



## **Lab 1: DDL**

**SECD2523 - 08 Database**

SEMESTER I, SESSION 2023/2024

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## Section 6 Lesson 3 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?

**A: 10 tables**

2. How many columns are created for the price history table?

**A: 6 columns**

3. What statement is used to enforce the constraint that the category column of the items table must have a value?

**A: NOT NULL statement**

4. What is the name of the foreign key constraint between the customers and customer addresses tables?

**A: The name is “customer\_address\_customer\_fk”**

5. What are the lowest and highest values that can be stored in the commission\_rate column for the sales\_representatives table?

**A:**

**Lowest Values: -99**

**Highest Values: 99**

6. What are the lowest and highest values that can be stored in the price column for the price\_history table?

**A:**

**Lowest Values: -99,999.99**

**Highest Values: 99,999.99**

7. What are the 3 columns that make up the primary key for the price\_history table?

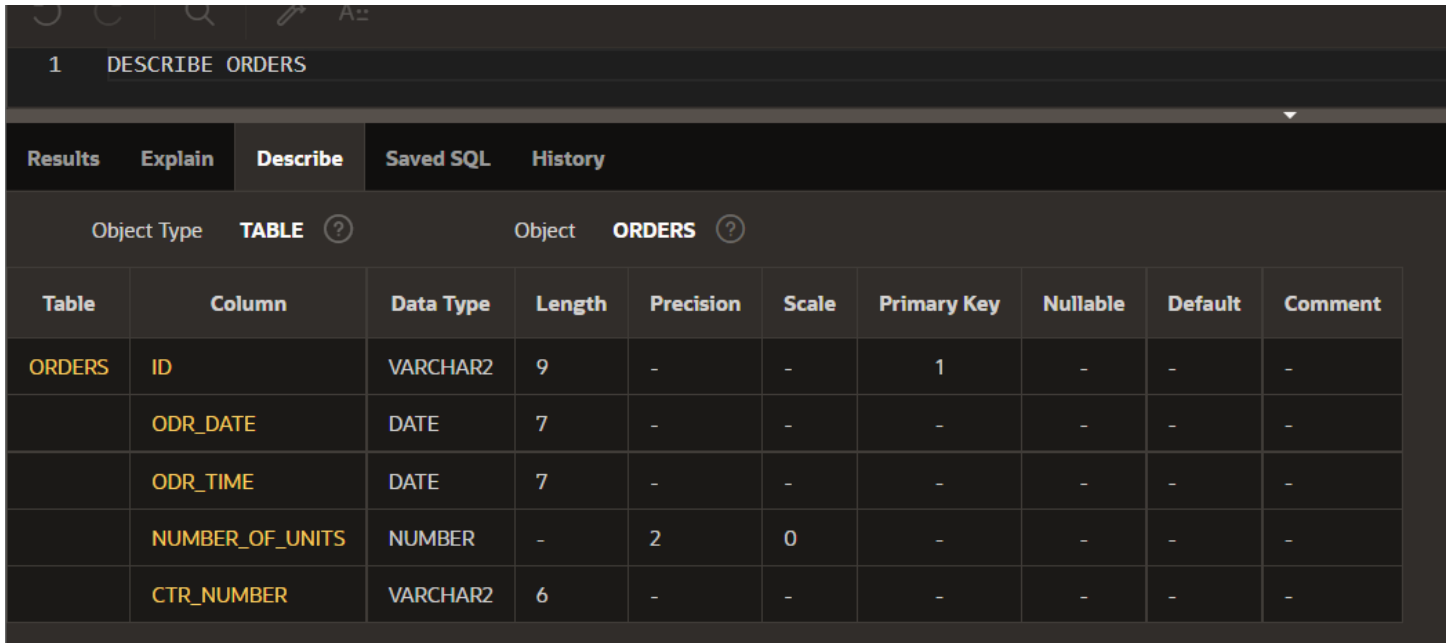
**A: ITM\_NUMBER, START\_DATE, START\_TIME**

## 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.
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.



The screenshot shows the APEX SQL environment. At the top, the command `1 DESCRIBE ORDERS` is entered. Below the command bar, there are tabs for **Results**, **Explain**, **Describe** (which is selected), **Saved SQL**, and **History**. The **Describe** tab displays the structure of the **ORDERS** table. It shows the object type as **TABLE** and the object name as **ORDERS**. Below this, a table lists the columns and their properties:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ORDERS	ID	VARCHAR2	9	-	-	1	-	-	-
	ODR_DATE	DATE	7	-	-	-	-	-	-
	ODR_TIME	DATE	7	-	-	-	-	-	-
	NUMBER_OF_UNITS	NUMBER	-	2	0	-	-	-	-
	CTR_NUMBER	VARCHAR2	6	-	-	-	-	-	-

**A:**

**ALTER TABLE ORDERS**

**MODIFY odr\_date DATE DEFAULT SYSDATE**

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

1

2

3

DESCRIBE ORDERS

Results

Explain

Describe

Saved SQL

History

Object Type

TABLE ?

Object

ORDERS ?

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ORDERS	ID	VARCHAR2	9	-	-	1	-	-	-
	ODR_DATE	DATE	7	-	-	-	-	SYSDATE	-
	ODR_TIME	DATE	7	-	-	-	-	-	-
	NUMBER_OF_UNITS	NUMBER	-	2	0	-	-	-	-
	CTR_NUMBER	VARCHAR2	6	-	-	-	-	-	-

### Adding a check constraint

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

1 DESCRIBE CUSTOMERS

ResultsExplainDescribeSaved SQLHistory

Object TypeTABLE ?ObjectCUSTOMERS ?

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	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.

A: **ALTER TABLE CUSTOMERS**

**ADD CONSTRAINT current\_balance CHECK (current\_balance >=0)**

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

1DESCRIBE CUSTOMERS2

ResultsExplainDescribeSaved SQLHistory

Object TypeTABLEObjectCUSTOMERS

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	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.
  - a. Go to the Object Browser
  - b. Select the customers table.
  - c. Click on the CONSTRAINTS tab.
  - d. You will see your constraint here.

CUSTOMERS									
<div>Show AllColumnsConstraintsRelated ConstraintsTriggersIndexesCode</div>									
Constraints									
Constraint	Type	Condition	Related Constraint	Related Table	Constraint Columns	On Delete	Status	Last Change	Invalid?
CURRENT_BALANCE	Check	current_balance >=0	-	-	-	-	ENABLED	113 seconds ago	-
SYS_C00143552408	Check	"CTR_NUMBER" IS NOT NULL	-	-	-	-	ENABLED	11 minutes ago	-
SYS_C00143552409	Check	"EMAIL" IS NOT NULL	-	-	-	-	ENABLED	11 minutes ago	-
SYS_C00143552410	Check	"FIRST_NAME" IS NOT NULL	-	-	-	-	ENABLED	11 minutes ago	-
SYS_C00143552411	Check	"LAST_NAME" IS NOT NULL	-	-	-	-	ENABLED	11 minutes ago	-
SYS_C00143552412	Check	"PHONE_NUMBER" IS NOT NULL	-	-	-	-	ENABLED	11 minutes ago	-
SYS_C00143552413	Check	"CURRENT_BALANCE" IS NOT NULL	-	-	-	-	ENABLED	11 minutes ago	-
CUSTOMER_SALES_REP_FK	Foreign Key	-	SALES_REPRESENTATIVE_PK	SALES_REPRESENTATIVES	SRE_ID	NO ACTION	ENABLED	11 minutes ago	-
CUSTOMER_TEAM_FK	Foreign Key	-	TEAM_PK	TEAMS	TEM_ID	NO ACTION	ENABLED	11 minutes ago	-
CUSTOMER_PK	Primary Key	-	-	-	CUSTOMER_ID	-	ENABLED	11 minutes ago	-
CTR_EMAIL_UK	Unique Key	-	-	-	EMAIL	-	ENABLED	11 minutes ago	-
CTR_LCN_UK	Unique Key	-	-	-	LOYALTY_CARD_NUMBER	-	ENABLED	11 minutes ago	-

## 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.

1 DESCRIBE CUSTOMERS

Results Explain Describe Saved SQL History

Object Type TABLE Object CUSTOMERS

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-
	MOBILE_PHONE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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

**ALTER TABLE CUSTOMERS**

**ADD mobile\_phone\_number VARCHAR2(11)**

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

1	DESCRIBE CUSTOMERS
2	

Results	Explain	Describe	Saved SQL	History
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Object Type	TABLE ?	Object	CUSTOMERS ?
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Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-

## 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.

1 DESCRIBE CUSTOMERS

Results

Explain

Describe

Saved SQL

History

Object Type

TABLE ?

Object

CUSTOMERS ?

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-
	MOBILE_PHONE_NUMBER	VARCHAR2	11	-	-	-	✓	-	-



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

A:

```
ALTER TABLE CUSTOMERS  
DROP(mobile_phone_number)
```

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

1 DESCRIBE CUSTOMERS									
Results Explain Describe Saved SQL History									
Object Type TABLE ? Object CUSTOMERS ?									
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-	-	-
	SRE_ID	VARCHAR2	4	-	-	-	✓	-	-
	TEM_ID	VARCHAR2	4	-	-	-	✓	-	-
	LOYALTY_CARD_NUMBER	VARCHAR2	6	-	-	-	✓	-	-