
Writing Basic SQL Statements

 Property for sale
in Pakistan

Buy

Rent

Projects

Wanted



Select City



All Homes




Then enter location here



Any



Price Range (Rs) 

Land Area Marla



From No Min

To No Max

From No Min

To No Max

 FIND PROPERTIES

 Property for sale
in Pakistan

Buy

Rent

Projects

Wanted



Lahore



All Homes



Any

Dha Phase 1 x

Dha Phase 2 x

Dha Phase 8 x

Enter more locations here

Price Range (Rs) 

From No Min

To No Max

Land Area

Marla



From No Min

To No Max

 FIND PROPERTIES

Type & Purpose

All Homes

For Sale

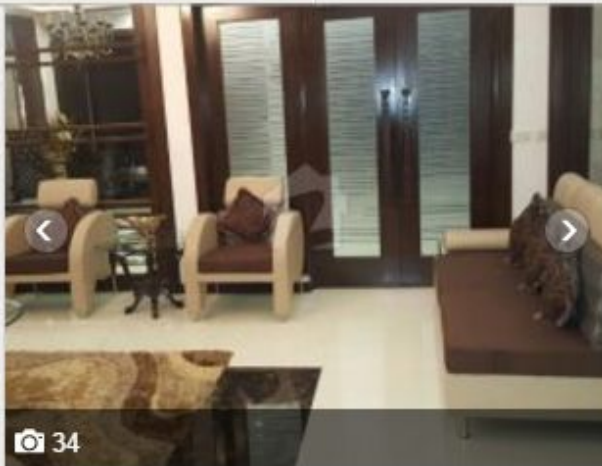
Location

Lahore

Price & Area

Beds & Baths

Keyword



34

DHA Phase 6 - Block C, DHA Phase 6

5 Bed 6 Bath 1 Kanal

VITAL ESTATE offer House is available for sale. Location: Dha Phase 6 C block Best Option For Living Purpose. Having 5 Bed Room With Beautiful Attached Bath, Tiles, Wooden Flooring, Huge Car Parking, Beautiful ... more

Added: 4 hours ago (Updated: 4 hours ago)

Marketed By: Vital Estate

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SUPER HOT

HOUSE IS AVAILABLE FOR S...



3 Bed House Is Available For Sale Rs 98.75 Lakh

Imperial Garden Homes, Paragon City

3 Bed 6 Marla

A nicely built 6 Marla, 3 Bed Room House is being offered for sale. This modern unit is fitted with high quality fixtures and boasts an excellent finish. Since it is located in Imperial Gardens in Paragon City Lahore, ... more

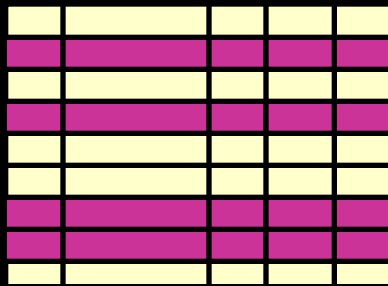
Added: 1 day ago (Updated: 5 hours ago)

Objectives

- After completing this lesson, you should be able to do the following:
 - List the capabilities of SQL SELECT statements
 - Execute a basic SELECT statement

Capabilities of SQL SELECT Statements

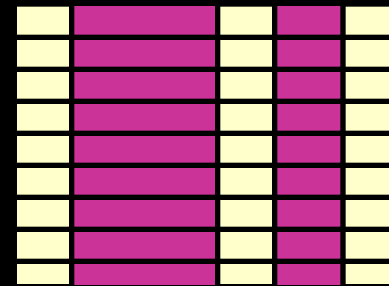
Selection



A 10x5 grid representing a table. The second, fourth, sixth, eighth, and tenth rows are highlighted in red, illustrating the result of a selection operation.

Table 1

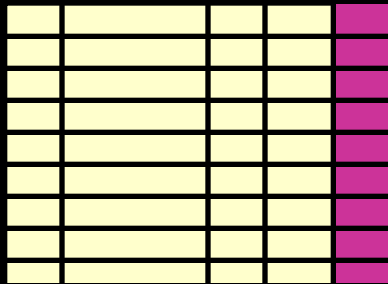
Projection



A 10x5 grid representing a table. The first, third, and fifth columns are highlighted in red, illustrating the result of a projection operation.

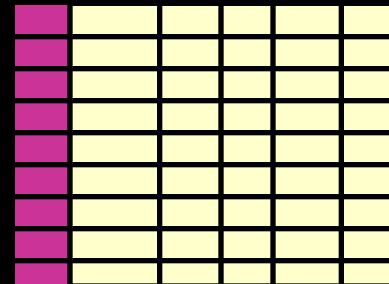
Table 1

Join



A 10x5 grid representing a table. The fifth column is highlighted in red, representing a selection operation.

Table 1



A 10x5 grid representing a table. The first column is highlighted in red, representing a selection operation.

Table 2

Basic SELECT Statement

```
SELECT [DISTINCT] {*, column [alias],...}  
FROM   table;
```

- SELECT identifies *what* columns.
- FROM identifies *which* table.

Writing SQL Statements

- SQL statements are not case sensitive.
- SQL statements can be on one or more lines.
- Keywords cannot be abbreviated or split across lines.
- Clauses are usually placed on separate lines.
- Tabs and indents are used to enhance readability.

Selecting All Columns

```
SQL> SELECT *  
2 FROM dept;
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Selecting Specific Columns

```
SQL> SELECT deptno, loc  
2 FROM dept;
```

DEPTNO	LOC
10	NEW YORK
20	DALLAS
30	CHICAGO
40	BOSTON

Column Heading Defaults

- Default justification
 - Left: Date and character data
 - Right: Numeric data
- Default display: Uppercase

Arithmetic Expressions

- Create expressions on NUMBER and DATE data by using arithmetic operators.

Operator	Description
+	Add
-	Subtract
*	Multiply
/	Divide

Using Arithmetic Operators

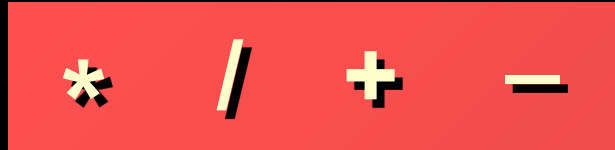
```
SQL> SELECT ename, sal, sal+300  
2 FROM emp;
```

ENAME	SAL	SAL+300
-----	-----	-----
KING	5000	5300
BLAKE	2850	3150
CLARK	2450	2750
JONES	2975	3275
MARTIN	1250	1550
ALLEN	1600	1900

...

14 rows selected.

Operator Precedence



- Multiplication and division take priority over addition and subtraction.
- Operators of the same priority are evaluated from left to right.
- Parentheses are used to force prioritized evaluation and to clarify statements.

Operator Precedence

```
SQL> SELECT ename, sal, 12*sal+100
        FROM emp;
```

ENAME	SAL	12*SAL+100
-----	-----	-----
KING	5000	60100
BLAKE	2850	34300
CLARK	2450	29500
JONES	2975	35800
MARTIN	1250	15100
ALLEN	1600	19300

...

14 rows selected.

Using Parentheses

```
SQL> SELECT ename, sal, 12*(sal+100)
2 FROM emp;
```

ENAME	SAL	12*(SAL+100)
-----	-----	-----
KING	5000	61200
BLAKE	2850	35400
CLARK	2450	30600
JONES	2975	36900
MARTIN	1250	16200

...

14 rows selected.

Defining a Null Value

- A null is a value that is unavailable, unassigned, unknown, or inapplicable.
- A null is not the same as zero or a blank space.

```
SQL> SELECT  ename, job, comm  
2  FROM      emp;
```

ENAME	JOB	COMM
-----	-----	-----
KING	PRESIDENT	
BLAKE	MANAGER	
...		
TURNER	SALESMAN	0
...		

14 rows selected.

Null Values

in Arithmetic Expressions

- Arithmetic expressions containing a null value evaluate to null.

```
SQL> select 12*sal+comm  
2   from emp  
3  WHERE  ename='KING' ;
```

ENAME	12*SAL+COMM
-----	-----
KING	

Defining a Column Alias

- Renames a column heading
- Is useful with calculations
- Immediately follows column name; optional AS keyword between column name and alias
- Requires double quotation marks if it contains spaces or special characters or is case sensitive

Using Column Aliases

```
SQL> SELECT 1 ename AS name, sal salary
2 FROM emp;
```

NAME	SALARY

...	

```
SQL> SELECT 1 ename "Name",
2 sal*12 "Annual Salary"
3 FROM emp;
```

Name	Annual Salary

...	

Concatenation Operator

- Concatenates columns or character strings to other columns
- Is represented by two vertical bars (||)
- Creates a resultant column that is a character expression

Using the Concatenation Operator

```
SQL> SELECT  ename||job AS "Employees"  
2  FROM      emp;
```

Employees

KINGPRESIDENT

BLAKEMANAGER

CLARKMANAGER

JONESMANAGER

MARTINSALESMAN

ALLENSALESMAN

...

14 rows selected.

Literal Character Strings

- A literal is a character, expression, or number included in the SELECT list.
- Date and character literal values must be enclosed within single quotation marks.
- Each character string is output once for each row returned.

Using Literal Character Strings

```
SQL> SELECT  ename      ||' '||'is a' ||' '||job
2           AS "Employee Details"
3 FROM      emp;
```

```
Employee Details
-----
KING is a PRESIDENT
BLAKE is a MANAGER
CLARK is a MANAGER
JONES is a MANAGER
MARTIN is a SALESMAN
...
14 rows selected.
```


Duplicate Rows

- The default display of queries is all rows, including duplicate rows.

```
SQL> SELECT deptno  
2 FROM emp;
```

```
DEPTNO  
-----  
10  
30  
10  
20  
  
...  
14 rows selected.
```

Eliminating Duplicate Rows

Eliminate duplicate rows by using the **DISTINCT** keyword in the **SELECT** clause.

```
SQL> SELECT DISTINCT deptno  
2 FROM emp;
```

DEPTNO
10
20
30

Displaying Table Structure

- Use the SQL*Plus DESCRIBE command to display the structure of a table.

```
DESC[RIBE] tablename
```

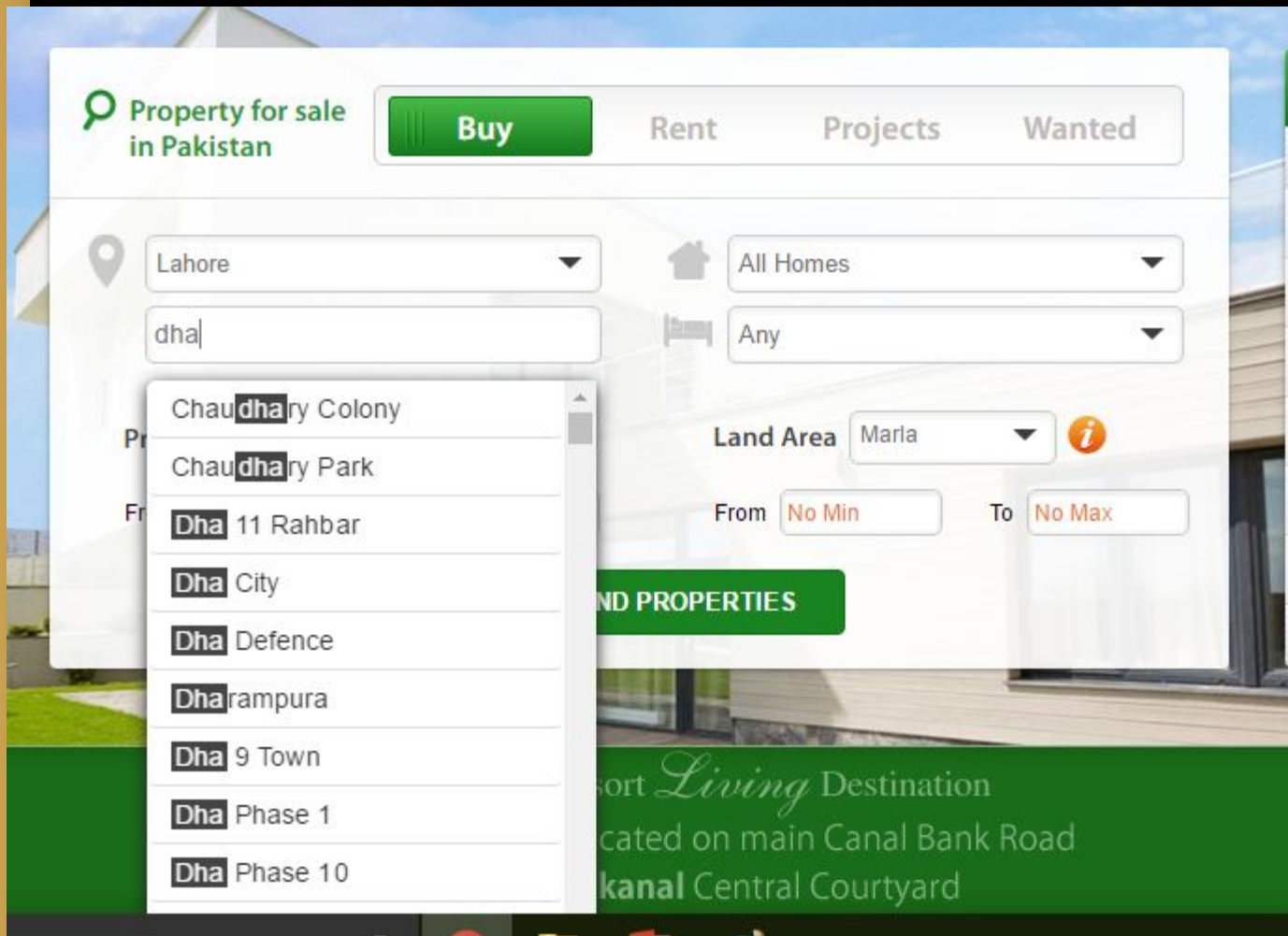
Displaying Table Structure

```
SQL> DESCRIBE dept
```

Name	Null?	Type
-----	-----	-----
DEPTNO	NOT NULL	NUMBER(2)
DNAME		VARCHAR2(14)
LOC		VARCHAR2(13)

Practice Overview

- Selecting all data from different tables
- Describing the structure of tables
- Performing arithmetic calculations and specifying column names
- Using SQL*Plus editor



Other comparison operators

Operator	Meaning
BETWEEN ...AND...	Between two values (inclusive)
IN(list)	Match any of a list of values
LIKE	Match a character pattern
IS NULL	Is a null value

Using the Between operator

- Using the between operator to display rows based on a range

```
SQL> SELECT  ename, sal
      2  FROM    emp
      3  WHERE  sal BETWEEN 1000 AND 1500;
```

ENAME	SAL
MARTIN	1250
TURNER	1500
WARD	1250
ADAMS	1100
MILLER	1300

Lower
limit

Higher
limit

 Property for sale
in Pakistan

Buy

Rent

Projects

Wanted



Lahore



All Homes



Any

Dha Phase 1 x

Dha Phase 2 x

Dha Phase 8 x

Enter more locations here

Price Range (Rs) 

From

No Min

To

No Max

Land Area

Marla



From

No Min

To

No Max

 FIND PROPERTIES

Using the IN operator

- Use the IN operator to test for values in a list

```
SQL> SELECT  empno, ename, sal, mgr
      2  FROM    emp
      3  WHERE   mgr IN (7902, 7566, 7788);
```

EMPNO	ENAME	SAL	MGR
7902	FORD	3000	7566
7369	SMITH	800	7902
7788	SCOTT	3000	7566
7876	ADAMS	1100	7788

Using the LIKE operator

- Use the LIKE operator to perform wildcard searches of valid search string values
- Search conditions can contain either literal characters or numbers
 - % denotes zero or many characters
 - _ denotes one character

```
SQL> SELECT   ename
      2  FROM    emp
      3  WHERE   ename LIKE 'S%';
```

Using the LIKE operator

- You can combine pattern-matching characters

```
SQL> SELECT  ename
      2  FROM emp
      3  WHERE   ename LIKE '_A%';
```

ENAME

MARTIN

JAMES

WARD

Using the IS NULL operator

- Test for null values with the IS NULL operator

```
SQL> SELECT  ename, mgr
      2  FROM    emp
      3  WHERE  mgr IS NULL;
```

ENAME	MGR
-----	-----
KING	

Logical Operators

Operator	Meaning
AND	Returns TRUE if <i>both</i> component conditions are TRUE
OR	Returns TRUE if <i>either</i> component condition is TRUE
NOT	Returns TRUE if the following condition is FALSE

 Property for sale
in Pakistan

Buy

Rent

Projects

Wanted



Select City



All Homes



Then enter location here



Any



Price Range (Rs) 

Land Area Marla



From No Min

To No Max

From No Min

To No Max

 FIND PROPERTIES

Using the OR operator

- OR requires either condition to be TRUE

```
SQL> SELECT empno, ename, job, sal
2 FROM emp
3 WHERE sal >= 1100
4 OR job = 'CLERK';
```

EMPNO	ENAME	JOB	SAL
7839	KING	PRESIDENT	5000
7698	BLAKE	MANAGER	2850
7782	CLARK	MANAGER	2450
7566	JONES	MANAGER	2975
7654	MARTIN	SALESMAN	1250
...			
7900	JAMES	CLERK	950
...			

14 rows selected.

Using the NOT operator

```
SQL> SELECT ename, job
      2 FROM emp
      3 WHERE job NOT IN ('CLERK', 'MANAGER', 'ANALYST');
```

ENAME	JOB
-----	-----
KING	PRESIDENT
MARTIN	SALESMAN
ALLEN	SALESMAN
TURNER	SALESMAN
WARD	SALESMAN

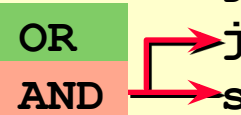
Rule of Precedence

Order Evaluated	Operator
1 All comparison operators	
2 NOT	
3 AND	
4 OR	

- Override rule of precedence by using parantheses

Rule of Precedence

```
SQL> SELECT ename, job, sal
      2 FROM emp
      3 WHERE job='SALESMAN'
      4 OR job='PRESIDENT'
      5 AND sal>1500;
```

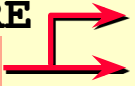


ENAME	JOB	SAL
KING	PRESIDENT	5000
MARTIN	SALESMAN	1250
ALLEN	SALESMAN	1600
TURNER	SALESMAN	1500
WARD	SALESMAN	1250

Rule of Precedence

- Use parentheses to force priority

```
SQL> SELECT      ename, job, sal
      2  FROM      emp
      3  WHERE      (job=' SALESMAN '
      4  OR          job=' PRESIDENT ' )
      5  AND          sal>1500;
```



ENAME	JOB	SAL
KING	PRESIDENT	5000
ALLEN	SALESMAN	1600

Order by clause

- Sort rows with the ORDER BY clause
 - ASC: Ascending order, default
 - DESC: descending order
- The ORDER BY clause comes last in the select statement

```
SQL> SELECT      ename, job, deptno, hiredate
  2  FROM          emp
  3  ORDER BY hiredate;
```

ENAME	JOB	DEPTNO	HIREDATE
-----	-----	-----	-----
SMITH	CLERK	20	17-DEC-80
ALLEN	SALESMAN	30	20-FEB-81
...			

14 rows selected.

Showing 1 to 20 of 20,208 properties

Sort by: Default Order

Default Order
Price Low to High
Price High to Low
Beds Low to High
Beds High to Low
Area Low to High
Area High to Low
Date New to Old
Date Old to New
Verified Only
Hot Only
With Videos
With Photos

SUPER HOT
BRAND NEW HOUSE FOR SAL..



Excellent 1 Kanal Fully Furnished B..

DHA Phase 4 - Block FF, DHA Phase 4

5 Bed 6 Bath 1 Kanal

Extraordinary Home Will Surpass All Expectations, With Expansive Interior And Fine Finishes, This Luxury Bung Design By Architect Situated At DHA Phase 4. Outstand Plan Of This House. It Has ... more

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Get Expert Advice

SUPER HOT



One Kanal Palace Main of Back Ne... Rs 4.85 Crore

DHA Phase 6, DHA Defence

5 Bed 6 Bath 1 Kanal

Sorting in Descending Order

```
SQL> SELECT      ename, job, deptno, hiredate
  2  FROM          emp
  3  ORDER BY hiredate DESC;
```

ENAME	JOB	DEPTNO	HIREDATE
ADAMS	CLERK	20	12-JAN-83
SCOTT	ANALYST	20	09-DEC-82
MILLER	CLERK	10	23-JAN-82
JAMES	CLERK	30	03-DEC-81
FORD	ANALYST	20	03-DEC-81
KING	PRESIDENT	10	17-NOV-81
MARTIN	SALESMAN	30	28-SEP-81

...

14 rows selected.

Sorting by Multiple Columns

- The order to ORDER BY list is the order of sort

```
SQL> SELECT      ename, deptno, sal
  2  FROM        emp
  3  ORDER BY deptno, sal DESC;
```

ENAME	DEPTNO	SAL
KING	10	5000
CLARK	10	2450
MILLER	10	1300
FORD	20	3000
...		

14 rows selected.

- You can sort by a column that is not in the SELECT list

Exercise

Display the name and salary of employees earning more than 2850\$

The name and salary for all employees whose salary is not in the range of 1500\$ and 2850\$

Exercise

Find the Names, job and state date (hiredate) of employees between 20 February 1981 and May 1, 1981 in ascending order

Exercise

- The name, job and salary for employees whose job is clerk or analyst and their salary is not equal to 1000, 3000, 4000

Exercise

- The name, job and salary for employees whose job is clerk or analyst and their salary is not equal to 1000, 3000, 4000
- Find the name, salary, and commission for all employees whose commission (CMM) amount is greater than their salary increased by 10%