

Oracle SQL Basics

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Oracle SQL Overview

What is Oracle SQL?

- Oracle SQL is the **Structured Query Language** used with **Oracle Database**.
 - Oracle Database = one of the most widely used **RDBMS** (Relational Database Management Systems).
 - SQL in Oracle is **ANSI standard** but also includes **Oracle-specific extensions**.
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Key Components of Oracle SQL

1. **DDL (Data Definition Language)** → define structures
 - **CREATE, ALTER, DROP, TRUNCATE**
 2. **DML (Data Manipulation Language)** → work with data
 - **SELECT, INSERT, UPDATE, DELETE**
 3. **DCL (Data Control Language)** → manage access
 - **GRANT, REVOKE**
 4. **TCL (Transaction Control Language)** → transaction handling
 - **COMMIT, ROLLBACK, SAVEPOINT**
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Basic Oracle SQL Examples

1. Create a Table

```
CREATE TABLE employees (
```

```
emp_id NUMBER PRIMARY KEY,  
emp_name VARCHAR2(50),  
salary NUMBER(10,2),  
department_id NUMBER  
);
```

2. Insert Data

```
INSERT INTO employees (emp_id, emp_name, salary,  
department_id)  
VALUES (101, 'Rahul Sharma', 55000, 10);
```

3. Select Data

```
SELECT emp_name, salary  
FROM employees  
WHERE department_id = 10;
```

4. Update Data

```
UPDATE employees  
SET salary = salary * 1.10  
WHERE department_id = 10;
```

5. Delete Data

```
DELETE FROM employees  
WHERE emp_id = 101;
```

6. Aggregation

```
SELECT department_id, AVG(salary) AS avg_salary
FROM employees
GROUP BY department_id
HAVING AVG(salary) > 50000;
```

7. Join Example

```
SELECT e.emp_name, d.dept_name
FROM employees e
JOIN departments d
  ON e.department_id = d.dept_id;
```

8. Subquery

```
SELECT emp_name, salary
FROM employees
WHERE salary > (SELECT AVG(salary) FROM employees);
```

9. Transaction Control

```
UPDATE employees SET salary = 60000 WHERE emp_id = 102;
SAVEPOINT before_raise;
```

```
UPDATE employees SET salary = 70000 WHERE emp_id = 103;
```

```
ROLLBACK TO before_raise; -- undo last change but keep first
COMMIT; -- finalize
```



Oracle SQL vs Other Databases

Feature	Oracle SQL	Standard SQL (MySQL/Postgres)
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String type	VARCHAR2	VARCHAR
Auto increment	SEQUENCE + TRIGGER	AUTO_INCREMENT / SERIAL
Date handling	Powerful DATE and TIMESTAMP	Limited in MySQL/Postgres
Proprietary functions	NVL, DECODE, ROWNUM	Not available in standard SQL



Learning Path for Oracle SQL Beginners

1. **Basics** → DDL, DML, SELECT, WHERE
 2. **Functions** → String, Number, Date, Conversion (**TO_CHAR**, **TO_DATE**)
 3. **Aggregates** → GROUP BY, HAVING
 4. **Joins** → Inner, Outer, Self, Cross
 5. **Subqueries** → Scalar, Correlated, EXISTS
 6. **Transactions** → COMMIT, ROLLBACK, SAVEPOINT
 7. **Advanced Oracle Features**
 - **ROWNUM**, **ROWID**
 - Analytical Functions (**RANK**, **DENSE_RANK**, **ROW_NUMBER**)
 - **MERGE** for upserts
 - PL/SQL basics (blocks, procedures, functions, cursors)
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