



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**GROUP 7**

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SECD2523-01 PANGKALAN DATA (DATABASE)

## 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:  
(inventory list, items, price history, sales representatives, sales rep address, teams, customers, customers addresses, orders, oreded items)
2. How many columns are created for the price history table?  
6 columns:  
(start date, start time, price, end date, end time, itm number)
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?
5. CTR Number
6. What are the lowest and highest values that can be stored in the commission\_rate column for the sales\_representatives table?
7. Highest would be 99 and lowest would be -99 as the range of numbers is constrained by the (2) precision.
8. What are the lowest and highest values that can be stored in the price column for the price\_history table?  
Highest would be 99999999.99 and lowest would be -99999999.99 as the range of numbers is constrained by the (7,2) precision.
9. What are the 3 columns that make up the primary key for the price\_history table?  
itm number, start date, and 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.

**SQL Command: DESCRIBE orders**

**Output:**

Name	Null?	Type
ID	NOT NULL	VARCHAR2(9)
ODR_DATE	NOT NULL	DATE
ODR_TIME	NOT NULL	DATE
NUMBER_OF_UNITS	NOT NULL	NUMBER(2)
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.

**SQL COMMAND: ALTER TABLE orders**

**MODIFY odr\_date DATE DEFAULT SYSDATE;**

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

**OUTPUT:**

⚡	COLUMN_NAME	⚡	DATA_TYPE	⚡	NULLABLE	DATA_DEFAULT	⚡	COLUMN_ID	⚡	COMMENTS
1	ID		VARCHAR2(9 BYTE)	No		(null)		1		(null)
2	ODR_DATE		DATE	No		SYSDATE		2		(null)
3	ODR_TIME		DATE	No		(null)		3		(null)
4	NUMBER_OF_UNITS		NUMBER(2,0)	No		(null)		4		(null)
5	CTR_NUMBER		VARCHAR2(6 BYTE)	No		(null)		5		(null)

## Adding a check constraint

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

**SQL Command: DESCRIBE customers**

**OUTPUT:**

Name	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.

**SQL Command: ALTER TABLE customers**

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

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

**OUTPUT:**

Name	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)

Table CUSTOMERS altered.

CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE	STATUS	DEFERRABLE	VALIDATED	GENERATED
1 CHECK_POSITIVE_BALANCE	Check	current_balance >= 0	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME

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.

	⚡ COLUMN_NAME	⚡ DATA_TYPE	⚡ NULLABLE	DATA_DEFAULT	⚡ COLUMN_ID	⚡ COMMENTS
1	CTR_NUMBER	VARCHAR2(6 BYTE)	No	(null)	1	(null)
2	EMAIL	VARCHAR2(50 BYTE)	No	(null)	2	(null)
3	FIRST_NAME	VARCHAR2(20 BYTE)	No	(null)	3	(null)
4	LAST_NAME	VARCHAR2(30 BYTE)	No	(null)	4	(null)
5	PHONE_NUMBER	VARCHAR2(11 BYTE)	No	(null)	5	(null)
6	CURRENT_BALANCE	NUMBER(6,2)	No	(null)	6	(null)
7	SRE_ID	VARCHAR2(4 BYTE)	Yes	(null)	7	(null)
8	TEM_ID	VARCHAR2(4 BYTE)	Yes	(null)	8	(null)
9	LOYALTY_CARD_NUMBER	VARCHAR2(6 BYTE)	Yes	(null)	9	(null)

⚡ CONSTRAINT_NAME	⚡ CONSTRAINT_TYPE	SEARCH_CONDITION	⚡ R_OWNER	⚡ R_TABLE_NAME	⚡ R_CONSTRAINT_NAME	⚡ DELETE_RULE	⚡ STATUS	⚡ DEFERRABLE	⚡ VALIDATED	⚡ GENERATED	⚡ BAD	⚡ RELY	⚡ LAST_CHANGE
1 CHECK_POSITIVE_BALANCE	Check	current_balance >= 0	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME	(null)	(null)	04/11/2023
2 CTR_EMAIL_UK	Unique	(null)	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME	(null)	(null)	30/10/2023
3 CTR_LCN_UK	Unique	(null)	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME	(null)	(null)	30/10/2023
4 CUSTOMER_PK	Primary_Key	(null)	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME	(null)	(null)	30/10/2023
5 CUSTOMER_SALES_REP_FK	Foreign_Key	(null)	SYS	SALES_REPRESENTATIVES	SALES_REPRESENTATIVE_FK	NO ACTION	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME	(null)	(null)	30/10/2023
6 CUSTOMER_TEAM_FK	Foreign_Key	(null)	SYS	TEAMS	TEAM_FK	NO ACTION	ENABLED	NOT DEFERRABLE	VALIDATED	USER NAME	(null)	(null)	30/10/2023
7 SYS_C008254	Check	"CTR_NUMBER" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	GENERATED NAME	(null)	(null)	30/10/2023
8 SYS_C008255	Check	"EMAIL" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	GENERATED NAME	(null)	(null)	30/10/2023
9 SYS_C008256	Check	"FIRST_NAME" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	GENERATED NAME	(null)	(null)	30/10/2023
10 SYS_C008257	Check	"LAST_NAME" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	GENERATED NAME	(null)	(null)	30/10/2023
11 SYS_C008258	Check	"PHONE_NUMBER" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	GENERATED NAME	(null)	(null)	30/10/2023
12 SYS_C008259	Check	"CURRENT_BALANCE" IS NOT NULL	(null)	(null)	(null)	(null)	ENABLED	NOT DEFERRABLE	VALIDATED	GENERATED NAME	(null)	(null)	30/10/2023

## 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.

**SQL Command: DESCRIBE customers**

**OUTPUT:**

Name	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

**SQL Command: ALTER TABLE customers**

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

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

**OUTPUT:**

Name	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_PHONE_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.

**SQL Command: DESCRIBE customers**

**OUTPUT:**

Name	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_PHONE_NUMBER		VARCHAR2(11)

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

**SQL Command: ALTER TABLE customers**

**DROP COLUMN mobile\_phone\_number;**

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

**OUTPUT:**

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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