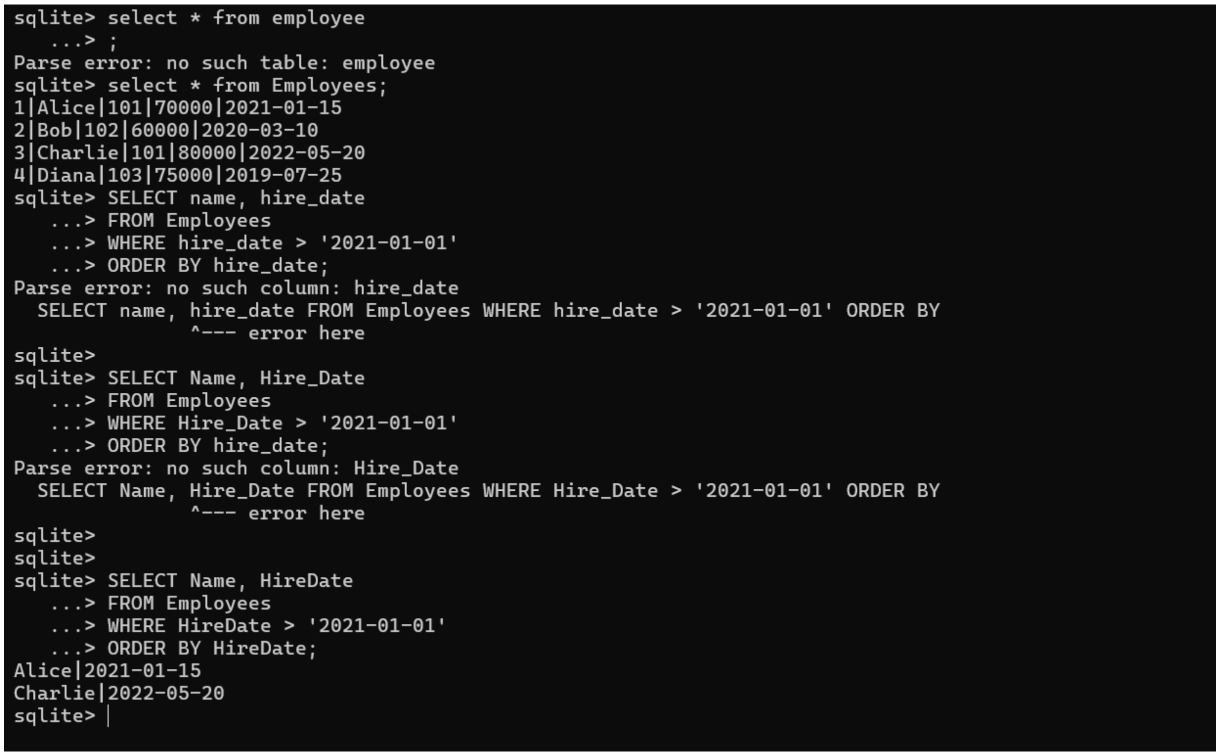
- **Departments: Stores information about departments.**



DepartmentID	DepartmentName
101	HR
102	IT
103	Finance

Q1. Write a query to list the names of employees hired after January 1, 2021.

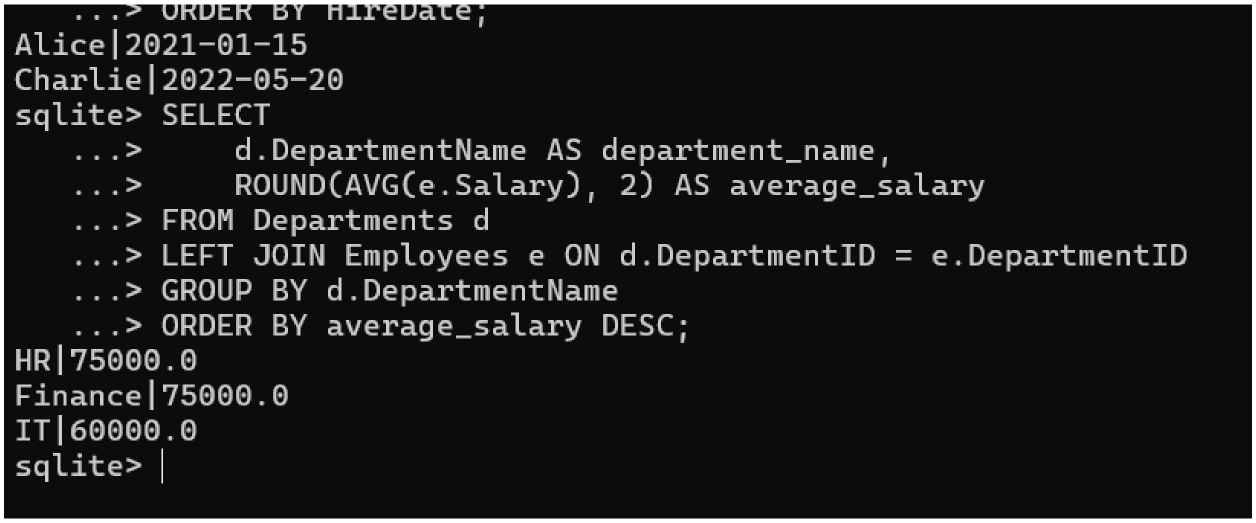
```
SELECT Name, HireDate

FROM Employees

WHERE HireDate > '2021-01-01'

ORDER BY HireDate;
```



```
sqlite> select * from employee
   ...> ;
Parse error: no such table: employee
sqlite> select * from Employees;
1|Alice|101|70000|2021-01-15
2|Bob|102|60000|2020-03-10
3|Charlie|101|80000|2022-05-20
4|Diana|103|75000|2019-07-25
sqlite> SELECT name, hire_date
   ...> FROM Employees
   ...> WHERE hire_date > '2021-01-01'
   ...> ORDER BY hire_date;
Parse error: no such column: hire_date
  SELECT name, hire_date FROM Employees WHERE hire_date > '2021-01-01' ORDER BY
               ^--- error here
sqlite>
sqlite> SELECT Name, Hire_Date
   ...> FROM Employees
   ...> WHERE Hire_Date > '2021-01-01'
   ...> ORDER BY hire_date;
Parse error: no such column: Hire_Date
  SELECT Name, Hire_Date FROM Employees WHERE Hire_Date > '2021-01-01' ORDER BY
               ^--- error here
sqlite>
sqlite>
sqlite> SELECT Name, HireDate
   ...> FROM Employees
   ...> WHERE HireDate > '2021-01-01'
   ...> ORDER BY HireDate;
Alice|2021-01-15
Charlie|2022-05-20
sqlite> |
```

Q2. Write a query to calculate the average salary of employees in each department.

```
SELECT
  d.DepartmentName AS department_name,
  ROUND(AVG(e.Salary), 2) AS average_salary
FROM Departments d
LEFT JOIN Employees e ON d.DepartmentID = e.DepartmentID
GROUP BY d.DepartmentName
ORDER BY average_salary DESC;
```



```
   ...> ORDER BY HireDate;
Alice|2021-01-15
Charlie|2022-05-20
sqlite> SELECT
   ...>     d.DepartmentName AS department_name,
   ...>     ROUND(AVG(e.Salary), 2) AS average_salary
   ...> FROM Departments d
   ...> LEFT JOIN Employees e ON d.DepartmentID = e.DepartmentID
   ...> GROUP BY d.DepartmentName
   ...> ORDER BY average_salary DESC;
HR|75000.0
Finance|75000.0
IT|60000.0
sqlite> 
```

Q3. Write a query to find the department name where the total salary is the highest.

SELECT

  d.DepartmentName AS department_name,

  SUM(e.Salary) AS total_salary

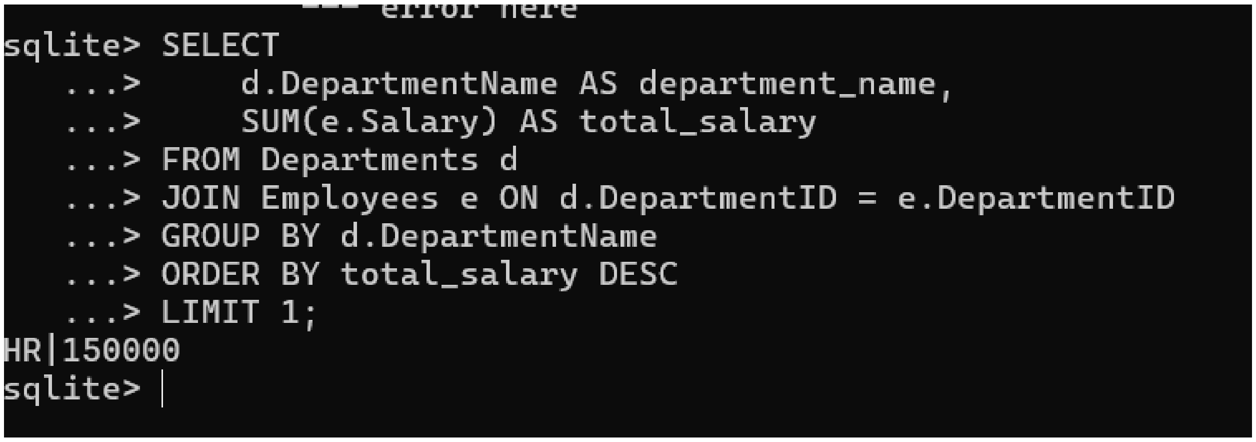
FROM Departments d

JOIN Employees e ON d.DepartmentID = e.DepartmentID

GROUP BY d.DepartmentName

ORDER BY total_salary DESC

LIMIT 1;



```
              --- error here
sqlite> SELECT
   ...>     d.DepartmentName AS department_name,
   ...>     SUM(e.Salary) AS total_salary
   ...> FROM Departments d
   ...> JOIN Employees e ON d.DepartmentID = e.DepartmentID
   ...> GROUP BY d.DepartmentName
   ...> ORDER BY total_salary DESC
   ...> LIMIT 1;
HR|150000
sqlite> 
```

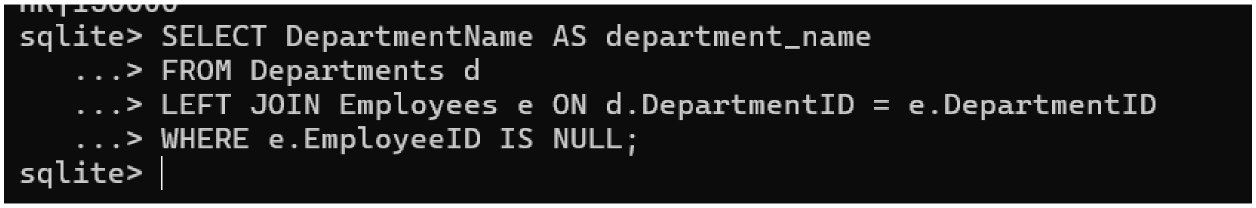
Q4. Write a query to list all departments that currently have no employees assigned.

SELECT DepartmentName AS department_name

FROM Departments d

LEFT JOIN Employees e ON d.DepartmentID = e.DepartmentID

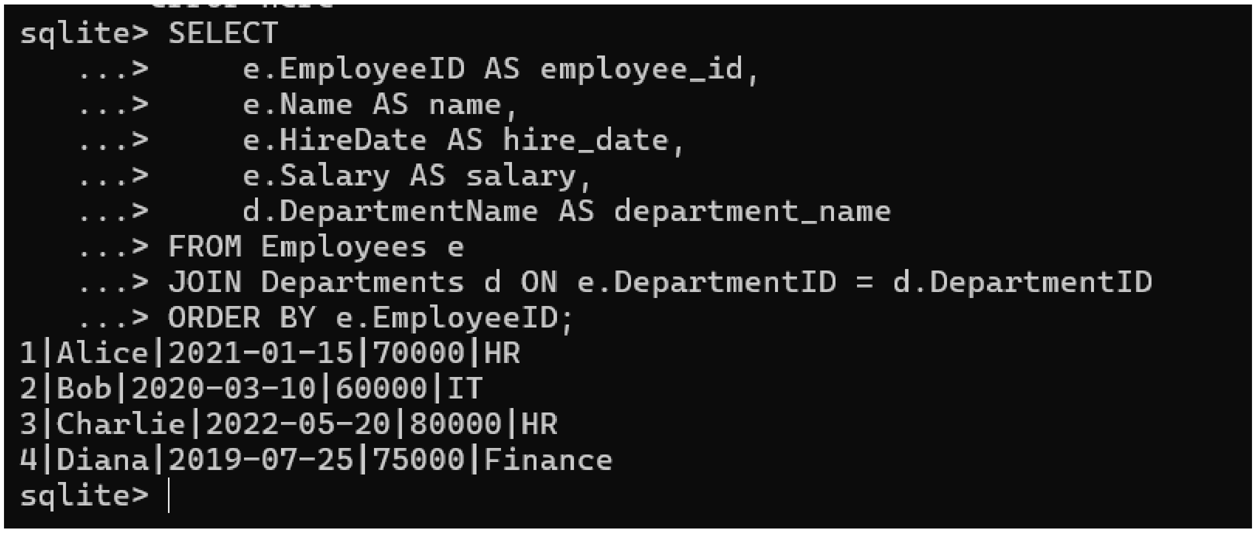
WHERE e.EmployeeID IS NULL;



```
sqlite> SELECT DepartmentName AS department_name
   ...> FROM Departments d
   ...> LEFT JOIN Employees e ON d.DepartmentID = e.DepartmentID
   ...> WHERE e.EmployeeID IS NULL;
sqlite>
```

Q5. Write a query to fetch all employee details along with their department names.

```
SELECT
   e.EmployeeID AS employee_id,
   e.Name AS name,
   e.HireDate AS hire_date,
   e.Salary AS salary,
   d.DepartmentName AS department_name
FROM Employees e
JOIN Departments d ON e.DepartmentID = d.DepartmentID
ORDER BY e.EmployeeID;
```



```
sqlite> SELECT
   ...>     e.EmployeeID AS employee_id,
   ...>     e.Name AS name,
   ...>     e.HireDate AS hire_date,
   ...>     e.Salary AS salary,
   ...>     d.DepartmentName AS department_name
   ...> FROM Employees e
   ...> JOIN Departments d ON e.DepartmentID = d.DepartmentID
   ...> ORDER BY e.EmployeeID;
1|Alice|2021-01-15|70000|HR
2|Bob|2020-03-10|60000|IT
3|Charlie|2022-05-20|80000|HR
4|Diana|2019-07-25|75000|Finance
sqlite> 
```