

Lab 1

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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?

10 tables

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?

“NOT NULL” statement

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

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?

Lowest: -99, Highest: 99

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

Lowest: -99999.99, Highest: 99999.99

7. What are the 3 columns that make up the primary key for the price_history table?

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.

1 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	-	-	-	-	-	-
	ODR_TIME	DATE	7	-	-	-	-	-	-
	NUMBER_OF_UNITS	NUMBER	-	2	0	-	-	-	-
	CTR_NUMBER	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.

1	ALTER TABLE ORDERS
2	MODIFY odr_date DATE DEFAULT SYSDATE
Results	Explain Describe Saved SQL History
Table altered.	
0.06 seconds	

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

1 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									
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	-	-	-	✓	-	-

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

```
1 ALTER TABLE CUSTOMERS
2 ADD CONSTRAINT min_current_balance
3 CHECK (current_balance>=0)
```

Results Explain Describe Saved SQL History

Table altered.

0.06 seconds

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

```
1 DESCRIBE CUSTOMERS
```

Results Explain Describe Saved SQL History

Object Type		Object							
TABLE ?		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	-	-	-	✓	-	-

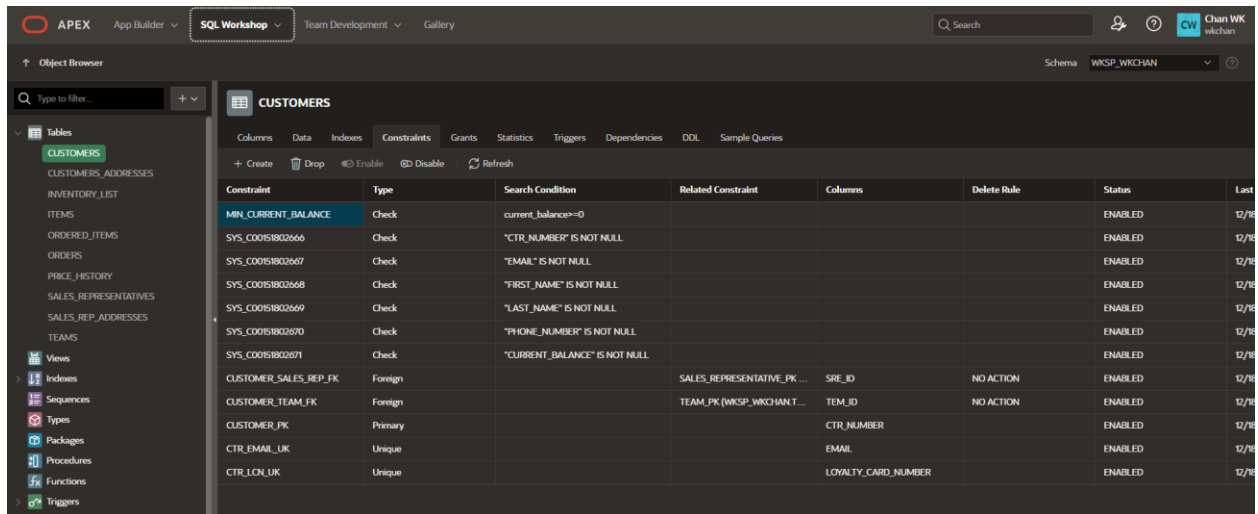
4. A check constraint is not shown in the results of a describe command.

a. Go to the Object Browser

b. Select the customers table.

c. Click on the CONSTRAINTS tab.

d. You will see your constraint here.



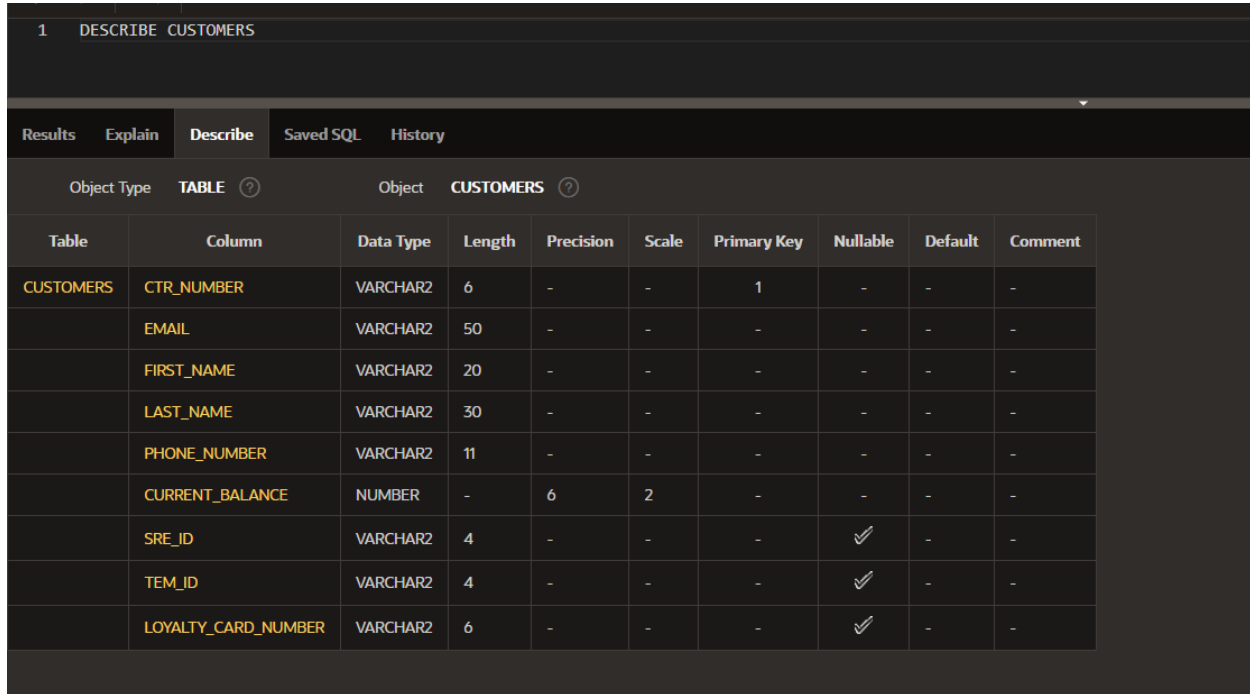
The screenshot shows the APEX SQL Workshop interface. The 'Object Browser' on the left lists various database objects, with 'CUSTOMERS' selected under the 'Tables' category. The main panel displays the 'CONSTRAINTS' tab for the 'CUSTOMERS' table. The table lists various constraints, including check constraints, foreign key constraints, and unique constraints. The 'MIN_CURRENT_BALANCE' constraint is highlighted.

Constraint	Type	Search Condition	Related Constraint	Columns	Delete Rule	Status	Last
MIN_CURRENT_BALANCE	Check	current_balance >= 0				ENABLED	12/18
SYS_C00151802666	Check	"CTR_NUMBER" IS NOT NULL				ENABLED	12/18
SYS_C00151802667	Check	"EMAIL" IS NOT NULL				ENABLED	12/18
SYS_C00151802668	Check	"FIRST_NAME" IS NOT NULL				ENABLED	12/18
SYS_C00151802669	Check	"LAST_NAME" IS NOT NULL				ENABLED	12/18
SYS_C00151802670	Check	"PHONE_NUMBER" IS NOT NULL				ENABLED	12/18
SYS_C00151802671	Check	"CURRENT_BALANCE" IS NOT NULL				ENABLED	12/18
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK ...	SRE_ID	NO ACTION	ENABLED	12/18
CUSTOMER_TEAM_FK	Foreign		TEAM_PK(WKSP_WKCHANLT ...	TEM_ID	NO ACTION	ENABLED	12/18
CUSTOMER_PK	Primary			CTR_NUMBER		ENABLED	12/18
CTR_EMAIL_UK	Unique			EMAIL		ENABLED	12/18
CTR_LCN_UK	Unique			LOYALTY_CARD_NUMBER		ENABLED	12/18

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.

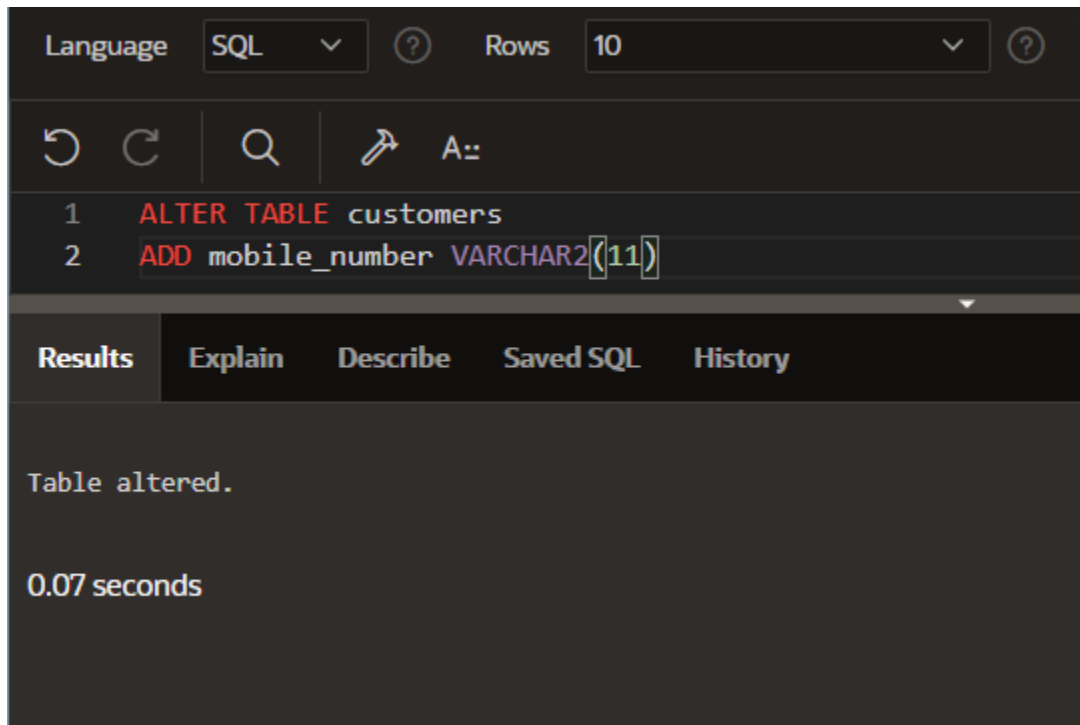
1. Run the DESCRIBE command on the customers table to view its structure.



The screenshot shows the SQL Developer interface. At the top, the command `1 DESCRIBE CUSTOMERS` is entered. Below the command bar, there are tabs for **Results**, **Explain**, **Describe** (selected), **Saved SQL**, and **History**. The **Describe** tab displays the structure of the **CUSTOMERS** table. It shows the table name, column names, data types, lengths, and other attributes.

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 column that will satisfy the clients requirements



The screenshot shows the SQL Developer interface. At the top, the **Language** is set to **SQL** and **Rows** is set to **10**. Below the command bar, there are icons for undo, redo, search, and a keyboard shortcut **A::**. The command bar shows the following SQL commands:

```
1 ALTER TABLE customers
2 ADD mobile_number VARCHAR2(11)
```

Below the command bar, there are tabs for **Results** (selected), **Explain**, **Describe**, **Saved SQL**, and **History**. The **Results** tab displays the message **Table altered.** and the execution time **0.07 seconds**.

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	-	-	-	✓	-	-
	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.

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_NUMBER	VARCHAR2	11	-	-	-	✓	-	-

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

```
1 ALTER TABLE customers
2 DROP (mobile_number)
```

Results Explain Describe Saved SQL History

Table altered.

0.05 seconds

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

Language: SQL Rows: 10 Clear Command Find Tables Save Run

```
1 DESCRIBE customers
2
```

Results Explain **Describe** Saved SQL History

Object Type		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	-	-	-	✓	-	-