SQL Basics Quick Reference

Basic SELECT Statement

```
-- Basic syntax
SELECT column1, column2 FROM table_name;

-- Select all columns
SELECT * FROM employees;

-- Select specific columns
SELECT name, age, salary FROM employees;
```

WHERE Clause (Filtering)

```
-- Basic filtering
SELECT * FROM employees WHERE age > 25;

-- Text filtering
SELECT * FROM employees WHERE department = 'Sales';

-- Multiple conditions
SELECT * FROM employees WHERE age > 25 AND salary > 50000;
SELECT * FROM employees WHERE department = 'Sales' OR department =
'Marketing';

-- Not equal
SELECT * FROM employees WHERE department != 'HR';
SELECT * FROM employees WHERE department <> 'HR';  -- Alternative syntax
```

Common Operators

```
-- Comparison operators
SELECT * FROM products WHERE price > 100;      -- Greater than
SELECT * FROM products WHERE price < 50;       -- Less than
SELECT * FROM products WHERE price >= 100;     -- Greater than or equal
SELECT * FROM products WHERE price <= 50;      -- Less than or equal
SELECT * FROM products WHERE price = 99.99;    -- Equal

-- LIKE operator (pattern matching)
SELECT * FROM customers WHERE name LIKE 'John%';     -- Starts with 'John'
SELECT * FROM customers WHERE name LIKE '%Smith';    -- Ends with 'Smith'
SELECT * FROM customers WHERE name LIKE '%son%';     -- Contains 'son'

-- IN operator
SELECT * FROM employees WHERE department IN ('Sales', 'Marketing', 'IT');

-- BETWEEN operator
SELECT * FROM employees WHERE age BETWEEN 25 AND 40;
SELECT * FROM products WHERE price BETWEEN 10 AND 100;
```

ORDER BY (Sorting)

```
-- Sort ascending (default)
SELECT * FROM employees ORDER BY name;
SELECT * FROM employees ORDER BY age ASC;

-- Sort descending
SELECT * FROM employees ORDER BY salary DESC;

-- Multiple sort columns
SELECT * FROM employees ORDER BY department, salary DESC;
SELECT * FROM employees ORDER BY age DESC, name ASC;
```

Basic Functions

```
-- Count records
SELECT COUNT(*) FROM employees;
SELECT COUNT(employee_id) FROM employees;

-- Mathematical functions
SELECT SUM(salary) FROM employees;
SELECT AVG(salary) FROM employees;
SELECT MAX(salary) FROM employees;
SELECT MIN(salary) FROM employees;

-- String functions
SELECT UPPER(name) FROM employees;
SELECT LOWER(email) FROM customers;
SELECT LENGTH(description) FROM products;
```

DISTINCT (Remove Duplicates)

```
-- Get unique values
SELECT DISTINCT department FROM employees;
SELECT DISTINCT city FROM customers;

-- Count unique values
SELECT COUNT(DISTINCT department) FROM employees;
```

LIMIT (Restrict Results)

```
-- Get first 10 records
SELECT * FROM employees LIMIT 10;

-- Get records 11-20 (with OFFSET)
SELECT * FROM employees LIMIT 10 OFFSET 10;

-- Top 5 highest salaries
SELECT * FROM employees ORDER BY salary DESC LIMIT 5;
```

Basic Examples

```sql
-- Example 1: Find all employees in Sales department
SELECT name, salary
FROM employees
WHERE department = 'Sales';

-- Example 2: Find products under $50, sorted by price
SELECT product_name, price
FROM products
WHERE price < 50
ORDER BY price;

-- Example 3: Count employees by department
SELECT department, COUNT(*) as employee_count
FROM employees
GROUP BY department;

-- Example 4: Find expensive products
SELECT *
FROM products
WHERE price > (SELECT AVG(price) FROM products);
```

Common Data Types

- **INTEGER / INT**: Whole numbers
- **VARCHAR(n)**: Variable-length text (up to n characters)
- **TEXT**: Large text fields
- **DECIMAL(p,s)**: Decimal numbers (p digits, s after decimal)
- **DATE**: Date values (YYYY-MM-DD)
- **DATETIME**: Date and time values
- **BOOLEAN**: True/false values

SQL Comments

```sql
-- Single line comment

/*
Multi-line comment
Can span multiple lines
*/

SELECT name, -- This is an inline comment
       age
FROM employees;
```