

Database Design Project

Oracle Baseball League Store Database

Project Scenario:

You are a small consulting company specializing in database development. You have just been awarded the contract to develop a data model for a database application system for a small retail store called Oracle Baseball League (OBL).

The Oracle Baseball League store serves the entire surrounding community selling baseball kit. The OBL has two types of customer, there are individuals who purchase items like balls, cleats, gloves, shirts, screen printed t-shirts, and shorts. Additionally customers can represent a team when they purchase uniforms and equipment on behalf of the team.

Teams and individual customers are free to purchase any item from the inventory list, but teams get a discount on the list price depending on the number of players. When a customer places an order we record the order items for that order in our database.

OBL has a team of three sales representatives that officially only call on teams but have been known to handle individual customer complaints.

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
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 value: -99
Highest value: 99
6. What are the lowest and highest values that can be stored in the price column for the price_history table?
Lowest value: -99999.99
Highest value: 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.

The screenshot shows the APEX SQL Workshop interface. The top navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Jane Ng bioinfo_database' are on the right. The 'SQL Commands' section is active, showing a command 'DESCRIBE orders' in the editor. Below the editor, the 'Results' tab is selected, displaying a table with the structure of the 'ORDERS' table.

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.

The screenshot shows the APEX SQL Workshop interface with the 'SQL Commands' section. The editor contains the following SQL command:

```
1 ALTER TABLE orders
2 MODIFY (odr_date DATE DEFAULT SYSDATE);
```

The 'Results' tab is selected, showing the message 'Table altered.' and a duration of '0.05 seconds'.

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

APEX App Builder SQL Workshop Team Development Gallery

Search

JN Jane Ng bioinfo_database

SQL Commands Schema WKSP_BIOINFODATABASE

Language SQL Rows 10 Clear Command Find Tables Save Run

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	-	-	-	-	-	-

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Adding a check constraint

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

APEX App Builder SQL Workshop Team Development Gallery

Search

JN Jane Ng bioinfo_database

SQL Commands Schema WKSP_BIOINFODATABASE

Language SQL Rows 10 Clear Command Find Tables Save Run

1 DESCRIBE customers
2

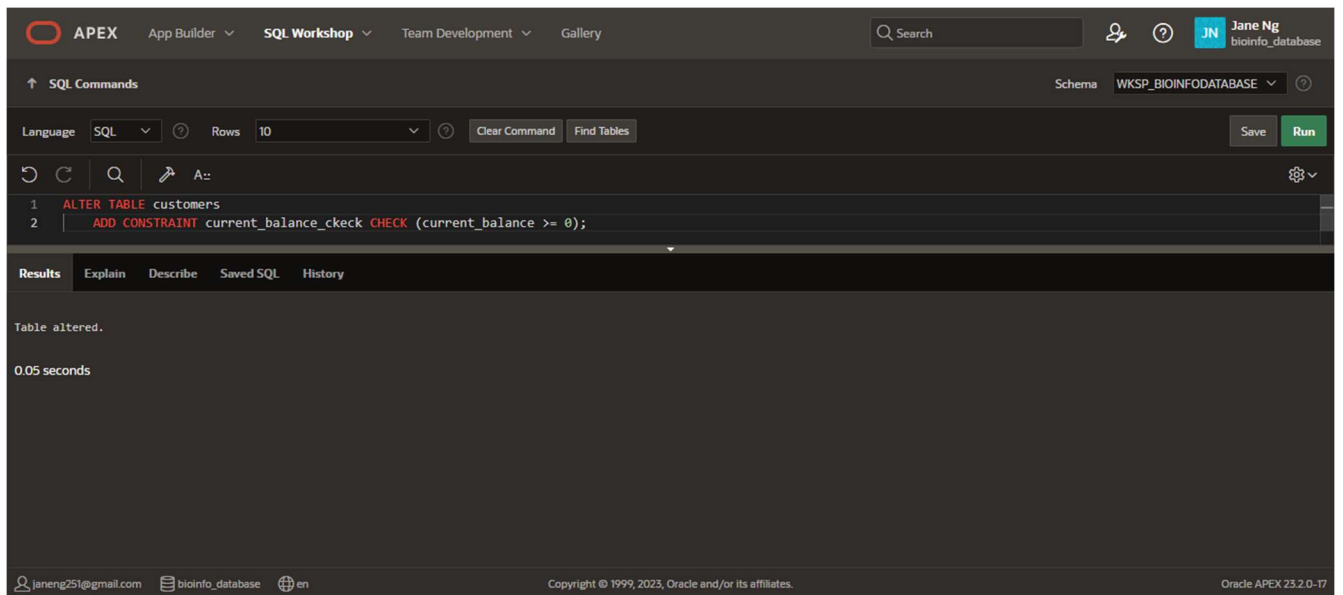
Results Explain Describe Saved SQL History

Object Type TABLE Object CUSTOMERS

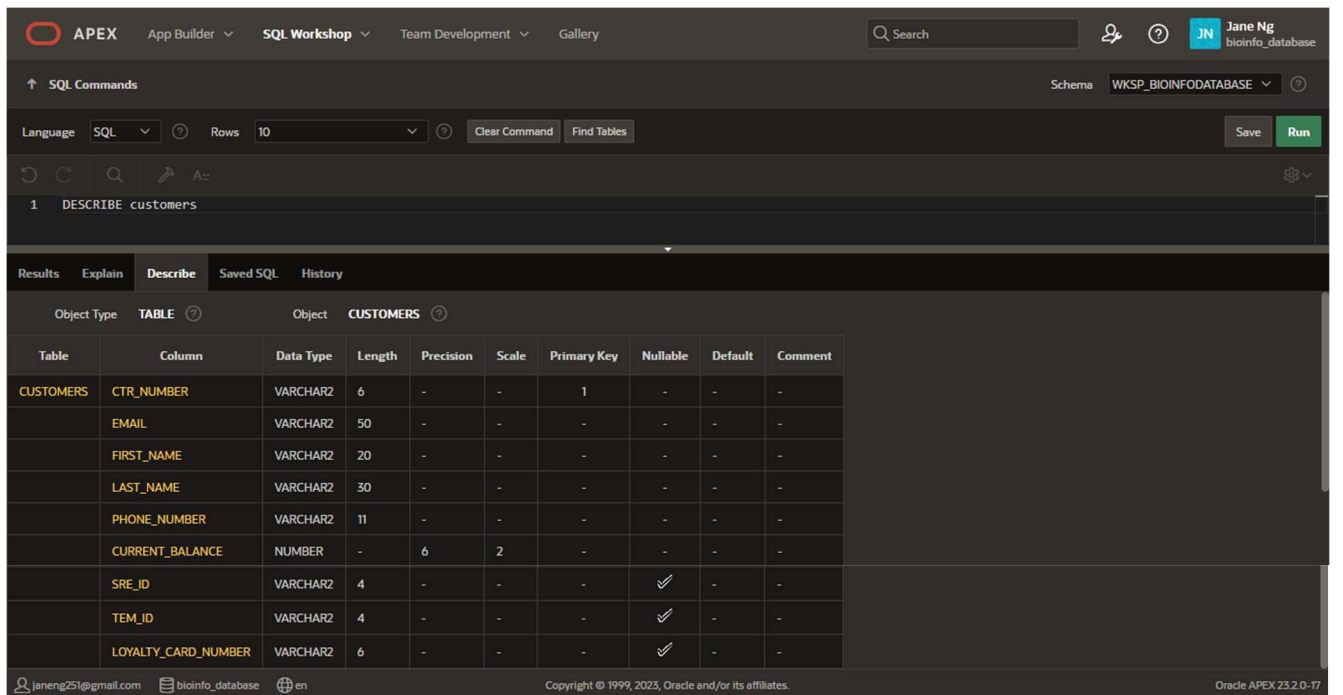
Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMERS	CTR_NUMBER	VARCHAR2	6	-	-	1	-	-	-
	EMAIL	VARCHAR2	50	-	-	-	-	-	-
	FIRST_NAME	VARCHAR2	20	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	11	-	-	-	-	-	-
	CURRENT_BALANCE	NUMBER	-	6	2	-	-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

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



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



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 Oracle APEX SQL Workshop interface. The 'Object Browser' on the left lists tables under the 'CUSTOMERS' schema. The main panel is set to the 'CONSTRAINTS' tab for the 'CUSTOMERS' table. The constraints listed are:

Constraint	Type	Search Condition	Related Constraint	Columns	Delete
CURRENT_BALANCE_CKECK	Check	current_balance >= 0			
SYS_C00148803825	Check	"CTR_NUMBER" IS NOT NULL			
SYS_C00148803826	Check	"EMAIL" IS NOT NULL			
SYS_C00148803827	Check	"FIRST_NAME" IS NOT NULL			
SYS_C00148803828	Check	"LAST_NAME" IS NOT NULL			
SYS_C00148803829	Check	"PHONE_NUMBER" IS NOT NULL			
SYS_C00148803830	Check	"CURRENT_BALANCE" IS NOT NULL			
CUSTOMER_SALES_REP_FK	Foreign		SALES_REPRESENTATIVE_PK...	SRE_ID	NO AC

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 Oracle APEX SQL Workshop interface with the 'SQL Commands' tab selected. The command 'DESCRIBE customers' has been executed. The results are displayed in a table format:

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

APEX App Builder SQL Workshop Team Development Gallery

Search

Jane Ng bioinfo_database

SQL Commands Schema WKSP_BIOINFODATABASE

Language SQL Rows 10 Clear Command Find Tables Save Run

```

1 ALTER TABLE customers
2 ADD mobile_phone_number VARCHAR2(11);

```

Results Explain Describe Saved SQL History

Table altered.

0.06 seconds

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

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SQL Commands Schema WKSP_BIOINFODATABASE

Language SQL Rows 10 Clear Command Find Tables Save Run

```

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	-	-	-	✓	-	-

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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.

The screenshot shows the APEX SQL Workshop interface. The 'SQL Commands' tab is active, and the command 'DESCRIBE customers' has been executed. The results are displayed in a table format under the 'Describe' tab.

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.

The screenshot shows the APEX SQL Workshop interface. The 'SQL Commands' tab is active, and the command 'ALTER TABLE customers DROP COLUMN mobile_phone_number;' has been executed. The results are displayed in a table format under the 'Results' tab.

Results	Explain	Describe	Saved SQL	History
Table altered.				
0.05 seconds				

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

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, the navigation bar includes 'APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'Gallery'. A search bar and user profile 'Jane Ng' are also present. The 'SQL Commands' section shows the command 'DESCRIBE customers' entered. Below this, the 'Results' tab is active, displaying the table structure for '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	-	-	-	✓	-	-

The footer of the interface shows the user 'janeng251@gmail.com', the database 'bioinfo_database', and the version 'Oracle APEX 23.2.0-17'.