

CSCI 275 – Oracle SQL Queries

```
SELECT [DISTINCT] { * | [ column_expr [AS new_name] ] [, ... ] }  
FROM table_name [alias_name] [, ... ]  
[ WHERE search_condition ]  
[ GROUP BY column_list [ HAVING search_condition ] ]  
[ { UNION | INTERSECT | MINUS } select_statement ] [ ... ]  
[ ORDER BY column_name { ASC | DESC } [, ... ] ]
```

SELECT - specify columns to include in resulting table
FROM - specify tables to be queried
WHERE - filters the rows
GROUP BY - forms groups based on same column value
HAVING - filters the resulting groups
ORDER BY - specifies order of resulting tuples (ascending order by default)
DISTINCT - eliminates duplicate tuples
* - select all columns from tables

Column Expressions

- mathematics expressions on attributes; e.g. salary / 12, gross_pay – taxes
- aggregates of column_expr;
e.g. COUNT (*)
SUM (salary)
AVG (grade)
MAX (hours * rate)
MIN (COUNT (id))

Join Expressions

```
join → table1 NATURAL [qualifier] JOIN table2  
      | table1 [qualifier] JOIN table2 USING (column_list)  
      | table1 [qualifier] JOIN table2 ON join_condition
```

qualifier → { LEFT | RIGHT | FULL } [OUTER]

Search Conditions

search_condition → search-item | search-item { AND | OR } search-item

search-item → [NOT] { search-test | (search-condition) }

search-test → expression { = | <> | != | < | <= | > | >= } { expression | subquery }
 | expression_list { = | <> | != } subquery
 | column-identifier [NOT] BETWEEN expression AND expression
 | column-identifier [NOT] LIKE value (use % and _ as wildcards)
 | column-identifier IS [NOT] NULL
 | expression [NOT] IN ({ value [,value]... | subquery })
 | expression { = | <> | != | < | <= | > | >= } [ALL | ANY | SOME] subquery
 | expression_list { = | <> | != } [ALL | ANY | SOME] { subquery | exp_list_seq }
 | EXISTS subquery

String Functions

LOWER(str)	- Converts string str to lowercase
LENGTH(str)	- Returns the length of a string
INSTR (str1, str2)	- Returns starting position of str2 within str1
SUBSTR(str, start [,length])	- Derives substring from str beginning at start
UPPER(str)	- Converts str to uppercase
REPLACE(str1, str2[, str3])	- Replaces occurrences of str2 in str1 with str3, if str3 missing or null then occurrences of str2 removed

Numeric Functions

ABS(numeric)	- Absolute value of numeric
CEIL(numeric)	- Smallest integer greater than or equal to numeric
FLOOR(numeric)	- Largest integer less than or equal to numeric
MOD(integer1, integer2)	- Modulus of integer1 divided by integer2
SIGN(numeric)	- Sign of numeric (-1 or 1)
TRUNC(numeric [, integer])	- Numeric truncated to the accuracy of integer1 decimals
ROUND(numeric [, integer1])	- Numeric rounded to the accuracy of integer1 decimals. If integer1 is missing it is assumed to be zero.

Date and Time Functions

SYSDATE	- current date and time
CURRENT_DATE	- current date and time
date +/- days	- adds / subtracts days from date
MONTHS_BETWEEN	- number of months between argument dates
NEXT_DAY(date, 'day')	- gives date of next 'day' where day in 'SUN' to 'SAT'
LAST_DAY(date)	- gives last day of month of date
ADD_MONTHS(date, num)	- gives date num months forward
MONTHS_BETWEEN(date1, date2)	- gives number of months between dates
TRUNC	- convert argument date to the date a midnight - converts to first day of second argument 'MM' or 'YYYY'
EXTRACT ({ YEAR MONTH DAY HOUR MINUTE SECOND } FROM date)	
TO_CHAR	- formats or extracts parts of date information - e.g. SELECT TO_CHAR(SYSDATE, 'MM-DD-YYYY') FROM dual;
Formats	- day 'D' or 'DD' or 'DDTH' or 'DAY' - month 'MM' or 'MON' - year 'YY' or 'YYYY' - hour 'HH' or 'HH24' - minute 'MI' - second 'SS'