Writing Basic SQL Statements


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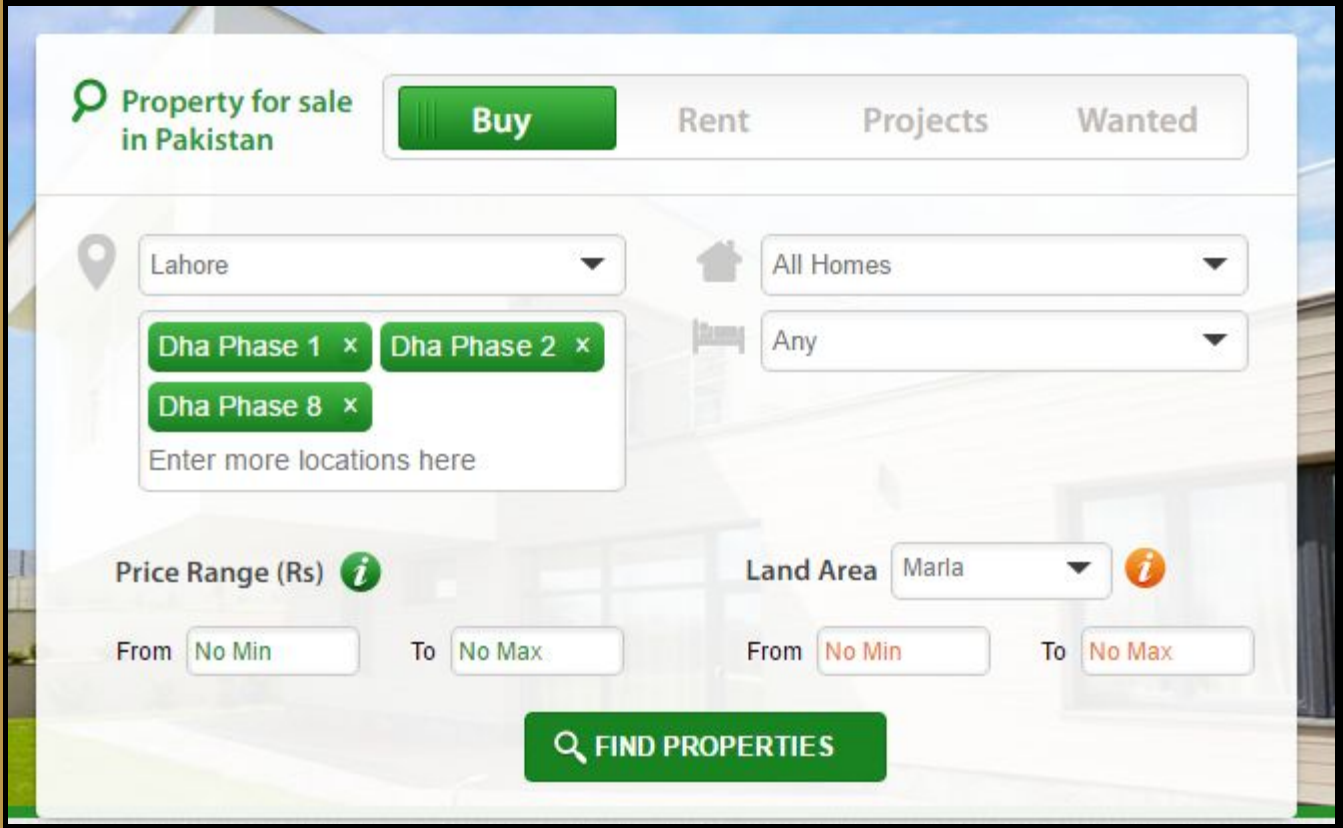
Select City
Then enter location here
All Homes
Any
Price Range (Rs)
Land Area
Marla
From
No Min
To
No Max
From
No Min
To
No Max
FIND PROPERTIES


Property for sale in Pakistan
Buy
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Lahore
All Homes
Dha Phase 1 ×
Dha Phase 2 ×
Dha Phase 8 ×
Enter more locations here
Any
Price Range (Rs)
Land Area
Marla
From
No Min
To
No Max
From
No Min
To
No Max
FIND PROPERTIES

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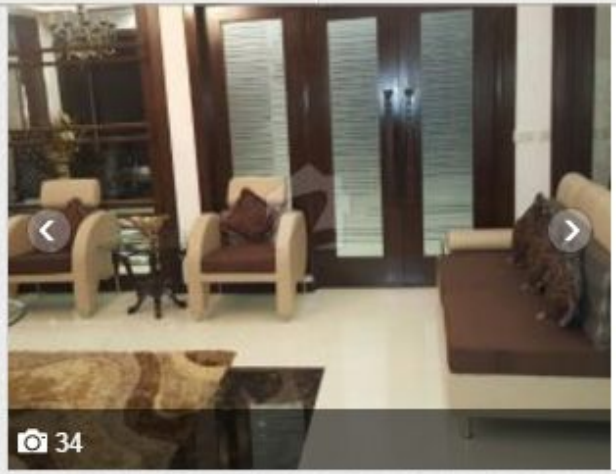
Type & Purpose: All Homes, For Sale | Location: Lahore | Price & Area | Beds & Baths | Keyword



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

Trusted Agency

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

Marketed By: Vital Estate

VIEW NUMBER

Save | Email Basket | SEND EMAIL

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

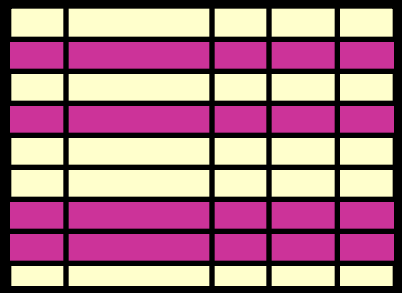


Table 1

Projection

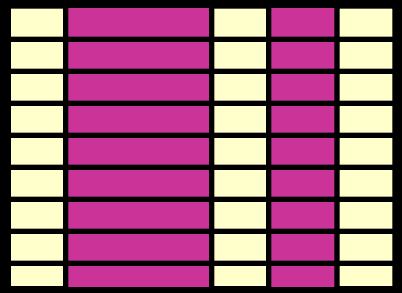


Table 1

Join

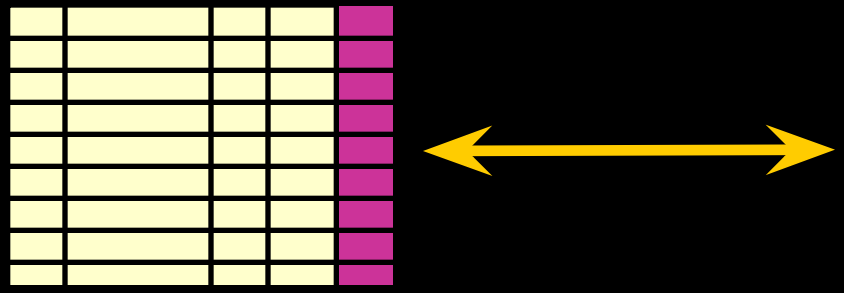


Table 1

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 ename, 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 ename AS name, sal salary
  2  FROM   emp;
```

```
NAME                 SALARY
-------------------- ---------

...
```

```
SQL> SELECT 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
```

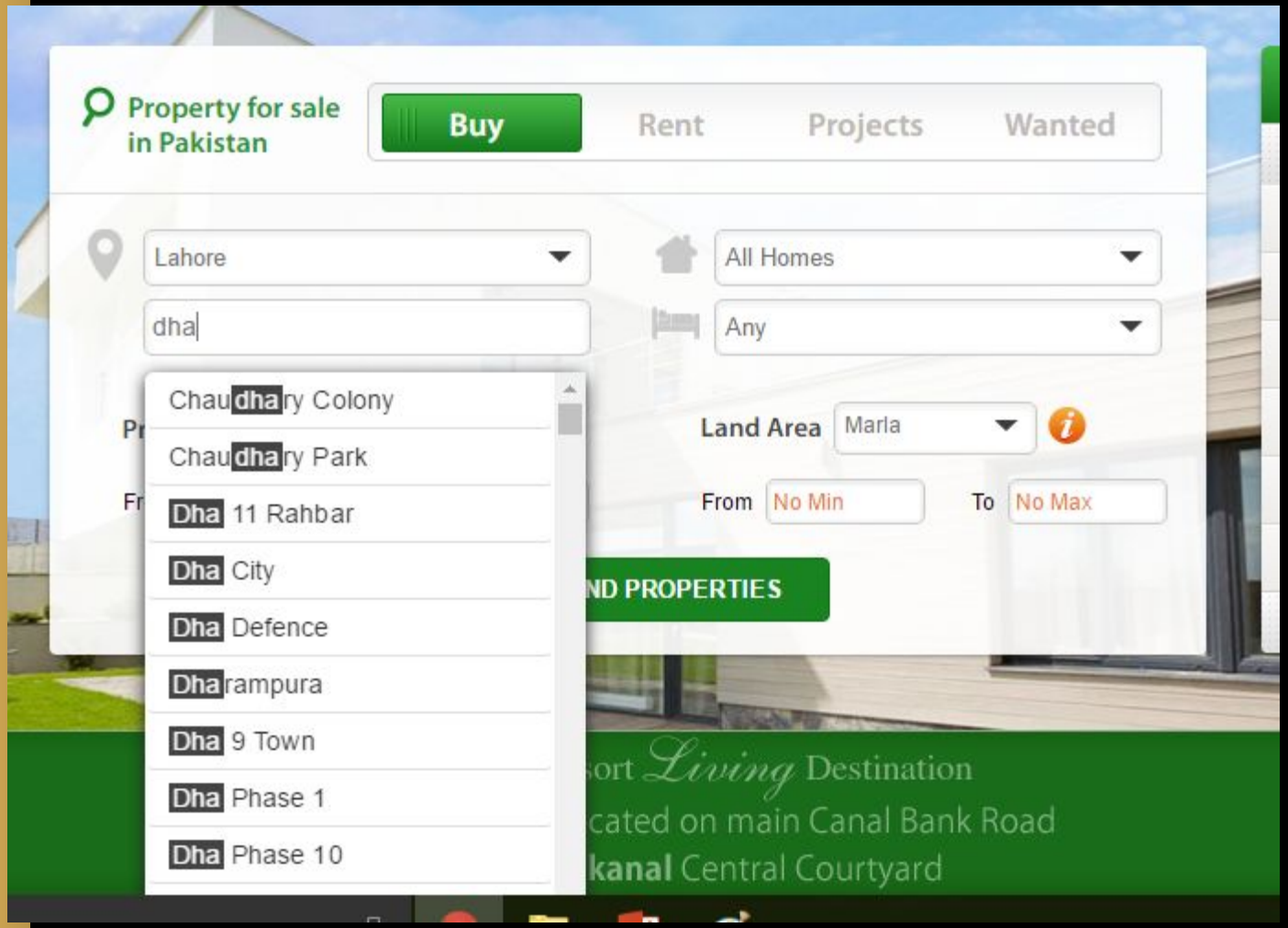
Displaying Table Structure

```
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


Property for sale in Pakistan
Buy
Rent
Projects
Wanted
Lahore
All Homes
dha
Any
Chaudhary Colony
Chaudhary Park
Dha 11 Rahbar
Dha City
Dha Defence
Dharampura
Dha 9 Town
Dha Phase 1
Dha Phase 10
Land Area
Marla
From
No Min
To
No Max
ND PROPERTIES
sort Living Destination
cated on main Canal Bank Road
kanal Central Courtyard

Other comparison operators

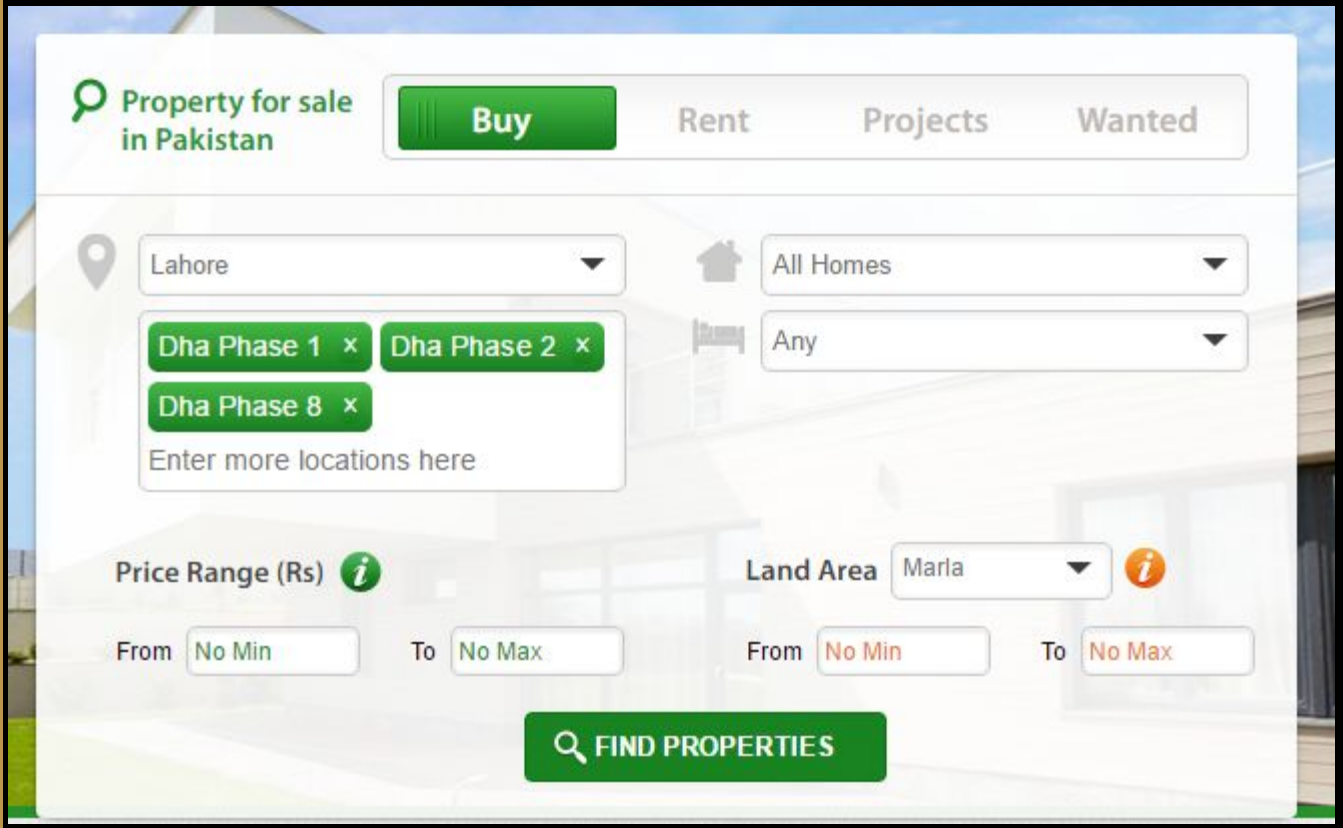
Operator	Meaning
BETWEEN ...AND...	Between two values (inclusive)
IN(list)	Match any of a list of values
LIKE	Match a character pattern
IS NULL	Is a null value

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


Property for sale in Pakistan
Buy
Rent
Projects
Wanted
Lahore
All Homes
Dha Phase 1 ×
Dha Phase 2 ×
Dha Phase 8 ×
Enter more locations here
Any
Price Range (Rs)
Land Area
Marla
From
No Min
To
No Max
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 *both* component conditions are TRUE
OR	Returns TRUE if *either* component condition is TRUE
NOT	Returns TRUE if the following condition is FALSE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Buy
Rent
Projects
Wanted
Select City
Then enter location here
All Homes
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

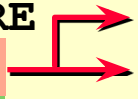
```
SQL> SELECT ename, job, sal
  2  FROM   emp
  3  WHERE  job='SALESMAN'
  4  OR     job='PRESIDENT'
  5  AND    sal>1500;
```

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;
```



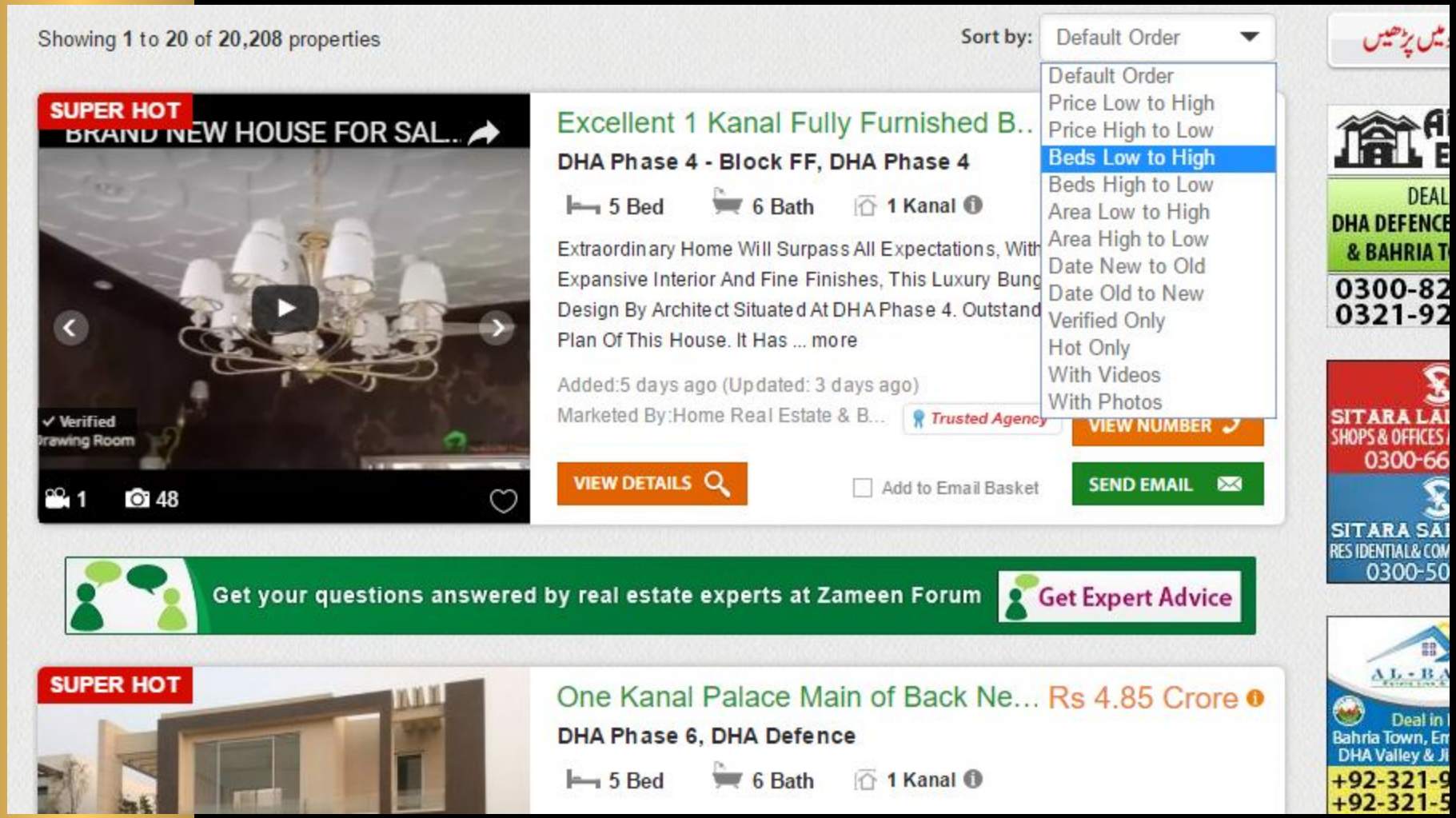
```
ENAME      JOB              SAL
---------- --------- ---------
KING       PRESIDENT       5000
ALLEN      SALESMAN        1600
```

Order by clause

- Soft 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..
Verified
Drawing Room
1
48
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
DHA DEFENCE
& BAHRIA
0300-82
0321-92
SITARA
SHOPS & OFFICES
0300-66
SITARA
RESIDENTIAL & COM
0300-50
Deal in
Bahria Town, Em
DHA Valley & Ji
+92-321-9
+92-321-5

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%