

The SELECT command is used to indicate which information we need to obtain not how the information is to be processed. SQL is a non-procedural language.

```

SELECT      [DISTINCT| ALL]
            {* | [column_expression [AS new_name]] [, ...]}
FROM        table_name [alias] [,...]
[WHERE      condition]
[GROUP BY  column_list]      [HAVING condition]
[ORDER BY  column_list]
    
```

**FROM** Specifies table(s) to be used  
**WHERE** Filters rows subject to some condition  
**GROUP BY** Forms rows of groups with same column value  
**HAVING** Filters groups subject to some condition  
**SELECT** Specifies which columns are to appear in the result table  
**ORDER BY** Specifies the order of the rows in the table result

Order of the clauses cannot be changed  
 Only SELECT and FROM are mandatory

WARD			NURSING_STAFF		
WNbr	WName	BedsNbr	NNbr	NName	Grade
07	Post_op	05	010	CSE1550	Top Level
10	One day	12	111	Mary S	Grade 5
11	Emergency	05	117	CSE1550	Grade 2
12	mayagogaya	40	122	Mary Smith	Grade 4
13	winter	23	123	Mira Topal	Grade 1
14	wqerty	32	143	Mary Mac	Grade 3
26	Long term	10	155	Mary Smithache	Grade 2
77	CSE1550	10	211	Mary Smith	Grade 2
99	New North care	33	222	Mary Smith_1	Grade 3
5678	January	23	255	Price Melanie	Grade 2

  

CONSULTANT			PERFORMS				
Code	CName	Phone	Code	ONbr	PNbr	DateP	Length
0017	asqwert	416-1-23--1234	0111	0001	1223331111	9/22/2003	00046
0055	qwertyo	416-1-22--1234	0111	0102	0000000044	5/23/2000	00034
0103	Ann Smith	416-365-3214	0999	0001	1234567891	3/4/2000	00120
0111	Mel Ferrer	111-222-2345	0999	0111	1223331111	2/5/2003	00100
0999	Peterson Alec	123-123-1234					

**SELECT \* FROM NURSING\_STAFF;**

NURSING_STAFF		
NNbr	NName	Grade
010	CSE1550	Top Level
111	Mary S	Grade 5
117	CSE1550	Grade 2
122	Mary Smith	Grade 4
123	Mira Topal	Grade 1
143	Mary Mac	Grade 3
155	Mary Smithache	Grade 2
211	Mary Smith	Grade 2
222	Mary Smith_1	Grade 3
255	Price Melanie	Grade 2

**SELECT NNbr, NName FROM NURSING\_STAFF;**

Select_2_Nurse	
NNbr	NName
010	CSE1550
111	Mary S
117	CSE1550
122	Mary Smith
123	Mira Topal
143	Mary Mac
155	Mary Smithache
211	Mary Smith
222	Mary Smith_1
255	Price Melanie

**SELECT Grade FROM NURSING\_STAFF;**

select_1_Nurse
Grade
Top Level
Grade 5
Grade 2
Grade 4
Grade 1
Grade 3
Grade 2
Grade 2
Grade 3
Grade 2

**SELECT DISTINCT Grade FROM NURSING\_STAFF;**

select_1_D_Nurse
Grade
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Top Level

**SELECT \* FROM NURSING\_STAFF WHERE Grade="Grade 2";**

select_1_Where_Nurse		
NNbr	NName	Grade
255	Price Melanie	Grade 2
117	CSE1550	Grade 2
211	Mary Smith	Grade 2
155	Mary Smithache	Grade 2

**SELECT \* FROM CONSULTANT, PERFORMS;**

Select_C_P							
CONSULTANT.Code	CName	Phone	PERFORMS.Code	ONbr	PNbr	DateP	Length
0103	Ann Smith	416-365-3214	0111	0001	1223331111	9/22/2003	00046
0103	Ann Smith	416-365-3214	0999	0001	1234567891	3/4/2000	00120
0103	Ann Smith	416-365-3214	0999	0111	1223331111	2/5/2003	00100
0103	Ann Smith	416-365-3214	0111	0102	0000000044	5/23/2000	00034
0111	Mel Ferrer	111-222-2345	0111	0001	1223331111	9/22/2003	00046
0111	Mel Ferrer	111-222-2345	0999	0001	1234567891	3/4/2000	00120
0111	Mel Ferrer	111-222-2345	0999	0111	1223331111	2/5/2003	00100
0111	Mel Ferrer	111-222-2345	0111	0102	0000000044	5/23/2000	00034
0999	Peterson Alec	123-123-1234	0111	0001	1223331111	9/22/2003	00046
0999	Peterson Alec	123-123-1234	0999	0001	1234567891	3/4/2000	00120
0999	Peterson Alec	123-123-1234	0999	0111	1223331111	2/5/2003	00100
0999	Peterson Alec	123-123-1234	0111	0102	0000000044	5/23/2000	00034
0017	asqwert	416-1-23--1234	0111	0001	1223331111	9/22/2003	00046
0017	asqwert	416-1-23--1234	0999	0001	1234567891	3/4/2000	00120
0017	asqwert	416-1-23--1234	0999	0111	1223331111	2/5/2003	00100
0017	asqwert	416-1-23--1234	0111	0102	0000000044	5/23/2000	00034
0055	qwertyo	416-1-22--1234	0111	0001	1223331111	9/22/2003	00046
0055	qwertyo	416-1-22--1234	0999	0001	1234567891	3/4/2000	00120
0055	qwertyo	416-1-22--1234	0999	0111	1223331111	2/5/2003	00100
0055	qwertyo	416-1-22--1234	0111	0102	0000000044	5/23/2000	00034

**SELECT \* FROM CONSULTANT, PERFORMS WHERE CONSULTANT.CODE=PERFORMS.CODE;**

Select_C_P_Join							
CONSULTANT.Code	CName	Phone	PERFORMS.Code	ONbr	PNbr	DateP	Length
0111	Mel Ferrer	111-222-2345	0111	0001	1223331111	9/22/2003	00046
0111	Mel Ferrer	111-222-2345	0111	0102	0000000044	5/23/2000	00034
0999	Peterson Alec	123-123-1234	0999	0001	1234567891	3/4/2000	00120
0999	Peterson Alec	123-123-1234	0999	0111	1223331111	2/5/2003	00100

**SELECT \* FROM CONSULTANT, PERFORMS INNER JOIN ON CONSULTANT.CODE=PERFORMS.CODE;**

**SELECT CName, PNbr, DateP FROM Consultant INNER JOIN Performs ON CONSULTANT.Code=Performs.Code;**

Select_C_P_Join_2		
CName	PNbr	DateP
Mel Ferrer	1223331111	9/22/2003
Mel Ferrer	0000000044	5/23/2000
Peterson Alec	1234567891	3/4/2000
Peterson Alec	1223331111	2/5/2003

**SELECT TOP 2 NName AS [Nurse Name] FROM Nursing\_Staff;**

Select_Top
Nurse Name
Mira Topal
Price Melanie

**SELECT PName & " lives in --> " & Addr AS [Patient name --> patient address] FROM Patient;**

Select_with_Header
Patient name --> patient address
444 lives in --> 444
Michael Box lives in --> 22, Grondin St., Hamilton
Pat Rex lives in --> 123, Main St, Toronto

**SELECT CNAME FROM CONSULTANT WHERE CNAME LIKE "\*\*E\*\*";**

Select_Like_1
CNAME
Mel Ferrer
Peterson Alec
asqwert
qwertyo

**SELECT CNAME FROM CONSULTANT WHERE CNAME LIKE "?E\*";**

Select_Like_2
CNAME
Mel Ferrer
Peterson Alec

**SELECT Code FROM Performs WHERE DateP>#1/22/2002#;**

Select_Date_1
Code
0111
0999

## SELECT STATEMENT WITH SUBQUERIES

A subselect can be used in WHERE and HAVING clauses of an outer SELECT, where it is called a **subquery** or **nested query**.

Subselects may appear also in INSERT, UPDATE and DELETE statements.

Rules:

- ORDER BY clause may not be used in a subquery (although it may be used in outermost SELECT)
- The subquery SELECT list must consist of a single column name or expression, except for subqueries that use EXISTS
- By default, column names refer to table name in the FROM clause of the subquery. Can refer to a table in FROM using an **alias**.
- When a subquery is one of the two operands in a comparison, subquery must appear on the right-hand side of the comparison.
- A subquery may not be used as an operand in an expression.

DEPT		
DeptNO	DNom	Location
10	ACCOUNTING	MONTREAL
20	RESEARCH	TORONTO
30	SALES	MONCTON
40	OPERATIONS	ST. JOHN'S

EMPLOYEE							
EMPNO	EName	JOB	ManagerNO	DateStart	Salary	Comission	DeptNO
7369	LEBLANC	EMPLOYEE	7902	17/12/1980	800		20
7449	CHIASSON	SALESMAN	7698	20/02/1981	1600	300	30
7521	WARD	SALESMAN	7698	22/02/1981	1250	500	30
7566	LANDRY	DIRECTOR	7839	02/04/1981	2975		20
7654	MARTIN	SALESMAN	7698	28/09/1981	1250	1400	30
7698	BLAKE	DIRECTOR	7839	01/05/1981	2850		30
7782	CLARK	DIRECTOR	7839	09/06/1981	2450		30
7788	SCOTT	ANALYST	7566	09/12/1982	3000		20
7839	ROY	DIR.GENER	0	17/11/1981	5000		10
7844	TURNER	SALESMAN	7698	08/09/1981	1500	0	30
7876	ADAMS	SALESMAN	7788	12/01/1983	1100		20
7900	JAMES	SALESMAN	7698	03/12/1981	950		30
7902	FORD	ANALYST	7566	03/12/1981	3000		20
7934	MILLER	SALESMAN	7782	23/01/1982	1300		10

1. Sub-query having as response only one row (tuple).

List all employees having the same JOB as Mr. Ward.

**SELECT ENAME, JOB FROM EMPLOYE WHERE JOB=(SELECT JOB FROM EMPLOYE WHERE ENAME="WARD");**

Query16	
ENAME	JOB
CHIASSON	SALESMAN
WARD	SALESMAN
MARTIN	SALESMAN
TURNER	SALESMAN
ADAMS	SALESMAN
JAMES	SALESMAN
MILLER	SALESMAN

List all employees that work in the same department as Mr. Ward.

**SELECT ENAME, JOB, DEPTNO FROM EMPLOYE WHERE DEPTNO=(SELECT DEPTNO FROM EMPLOYE WHERE ENAME="WARD");**

Query17		
ENAME	JOB	DEPTNO
CHIASSON	SALESMAN	30
WARD	SALESMAN	30
MARTIN	SALESMAN	30
BLAKE	DIRECTOR	30
CLARK	DIRECTOR	30
TURNER	SALESMAN	30
JAMES	SALESMAN	30

List all employees having the same JOB as Ward or a salary bigger than Clark.

**SELECT ENAME, JOB, Salary FROM EMPLOYE WHERE JOB=(SELECT JOB FROM EMPLOYE WHERE ENAME="WARD") OR SALARY > (SELECT SALARY FROM EMPLOYE WHERE ENAME="CLARK");**

Query18		
ENAME	JOB	Salary
CHIASSON	SALESMAN	1600
WARD	SALESMAN	1250
LANDRY	DIRECTOR	2975
MARTIN	SALESMAN	1250
BLAKE	DIRECTOR	2850

Query18		
ENAME	JOB	Salary
SCOTT	ANALYST	3000
ROY	DIR.GENER	5000
TURNER	SALESMAN	1500
ADAMS	SALESMAN	1100
JAMES	SALESMAN	950
FORD	ANALYST	3000
MILLER	SALESMAN	1300

2. Sub-query having as response one or many rows (tuples).

**SELECT CName FROM Consultant WHERE Code IN (Select code from Performs);**

Select_IN
CName
Mel Ferrer
Peterson Alec

**SELECT CName FROM Consultant WHERE Code NOT IN (Select code from Performs);**

Select_Not_IN
CName
Ann Smith
asqwert
qwertyo

Find staff whose salary is larger than salary of every member of staff at department 10.

**SELECT ENAME, JOB, SALARY FROM EMPLOYE WHERE SALARY > ALL (SELECT SALARY FROM EMPLOYE WHERE DEPTNO =10);**

**SELECT ENAME, JOB, SALARY, DEPTNO FROM EMPLOYE WHERE SALARY > ALL (SELECT SALARY FROM EMPLOYE WHERE DEPTNO =30);**  
?

MARCH_20			
EName	JOB	Salary	DEPTNO
LANDRY	DIRECTOR	2975	20
SCOTT	ANALYST	3000	20
ROY	DIR.GENER	5000	10
FORD	ANALYST	3000	20

- **ANY** and **ALL** may be used with subqueries that produce a single column of values
- If subquery is preceded by **ALL**, condition will only be true if it is satisfied by all values produced by the subquery
- If subquery is preceded by **ANY**, the condition will be true if it is satisfied by any value produced by the subquery (at least one value produced by the subquery)
- If subquery is empty, **ALL** returns true, **ANY** returns false

Find staff (**ENAME, JOB, SALARY, DEPTNO**) whose salary is larger than salary of at least 1 member of department 20.

**SELECT ENAME, JOB, SALARY, DEPTNO FROM EMPLOYE**  
**WHERE SALARY > ANY (SELECT SALARY FROM EMPLOYE WHERE DEPTNO =20);**

MARCH_22			
ENAME	JOB	SALARY	DEPTNO
CHIASSON	SALESMAN	1600	30
WARD	SALESMAN	1250	30
LANDRY	DIRECTOR	2975	20
MARTIN	SALESMAN	1250	30
BLAKE	DIRECTOR	2850	30
CLARK	DIRECTOR	2450	30
SCOTT	ANALYST	3000	20
ROY	DIR.GENER	5000	10
TURNER	SALESMAN	1500	30
ADAMS	SALESMAN	1100	20
JAMES	SALESMAN	950	30
FORD	ANALYST	3000	20
MILLER	SALESMAN	1300	10

**SELECT ENAME, JOB, SALARY, DEPTNO FROM EMPLOYE**  
**WHERE SALARY > ANY (SELECT SALARY FROM EMPLOYE WHERE DEPTNO =20) AND**  
**DEPTNO NOT IN (20);**

March_21			
ENAME	JOB	SALARY	DEPTNO
CHIASSON	SALESMAN	1600	30
WARD	SALESMAN	1250	30
MARTIN	SALESMAN	1250	30
BLAKE	DIRECTOR	2850	30
CLARK	DIRECTOR	2450	30
ROY	DIR.GENER	5000	10
TURNER	SALESMAN	1500	30
JAMES	SALESMAN	950	30
MILLER	SALESMAN	1300	10