Database

Select Statement

```
Select      cols
From      Table-Name
Where  Condition
Order by cols
```

Data Retrieval

Doctors

id	fname	Lname	bdate	address	sal	Dno
1255	Ahmad	sami	9-May-1979	Amman	2000	20
1314	Sara	ali	1-jan-1996	Irbid	1550	20
1772	Sana	khalil	5-mar-1960	Ajloun	3000	1
5988	mohammad	qais	10-aug-1988	Karak	5700	5
3421	leen	wesam	10-feb-1987	Amman	2500	3

Basic Data Retrieval

- Select * from doctors where sal=2000

id	fname	Lname	bdate	address	sal	Dno
1255	Ahmad	sami	9-May-1979	Amman	2000	20

- Select * from doctors where fname='Sara'

id	fname	Lname	bdate	address	sal	Dno
1314	Sara	ali	1-jan-1996	Irbid	1550	20

Basic Data Retrieval

- Select * from doctors where sal >= 3000

id	fname	Lname	bdate	address	sal	Dno
1772	Sana	khalil	5-mar-1960	Ajloun	3000	1
5988	mohammad	qais	10-aug-1988	Karak	5700	5

- Select * from doctors where bdate> '1-jan-1986'

id	fname	Lname	bdate	address	sal	Dno
1314	Sara	ali	1-jan-1996	Irbid	1550	20
5988	mohammad	qais	10-aug-1988	Karak	5700	5
3421	leen	wesam	10-feb-1987	Amman	2500	3

Basic Data Retrieval

Operator	Description	Example
=	Equality test.	`SELECT ENAME "Employee" FROM EMP WHERE SAL = 1500;`
!=, ^=, <>	Inequality test.	`SELECT ENAME FROM EMP WHERE SAL ^= 5000;`
>	Greater than test.	`SELECT ENAME "Employee", JOB "Title" FROM EMP WHERE SAL > 3000;`
<	Less than test.	`SELECT * FROM PRICE WHERE MINPRICE < 30;`
>=	Greater than or equal to test.	`SELECT * FROM PRICE WHERE MINPRICE >= 20;`
<=	Less than or equal to test.	`SELECT ENAME FROM EMP WHERE SAL <= 1500;`
IN	"Equivalent to any member of" test. Equivalent to "= ANY".	`SELECT * FROM EMP WHERE ENAME IN ('SMITH', 'WARD');`
ANY/ SOME	Compares a value to each value in a list or returned by a query. Must be preceded by =, !=, >, <, <=, or >=. Evaluates to FALSE if the query returns no rows.	`SELECT * FROM DEPT WHERE LOC = SOME ('NEW YORK','DALLAS');`
NOT IN	Equivalent to "!= ANY". Evaluates to FALSE if any member of the set is NULL.	`SELECT * FROM DEPT WHERE LOC NOT IN ('NEW YORK', 'DALLAS');`

Basic Data Retrieval

ALL	Compares a value with every value in a list or returned by a query. Must be preceded by =, !=, >, <, <=, or >=. Evaluates to TRUE if the query returns no rows.	`SELECT * FROM emp WHERE sal >= ALL (1400, 3000);`
[NOT] BETWEEN *x* and *y*	[Not] greater than or equal to *x* and less than or equal to *y*.	`SELECT ENAME, JOB FROM EMP WHERE SAL BETWEEN 3000 AND 5000;`
EXISTS	TRUE if a sub-query returns at least one row.	`SELECT * FROM EMP WHERE EXISTS (SELECT ENAME FROM EMP WHERE MGR IS NULL);`
x [NOT] LIKE *y* [ESCAPE *z*]	TRUE if *x* does [not] match the pattern *y*. Within *y*, the character "%" matches any string of zero or more characters except null. The character "_" matches any single character. Any character following ESCAPE is interpretted litteraly, useful when *y* contains a percent (%) or underscore (_).	`SELECT * FROM EMP WHERE ENAME LIKE '%E%';`
IS [NOT] NULL	Tests for nulls. This is the only operator that should be used to test for nulls.	`SELECT * FROM EMP WHERE COMM IS NOT NULL AND SAL > 1500;`

Null values-is Null/is not Null

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


ENAME      JOB              COMM
---------- ----------- ------
KING       PRESIDENT
BLAKE      MANAGER
CLARK      MANAGER
...
```

Basic Data Retrieval

- Select * from doctors where sal >= 3000 and Dno = 1

id	fname	Lname	bdate	address	sal	Dno
1772	Sana	khalil	5-mar-1960	Ajloun	3000	1

- Select * from doctors where bdate> '1-jan-1986' or Lname='khalil'

id	fname	Lname	bdate	address	sal	Dno
1314	Sara	ali	1-jan-1996	Irbid	1550	20
5988	mohammad	qais	10-aug-1988	Karak	5700	5
3421	leen	wesam	10-feb-1987	Amman	2500	3
1772	Sana	khalil	5-mar-1960	Ajloun	3000	1

Operators

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

In/not in

- Display the name, job, and salary for all employees whose job is Manager or ANALYST and their salary is not equal to $1000, $3000, $5000.

Basic Data Retrieval

- Select * from doctors where lname like '_ _ali%'

id	fname	Lname	bdate	address	sal	Dno
1772	Sana	khalil	5-mar-1960	Ajloun	3000	1

- Select * from doctors where bdate like '%1996'

id	fname	Lname	bdate	address	sal	Dno
1314	Sara	ali	1-jan-1996	Irbid	1550	20

Basic Data Retrieval

- Select fname from doctors where lname like '_

fname
Sana

- Select id , address from doctors where bdate like '%1986'

id	address
1314	Irbid

Order by

- Select * from doctors order by fname

id	fname	Lname	bdate	address	sal	Dno
1255	ahmad	sami	9-May-1979	Amman	2000	20
3421	leen	wesam	10-feb-1987	Amman	2500	3
5988	mohammad	qais	10-aug-1988	Karak	5700	5
1772	sana	khalil	5-mar-1960	Ajloun	3000	1
1314	sara	ali	1-jan-1996	Irbid	1550	20

- Two choices :Asc ,Desc
- Char / Number /Date
- Two columns
- Aliases

Order by

- Select * from doctors order by fname desc

id	fname	Lname	bdate	address	sal	Dno
1314	sara	ali	1-jan-1996	Irbid	1550	20
1772	sana	khalil	5-mar-1960	Ajloun	3000	1
5988	mohammad	qais	10-aug-1988	Karak	5700	5
3421	leen	wesam	10-feb-1987	Amman	2500	3
1255	ahmad	sami	9-May-1979	Amman	2000	20

Order by/alias

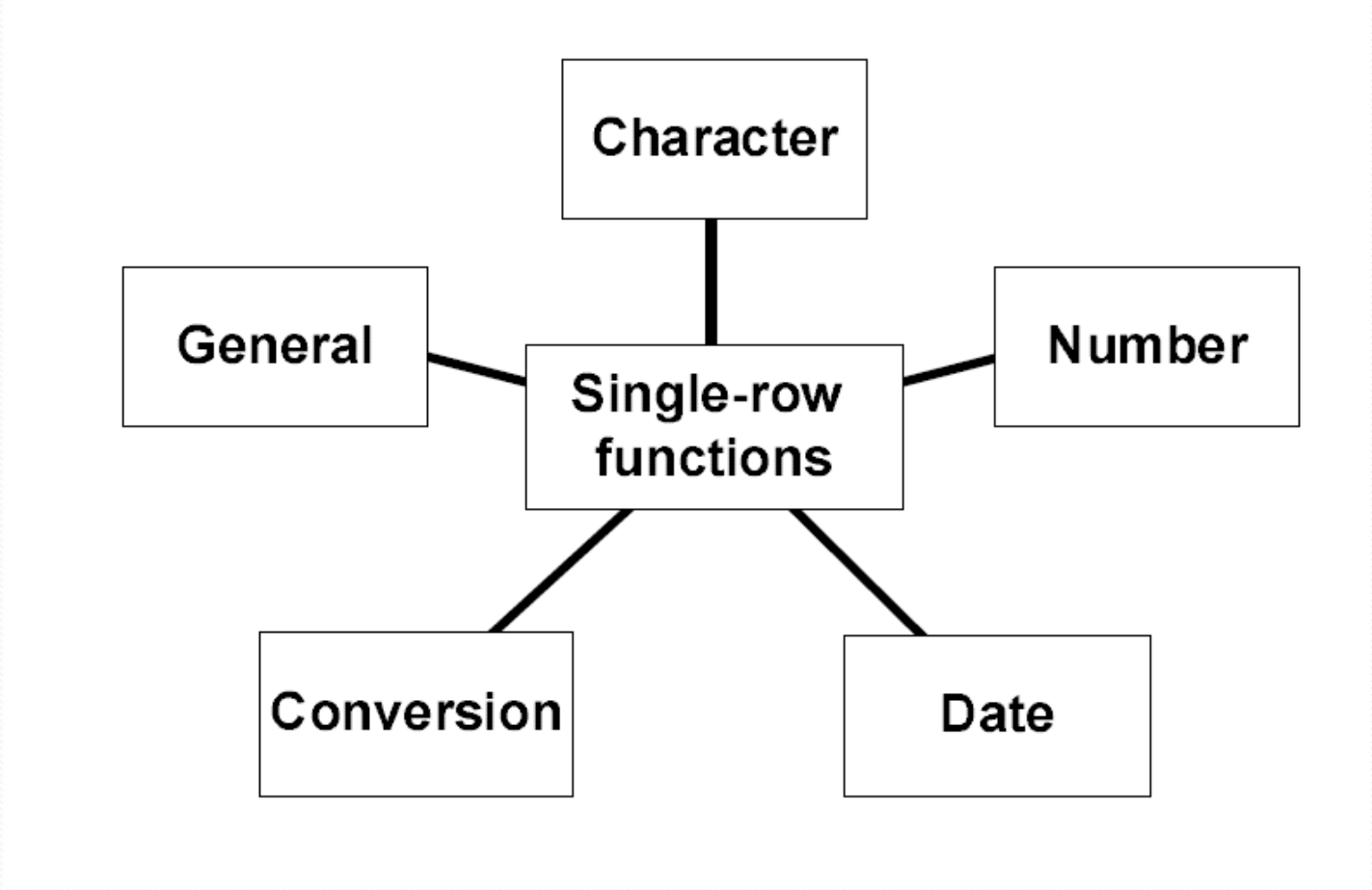
Select fname, sal*12 from doctors order by sal*12

fname	Sal*12
Sara	18600
Ahmad	24000
leen	30000
Sana	36000
mohammad	68400

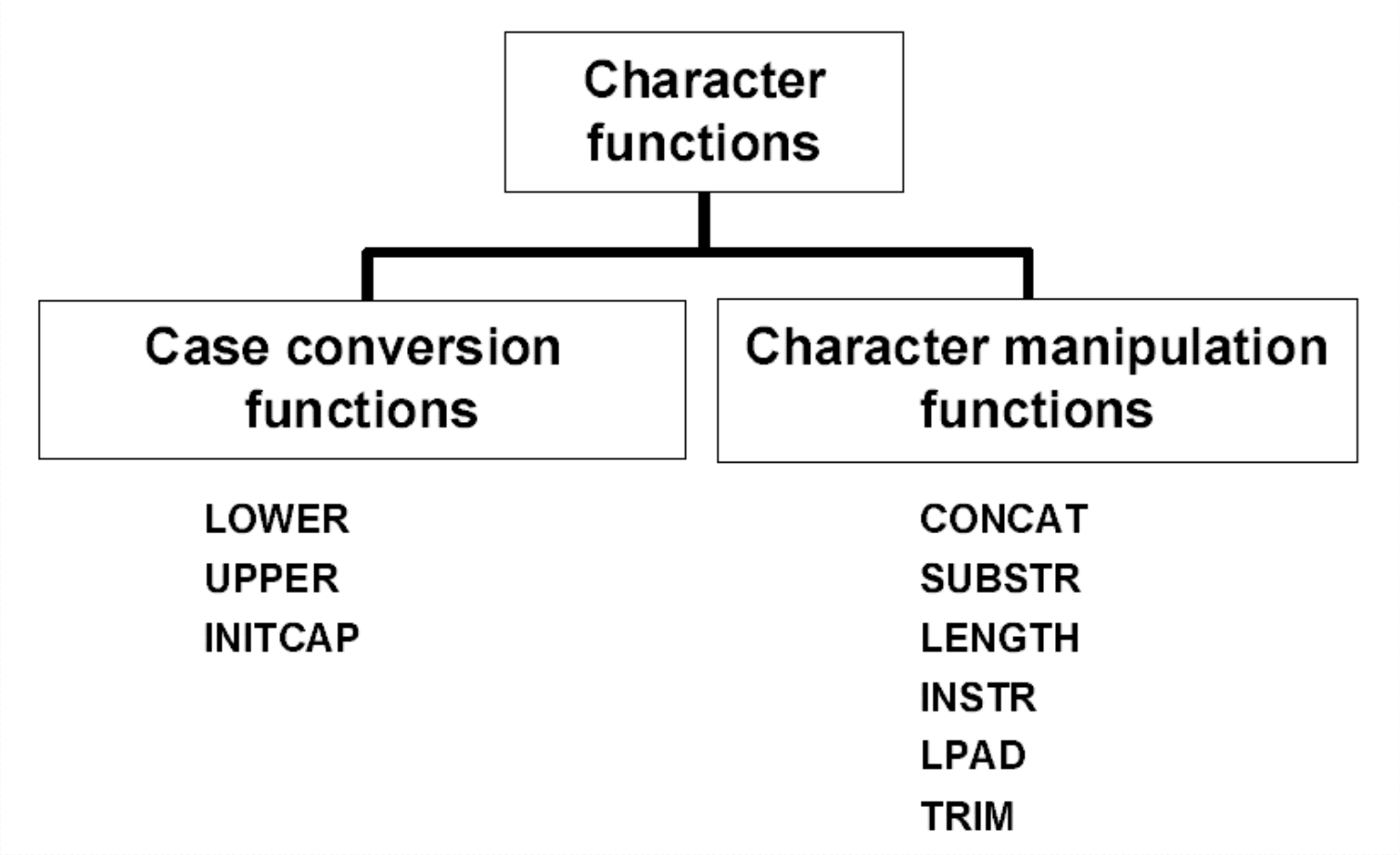
Select fname, sal*12 as “The salary” from doctors order by “The salary”

fname	salary
Sara	18600
Ahmad	24000
leen	30000
Sana	36000
mohammad	68400

Single row functions



Character


Character functions
Case conversion functions
Character manipulation functions
LOWER
UPPER
INITCAP
CONCAT
SUBSTR
LENGTH
INSTR
LPAD
TRIM

Case conversion functions

Function	Result
LOWER('SQL Course')	sql course
UPPER('SQL Course')	SQL COURSE
INITCAP('SQL Course')	Sql Course

Example 1

```
SQL>  SELECT 'The job title for '||INITCAP(ename)||' is '
  2   ||LOWER(job) AS "EMPLOYEE DETAILS"
  3   FROM emp;

EMPLOYEE DETAILS
----------------------------------------
The job title for King is president
The job title for Blake is manager
The job title for Clark is manager
...
14 rows selected.
```

Example 2

Display the employee number, name, and department number for employee Blake.

```
SQL> SELECT   empno, ename, deptno
  2  FROM     emp
  3  WHERE    ename = 'blake';
no rows selected
```

```
SQL> SELECT   empno, ename, deptno
  2  FROM     emp
  3  WHERE    ename = UPPER('blake');
```

```
     EMPNO ENAME          DEPTNO
---------- ---------- ----------
      7698 BLAKE              30
```

Character manipulation functions

Function	Result
CONCAT('Good', 'String')	GoodString
SUBSTR('String',1,3)	Str
LENGTH('String')	6
INSTR('String', 'r')	3
LPAD(sal,10,'*')	******5000
TRIM('S' FROM 'SSMITH')	MITH

Example

```
SQL> SELECT ename, CONCAT (ename, job), LENGTH(ename),
  2         INSTR(ename, 'A')
  3 FROM    emp
  4 WHERE   SUBSTR(job,1,5) = 'SALES';
```

ENAME	CONCAT(ENAME,JOB)	LENGTH(ENAME)	INSTR(ENAME,'A')
MARTIN	MARTINSALESMAN	6	2
ALLEN	ALLENSALESMAN	5	1
TURNER	TURNERSALESMAN	6	0
WARD	WARDSALESMAN	4	2

Number Functions

- **ROUND: Rounds value to specified decimal**

  ROUND(45.926, 2) ⟶ 45.93

- **TRUNC: Truncates value to specified decimal**

  TRUNC(45.926, 2) ⟶ 45.92

- **MOD: Returns remainder of division**

  MOD(1600, 300) ⟶ 100

Example

```
SQL> SELECT TRUNC(45.923,2), TRUNC(45.923),
  2         TRUNC(45.923,-1)
  3  FROM   DUAL;
```

```
TRUNC(45.923,2) TRUNC(45.923) TRUNC(45.923,-1)
--------------- -------------- ----------------
          45.92             45               40
```