



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

UNIVERSITI TEKNOLOGI MALAYSIA  
SEMESTER 1, SESSION 2023/2024

# LAB EXERCISE 1

**SECD2523 : DATABASE**

**SECTION 10**

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## Exercise: Data Definition Language

### Use DDL to build and maintain database tables (S6L3 Objective 3)

#### Part 1: Reading information from a script

In this exercise you will use the “obl Sports.ddl” file to consolidate your knowledge of DDL. Open the “obl Sports.ddl” in a text editor

1. How many tables have been created using the CREATE TABLE statement?  
10 tables have been created
2. How many columns are created for the price history table?  
6 columns
3. What statement is used to enforce the constraint that the category column of the items table must have a value?  
The “NOT NULL” statement
4. What is the name of the foreign key constraint between the customers and customer addresses tables?  
Foreign key = id
5. What are the lowest and highest values that can be stored in the commission\_rate column for the sales\_representatives table?  
commission\_rate    **NUMBER(2) NOT NULL,**  
Highest = 99  
Lowest = - 99
6. What are the lowest and highest values that can be stored in the price column for the price\_history table?  
price                **NUMBER(7,2) NOT NULL,**  
Highest = 9999999.99  
Lowest = -9999999.99
7. What are the 3 columns that make up the primary key for the price\_history table?

PRICE_HISTORY_PK	Primary Key	-	-	-	ITM_NUMBER, START_DATE, START_TIME
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itm\_number, start\_date, start\_time

## Part 2 : Updating Constraints

Log-in to APEX and go to the SQL commands environment

### Modifying a column

1. Run the DESCRIBE command on the orders table to view its structure

DESCRIBE orders;

TABLE ORDERS

Column	Null?	Type
ID	NOT NULL	VARCHAR2(9)
ODR_DATE	NOT NULL	DATE
ODR_TIME	NOT NULL	DATE
NUMBER_OF_UNITS	NOT NULL	NUMBER(2,0)
CTR_NUMBER	NOT NULL	VARCHAR2(6)

2. **Task:** Add a default constraint that will use today's date to assign a value to the odr\_date column of the orders table if no date is provided

ALTER TABLE orders

MODIFY odr\_date DATE DEFAULT SYSDATE;

3. Run the DESCRIBE command again to verify the command was successful

The output is same as in question 1

TABLE ORDERS

Column	Null?	Type
ID	NOT NULL	VARCHAR2(9)
ODR_DATE	NOT NULL	DATE
ODR_TIME	NOT NULL	DATE
NUMBER_OF_UNITS	NOT NULL	NUMBER(2,0)
CTR_NUMBER	NOT NULL	VARCHAR2(6)

## Adding a check constraint

1. Run the DESCRIBE command on the customers table to view its structure  
DESCRIBE customers;

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)

2. **Task:** Add a check constraint that will not allow the customers current balance to go below zero

ALTER TABLE customers

ADD CONSTRAINT cust\_bal\_check

CHECK (current\_balance >= 0);

3. Run the DESCRIBE command again to verify the command was successful  
The output is same as in question 1

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)

4. A check constraint is not shown in the results of a describe command
- Go to the Object Browser
  - Select the customers table
  - Click on the CONSTRAINTS tab
  - You will see your constraint here

Constraints							
Constraint	Type	Condition	Related Constraint	Related Table	Constraint Columns	On Delete	Status
CUST_BAL_CHECK	Check	current_balance >= 0	-	-	-	-	ENABLED
SYS_C00142254370	Check	"CTR_NUMBER" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00142254371	Check	"EMAIL" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00142254372	Check	"FIRST_NAME" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00142254373	Check	"LAST_NAME" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00142254374	Check	"PHONE_NUMBER" IS NOT NULL	-	-	-	-	ENABLED
SYS_C00142254375	Check	"CURRENT_BALANCE" IS NOT NULL	-	-	-	-	ENABLED
CUSTOMER_SALES_REP_FK	Foreign Key	-	SALES_REPRESENTATIVE_PK	SALES_REPRESENTATIVES	SRE_ID	NO ACTION	ENABLED
CUSTOMER_TEAM_FK	Foreign Key	-	TEAM_PK	TEAMS	TEM_ID	NO ACTION	ENABLED
CUSTOMER_PK	Primary Key	-	-	-	CUSTOMER_ID	-	ENABLED
CTR_EMAIL_UK	Unique Key	-	-	-	EMAIL	-	ENABLED
CTR_LCN_UK	Unique Key	-	-	-	LOYALTY_CARD_NUMBER	-	ENABLED

## Adding a column

The client has decided that they would like a separate column for the customer's mobile phone number. This is an optional column that will be required to store 11 digits.

1. Run the DESCRIBE command on the customers table to view its structure

DESCRIBE customers;

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)

2. **Task:** Add column that will satisfy the clients requirements

ALTER TABLE customers

ADD mobile\_number VARCHAR2(11);

3. Run the DESCRIBE command on the customers table to view its structure

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)
MOBILE_NUMBER	-	VARCHAR2(11)

## Dropping a column

The client has decided that they don't need the mobile number column as most customers only provide a single contact number and that is already catered for with the existing phone\_number column.

1. Run the DESCRIBE command on the customers table to view its structure

DESCRIBE customers;

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)
MOBILE_NUMBER	-	VARCHAR2(11)

2. **Task:** Drop the column that was created to store the mobile phone number

ALTER TABLE customers

DROP COLUMN mobile\_number;



3. Run the DESCRIBE command on the customers table to view its structure

DESCRIBE customers;

TABLE CUSTOMERS

Column	Null?	Type
CTR_NUMBER	NOT NULL	VARCHAR2(6)
EMAIL	NOT NULL	VARCHAR2(50)
FIRST_NAME	NOT NULL	VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(30)
PHONE_NUMBER	NOT NULL	VARCHAR2(11)
CURRENT_BALANCE	NOT NULL	NUMBER(6,2)
SRE_ID	-	VARCHAR2(4)
TEM_ID	-	VARCHAR2(4)
LOYALTY_CARD_NUMBER	-	VARCHAR2(6)