HÖGSKOLAN
Dalarna

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Lab assignment # 2- Data Retrieval Language, SELECT from a single table

In this lab you will work with SELECT statements against a single table. Start by creating the table customer and fill it with data, by copy the following SQL statements and paste them into your SQL client software, and hit "Run".

```
----------------------------------COPY and PASTE START-----------------------
CREATE TABLE customer(
username VARCHAR2(8) PRIMARY KEY,
passwd VARCHAR2(8) NOT NULL,
first_name VARCHAR2(20) NOT NULL,
last_name VARCHAR2(20) NOT NULL,
profession VARCHAR2(20),
reg_date DATE NOT NULL,
salary NUMBER(7));

INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('MrBig','MBisKING','Roger','nyberg','Officer',TO_DATE('1998-NOV-29','YYYY-MON-
DD'),317000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('MEZcal','P33kssa','maria','Nyberg','psychologist',TO_DATE('1999-08-29','YYYY-MM-
DD'),435000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('FISSIped','bintje','Tomas','kvist','Potatoe farmer',TO_DATE('2000-02-28','YYYY-MM-
DD'),198000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('OlleBull','Bullas','hans','Lindqvist',NULL,TO_DATE('2002-05-05','YYYY-MM-
DD'),116000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('MrMDI','MDIisit','Hans','Rosenboll','assistant professor',TO_DATE('1997-01-
15','YYYY-MM-DD'),307000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('King25','asdf1234','charlotte','Ortiz','dentist',TO_DATE('2003-12-10','YYYY-MM-
DD'),586000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('h01hanro','T56xxL','Sven','Larsson',NULL,TO_DATE('2003-08-09','YYYY-MM-DD'),NULL);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('XXXL','IRule','Margareta','ek','MD',TO_DATE('2001-06-29','YYYY-MM-DD'),942000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('Rolven','revolver','roger','nyberg',NULL,TO_DATE('1998-10-29','YYYY-MM-
DD'),240000);
INSERT INTO customer(username,passwd,first_name,last_name,profession,reg_date,salary)
VALUES('IceMan','Quantos','Maria','Nyberg','Engineer',TO_DATE('1998-02-14','YYYY-MM-
DD'),412000);
COMMIT;
----------------------------------END COPY and PASTE-------------------------
```

Your task in the lab is to write SQL statements that retrieve information, from the database, asked for in the tasks. Write your SQL-statements well structured, like:

```
SELECT col, col, group functions(),..
FROM table..
WHERE..
AND..
HAVING..
GROUP BY..
ORDER BY col.. ASC.. DESC..
```

In order for you to succeed with the lab, you have to use the built in function `NVL()` to handle `NULL`-values. The functions `TO_DATE()` or `TO_CHAR()` to handle date conversions, and finally the functions `UPPER()` or `LOWER()` to handle, case sensitive storage of string values (andersson, Andersson, ANDERSSON). We assume that `NULL` = `0` (zero) in columns of numeric data type.

Task 1
Show **all data** about all customers, sort by last_name (a-ö).

```
-- TASK 1

SELECT * FROM customer
ORDER BY LOWER(last_name) ASC;
```

Task 2
Show **all data** about all customers, sort by last_name (ö-a).

```
-- TASK 2

SELECT * FROM customer
ORDER BY LOWER(last_name) DESC;
```

Task 3
Show **the numbers of customers** that are stored in the customer table (i.e. the number of rows).

```
-- TASK 3

SELECT COUNT(username)
FROM customer;
```

Correct answer = 10

Task 4
Show **how many** customers that have an annual (yearly) income that is greater than 300 000 SEK.

```
-- TASK 4

SELECT COUNT(username) AS ANNUAL_INCOME_GREATER_THAN_300000_SEK
FROM customer
WHERE salary > 300000;
```

Correct answer = 6

Task 5
Show **how many** customers that have an annual (yearly) income that is less than 300 000 SEK.

```
-- TASK 5

SELECT COUNT (username) AS ANNUAL_INCOME_LESS_THAN_300000_SEK
FROM customer
WHERE NVL(salary,0) < 300000;
```

Correct answer = 4

Task 6
Show average **annual income for all customers**. The column headline should be: **average_salary**

```
-- TASK 6

SELECT AVG (NVL(salary,0)) AS average_salary
FROM customer;
```

Correct answer:

```
average_salary
--------------
        355300
```

Task 7

Show **username**, **first_name**, **last_name** and **salary** for those customers that have a salary that is less than the average annual income for all customers.

```
-- TASK 7
SELECT username, first_name, last_name, NVL(salary,0) AS salary
FROM customer
WHERE NVL(salary,0) < (SELECT AVG (NVL(SALARY,0)) AS average_salary
FROM CUSTOMER);
```

Correct answer:

```
USERNAME FIRST_NAME           LAST_NAME                SALARY
-------- -------------------- -------------------- ----------
MrBig    Roger                nyberg                   317000
FISSIped Tomas                kvist                    198000
OlleBull hans                 Lindqvist                116000
MrMDI    Hans                 Rosenboll                307000
h01hanro Sven                 Larsson                       0
Rolven   roger                nyberg                   240000
```

Task 8

Show **first_name**, **last_name** with **UPPER-CASE LETTERS** for those customers who have the letter `'s'` in the last name.
Rätt svar:

```
-- TASK 8
SELECT UPPER (first_name) FIRST_NAME, UPPER(last_name) LAST_NAME
FROM customer
WHERE UPPER(last_name) LIKE '%S%';
```

```
FIRST_NAME           LAST_NAME
-------------------- ---------
TOMAS                KVIST
HANS                 LINDQVIST
HANS                 ROSENBOLL
SVEN                 LARSSON
```

Task 9

Show **first_name**, **last_name** and **profession** with **lower-case letters** for those customers who have a first name which ends with the letter `'s'`. Replace null-values in the column profession with the string `'jobless'`.

```
-- TASK 9
```

```
SELECT LOWER(first_name) FIRST_NAME, LOWER(last_name) LAST_NAME,
NVL(LOWER(profession), 'jobless') Profession
FROM customer
WHERE LOWER (first_name) LIKE '%s';
```

Correct answer:

```
FIRST_NAME           LAST_NAME            PROFESSION
-------------------- -------------------- ------------
tomas                kvist                potatoe farmer
hans                 lindqvist            jobless
hans                 rosenboll            assistant professor
```

Task 10

Show **profession** and the **number of customers** in that **profession category**. Sort by profession (z-a).

The column headings should **profession** and **quantity**. Replace null-values in the column profession with the string `'jobless'`. Show profession **capitalized**. Suggestion! Use the function `initcap()`.

```
-- TASK 10
SELECT INITCAP(NVL(profession, 'jobless')) PROFESSION ,
COUNT(NVL(profession, 'jobless')) QUANTITY
FROM customer
GROUP BY profession
ORDER BY profession DESC;
```

Correct answer:

```
PROFESSION           QUANTITY
-------------------- ----------------------
Psychologist         1
Potatoe Farmer       1
Officer              1
Md                   1
Jobless              3
Engineer             1
Dentist              1
Assistant Professor  1
```

Task 11

Show **first_name** concatenated with a **space** and **last_name** under the heading **customer_name**. Show both names capitalized. Concatenate in Oracle: `'string1'||'string2'||'string3'..`

```
-- TASK 11
SELECT INITCAP (first_name) ||' '|| INITCAP(last_name) AS CUSTOMER_NAME
FROM customer;
```

Correct answer:

```
CUSTOMER_NAME
-----------------
Roger Nyberg
Maria Nyberg
Tomas Kvist
Hans Lindqvist
Hans Rosenboll
Charlotte Ortiz
Sven Larsson
Margareta Ek
Roger Nyberg
Maria Nyberg
```

Task 12

Show **the number of customers** who has the `username = 'King25'` and `passwd = 'asdf1234'` with the heading logged_in**.**

```
-- TASK 12

SELECT COUNT (username) AS logged_in
FROM customer
WHERE username = 'King25' AND passwd = 'asdf1234';
```

Correct answer:

```
 logged_in
----------
         1
```

Task 13

Show the **number of customers** who has the `username = 'KING25'` and

`passwd = 'ASDF1234'` with the heading logged_in**.**

```
-- TASK 13
SELECT COUNT (username) AS logged_in
FROM customer
WHERE username = 'KING25' AND passwd = 'ASDF1234';
```

Correct answer:

```
 logged_in
----------
         0
```

Task 14
Show **username**, **passwd** and **reg_date** for those customers who registered before **year 2000**.

```
-- TASK 14
SELECT username, passwd, TO_CHAR(reg_date, 'YYYY-mm-DD') AS REG_DATE
FROM customer
WHERE TO_CHAR(reg_date, 'YYYY') < 2000;
```

Correct answer:

```
USERNAME PASSWD   REG_DATE
-------- -------- ----------
MrBig    MBisKING 1998-11-29
MEZcal   P33kssa  1999-08-29
MrMDI    MDIisit  1997-01-15
Rolven   revolver 1998-10-29
IceMan   Quantos  1998-02-14
```

Task 15
Show **username**, **passwd** and **reg_date** for those customers who registered between `01 january 2001` and `01 october 2003`.

```
-- TASK 15
SELECT username, passwd, TO_CHAR(reg_date, 'YYYY-MM-DD') AS REG_DATE
FROM customer
WHERE TO_DATE(reg_date) BETWEEN '01 January 2001' AND '01 October
2003';
```

Correct answer:

```
USERNAME PASSWD   REG_DATE
-------- -------- ----------
OlleBull Bullas   2002-05-05
h01hanro T56xxL   2003-08-09
XXXL     IRule    2001-06-29
```

Task 16

Show **username**, **passwd**, **first_name**, **last_name** for those customers who has a last name equal to `'nyberg'` or `'kvist'` and a first name **not** equal to `'roger'` .

```
-- TASK 16
SELECT username, passwd, first_name, last_name
FROM customer
where lower(last_name) in('nyberg' , 'kvist')
and lower(first_name) != 'roger';
```

Correct answer:

```
USERNAME  PASSWD   FIRST_NAME           LAST_NAME
--------  -------- -------------------- -------
MEZcal    P33kssa  maria                Nyberg
FISSIped   bintje  Tomas                kvist
IceMan    Quantos  Maria                Nyberg
```

Task 17

Show **first_name**, **last_name** and **salary** for the customer with the highest salary of all customers.

```
-- TASK 17
SELECT first_name, last_name, salary
from customer
where salary = (SELECT MAX(salary) FROM customer);
```

Correct answer:

```
FIRST_NAME           LAST_NAME     SALARY
-------------------- ------------- ------
Margareta            ek            942000
```

Task18

Show **first_name**, **last_name** and **salary** for the customer with the lowest salary of all customers. Do not include customers with `NULL` salary.

```
-- TASK 18
SELECT first_name, last_name, salary
FROM customer
WHERE salary = (SELECT MIN (salary) FROM customer);
```

Correct answer:

```
FIRST_NAME           LAST_NAME      SALARY
-------------------- -------------- ------
hans                 Lindqvist      116000
```

Task 19

Show **first_name** and **last_name** for those customers who has a `NULL value` in the profession column.

```
-- TASK 19
select first_name, last_name
FROM customer
WHERE Profession IS NULL;
```

Correct anawer:

```
FIRST_NAME           LAST_NAME
-------------------- ---------
hans                 Lindqvist
Sven                 Larsson
roger                nyberg
```

Put the lab report in Learn (Blackboard). Click on the link Assignments.