## Lab assignment # 1 - DDL, DML, constraints and transaction processing

**How do you write the lab report? You can put your answers in this document and provide your code with comments where you think it's necessary. If you can't use this document I would like you to include the task text in your answer. These goes for all lab reports.**

During this lab you will acquire knowledge required to create database objects in the form of tables and sequences. Furthermore, you will see that certain integrity rules mentioned in the tasks is maintained by constraints on the table level.

Do all labs here: <https://livesql.oracle.com>

**Task 1**

Create a sequence object with the name **my\_seq**. It should start with 1 and increase by 1. The sequence method NEXTVAL returns a numeric data type.

create sequence my\_seq

start with 1

increment by 1;

*-- The sequence is used during INSERT with NEXT method --*

**Task 2**

Create a table structure according to the drawing below:

CUSTOMER

# cust\_id

\* username

\* passwd

\* first\_name

\* last\_name

\* credit\_type

o phone

CUST\_ORDER

# ord\_id

(#)cust\_id

\* order\_date

CART

# row\_id

(#)ord\_id

(#)prod\_id

\* quantity

PRODUCT

# prod\_id

(#)group\_id

\* prod\_name

\* price

PROD\_GROUP

# group\_id

\* group\_name

PROD\_PICT

# pict\_id

(#)prod\_id

\* file\_type

\* width

\* height

\* path

**Explanation of notation**

# = Primary key

(#) = Foreign key

\* = Mandatory (must contain a value => NOT NULL)

o = Optional (must not contain a value can be NULL)

**customer.credit\_type** CHECK ('high','average','low')

**prod\_pict.file\_type** CHECK ('gif','jpg')

**cust\_order.ord\_id** (generated by the sequence my\_seq)

**cart.row\_id** (generated by the sequence my\_seq)

**cust\_order.order\_date** (data type = DATE, DEFAULT SYSDATE)

**customer.username** (should be unique, constraint UNIQUE)

**All Foreign Key columns should have the** column constraint **NOT NULL**

Declare all constraints except NOT NULL at the table level! Suggestion for a constraint naming convention: **table\_column\_constraint**, you can use the following abbreviations

*-- Table CUSTOMER --*

create table CUSTOMER (

cust\_id number(9),

username varchar2(20) not null,

passwd varchar2(20) not null,

first\_name varchar2(30) not null,

last\_name varchar2(30) not null,

credit\_type varchar2(20) not null,

phone varchar2(15)

);

*-- Add named constraints for table CUSTOMER*

alter table CUSTOMER

add constraint customer\_id\_pk primary key (cust\_id)

add constraint customer\_username\_uq unique(username)

add constraint customer\_credit\_type\_ck check (credit\_type in ('high','low','average'));

*------------------------------------------------------------------------------*

*-- Table CUST-ORDER --*

create table CUST\_ORDER(

ord\_id number(9),

cust\_id number(9) not null,

order\_date date default sysdate not null

);

*-- Add named constraints for table CUST\_ORDER*

alter table CUST\_ORDER

add constraint cust\_order\_ord\_id\_pk primary key (ord\_id)

add constraint cust\_order\_cust\_id\_fk foreign key (cust\_id) references customer(cust\_id);

*------------------------------------------------------------------------------*

*-- Table PROD-GROUP --*

create table PROD\_GROUP(

group\_id number(9),

group\_name varchar(255) not null

);

*-- Add named table constraints*

alter table PROD\_GROUP

add constraint prod\_group\_group\_id\_pk primary key (group\_id);

*------------------------------------------------------------------------------*

*-- Table PRODUCT --*

create table PRODUCT(

prod\_id number(9),

group\_id number(9) not null,

prod\_name varchar(255) not null,

price number(9,2) not null

);

*-- add named table constraints*

alter table PRODUCT

add constraint product\_prod\_id\_pk primary key (prod\_id)

add constraint product\_group\_id\_fk foreign key (group\_id) references prod\_group(group\_id);

*------------------------------------------------------------------------------*

*-- Table CART --*

create table CART(

row\_id number(9),

ord\_id number(9) not null,

prod\_id number(9) not null,

quantity number(9) not null

);

*-- Add named table constraints*

alter table CART

add constraint cart\_row\_id\_pk primary key (row\_id)

add constraint cart\_ord\_id\_fk foreign key (ord\_id) references cust\_order(ord\_id)

add constraint cart\_prod\_id\_fk foreign key (prod\_id) references product(prod\_id);

*-----------------------------------------------------------------------------*

*-- Table PRODUCT\_PICT*

create table PROD\_PICT(

pict\_id number(9),

prod\_id number(9) not null,

file\_type varchar(255) not null,

width number(9) not null,

height number(9) not null,

path varchar(255) not null

);

*-- add named table constraints*

alter table PROD\_PICT

add constraint prod\_pict\_pict\_id\_pk primary key (pict\_id)

add constraint prod\_pict\_prod\_id\_fk foreign key (prod\_id) references PRODUCT(prod\_id)

add constraint prod\_pict\_file\_type check (file\_type in ('gif', 'jpg'));

*------------------------------------------------------------------------------*

**Task 3**

Insert three rows in the **customer** table.

*-- insert three rows in the customer table*

insert into customer(cust\_id, username, passwd, first\_name, last\_name, credit\_type, phone)

values (1, 'frener', '98438er', 'Fred', 'Nerks', 'low', '0798312771');

insert into customer(cust\_id, username, passwd, first\_name, last\_name, credit\_type, phone)

values(2, 'jandoe', '988fkd-f', 'Jane', 'Doe', 'high', '0708316522');

insert into customer(cust\_id, username, passwd, first\_name, last\_name, credit\_type, phone)

values(3, 'joeblo', '6l-eg5fs', 'Joe', 'Bloggs', 'average', '');

**Task 4**

Insert two rows in the **prod\_group** table.

*--insert two rows in the product group table*

insert into prod\_group (group\_id, group\_name)

values (1, 'mobile');

insert into prod\_group (group\_id, group\_name)

values (2, 'laptop');

**Task 5**

Insert two rows in the **product** table.

*--insert two rows in the product table*

insert into product (prod\_id, group\_id, prod\_name, price)

values (1, 1, 'samsung s22', 8990);

insert into product (prod\_id, group\_id, prod\_name, price)

values (2, 2, 'DELL XPS13', 13990);

**Task 6**

Perform a sale by creating **one row** in the **cust\_order** table and **two rows** in the **cart** table. **Remember** to use the sequence to generate primary key in the tables.

**NOTE** that when you have created the cust\_order you must check what value the sequence put in the ord\_id column (i.e. the Primary Key value). Then take that number and use it in the insert on the cart table FK-column. **DO NOT USE** the sequence to generate a number to the foreign key ord\_id in the cart table!

*-- insert one row in cust order*

insert into cust\_order (ord\_id, cust\_id, order\_date)

values (my\_seq.nextval, 1, sysdate);

*-- Get the ord\_id (PK) from the cust\_order table, use as a FK in cart table*

select \* from cust\_order

*-- insert two rows in the cart table*

insert into cart (row\_id, ord\_id, prod\_id, quantity)

values (my\_seq.nextval, 1, 1, 3);

insert into cart (row\_id, ord\_id, prod\_id, quantity)

values (my\_seq.nextval, 1, 2, 5);

**Task 7**

Increase the price on all articles by 12%.

*-- increasing the price on all articles by 12%*

update product

set price = price + price \* 0.12;

**Task 8**

Update the phone number for an optional customer.

*-- Update the phone number for an optional customer*

update customer

set phone = '0700977131'

where first\_name = 'Jane' and last\_name = 'Doe';

**Task 9**

Delete all rows from the cust\_order table, by using DML. **What happens and why!**

*-- Delete all rows from the cust\_order table*

delete from cust\_order;

An integrity constraint violation error is shown, and the rows are not deleted. An attempt to delete records from the parent table(cust\_order) which has a record in the child table (cart) referenced by foreign keys will break data integrity constraints (in this case referential integrity). Because the cart table records exist in the cust\_order table (through foreign keys), the user needs to first delete the records from the cart table to be able to delete the records in the cust\_order table.