

Database Design Project

Oracle Baseball League Store Database

Project Scenario:

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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 6 Exercise 1: Retrieving Data Using SELECT

Write and Execute SELECT statements (S6L6 Objective 2)

In this exercise you will retrieve data that is stored in the database system by using a SELECT statement.

Part 1: Retrieving all columns from a table.

Using the SELECT * statement show all data stored in the following tables:

1. customers.

```
1 SELECT *
2 FROM CUSTOMERS;
3
```

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	-
c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	-	-	1c1015
c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	-
c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	-	-	1c2341
c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-
C02001	brianrog@hootech.com	Brian	Rogers	1654564898	50	-	-	1c4587

2. teams.

SQL Worksheet

```
1 SELECT *
2 FROM TEAMS;
3
```

ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
t001	Rockets	25	10
t002	Celtics	42	20
t003	Rovers	8	-
t004	Jets	10	5

3. items

SQL Worksheet

```
1 SELECT *
2 FROM ITEMS;
3
```

ITH_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID
im01101044	gloves	catcher mitt	clothing	brown	m	il010230124
im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125
im01101046	socks	team socks with emblem	clothing	range	l	il010230126
im01101047	game top	team shirt with emblem	clothing	range	m	il010230127

Part 2: Selecting Specific Columns

1. Display the customer number, first name, last name, email and phone number of the customers.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT CTR_NUMBER, FIRST_NAME, LAST_NAME, EMAIL, PHONE_NUMBER
2 FROM CUSTOMERS;
3
```

CTR_NUMBER	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER
c00001	Robert	Thornberry	bob.thornberry@heatmail.com	01234567898
c00012	Jennifer	Jones	Jjones@freemail.com	01505214598
c00101	John	Doe	unknown@here.com	03216547808
c00103	Andrew	Murcia	MurciaA@globaltech.com	07715246890
c01986	Maria	Galant	marga187@delphiview.com	01442736589

2. Display the name and number of players for each team.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT NAME, NUMBER_OF_PLAYERS
2 FROM TEAMS;
3
```

NAME	NUMBER_OF_PLAYERS
Rockets	25
Celtics	42
Rovers	8
Jets	10

3. Display the name, description and category for every item in the table.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT NAME, DESCRIPTION, CATEGORY
2 FROM ITEMS;
3
```

NAME	DESCRIPTION	CATEGORY
gloves	catcher mitt	clothing
under shirt	top worn under the game top	clothing
socks	team socks with emblem	clothing
game top	team shirt with emblem	clothing

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Part 2 : Using Column Aliases

1. You previously wrote a query that display the customer's first name, last name, current balance and monthly payment. Rewrite the query to use First Name, Last Name, Balance and Monthly Repayments as the column aliases. The aliases are to be shown exactly as described (case sensitive).

[illegible]

Part 3: Using Literal Character Strings

1. Write a query that will display the team information in the following format:

The Rockets team has 25 players and receives a discount of 10 percent.

Use **Team Information** as the column alias.

SQL Worksheet

Clear

Find

Actions

Save

Run

```
1 SELECT 'The ' || NAME || ' has ' || NUMBER_OF_PLAYERS || ' players and receives a discount of ' || DISCOUNT || ' percent' AS "Team Information"
2 FROM TEAMS;
```

Team Information
The Rockets has 25 players and receives a discount of 10 percent
The Celtics has 42 players and receives a discount of 20 percent
The Rovers has 8 players and receives a discount of percent
The Jets has 10 players and receives a discount of 5 percent

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2. Why does the last team not show a discount?
Because the discount value is NULL.

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Section 6 Lesson 7 Exercise 1: Restricting Data Using WHERE

Limit rows using WHERE (S6L7 Objective 1)

In this exercise you will refine the data that is returned in your query by adding a WHERE clause to your SELECT statement.

Part 1: Using the WHERE Clause.

1. Using the unique customer number in the where clause display all columns for Maria Galant.

```
1 v SELECT *
2 FROM CUSTOMERS
3 WHERE CTR_NUMBER='c01986';
```

CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER	MONTHLY_PAYMENT
c01986	marga187@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	-	-

Download CSV

2. Display the first name, last name and customer number for all customers who have a current balance of greater than 100. Use an appropriate alias for your column headings.

```
1 v SELECT FIRST_NAME, LAST_NAME, CTR_NUMBER
2 FROM CUSTOMERS
3 WHERE CURRENT_BALANCE>100;
```

FIRST_NAME	LAST_NAME	CTR_NUMBER
Robert	Thornberry	c00001
John	Doe	c00101
Maria	Galant	c01986

Download CSV

3. Display the order id, date and time of all orders that were placed before the 28th of May 2019. Use an appropriate alias for your column headings.

SQL Worksheet

Clear

Find

Actions

Save

Run

```
1 v SELECT ID, ODR_DATE, ODR_TIME
2 FROM ORDERS
3 WHERE ODR_DATE<TO_DATE('2019-05-28', 'YYYY-MM-DD');
```

ID	ODR_DATE	ODR_TIME
or0101250	17-APR-17	17-APR-17
or0101350	24-MAY-17	24-MAY-17
or0101425	28-MAY-17	28-MAY-17
or0101681	02-JUN-17	02-JUN-17
or0101750	18-JUN-17	18-JUN-17

Part 2: Range Conditions: BETWEEN Operator

1. Display the inventory id, cost and number of units using appropriate aliases for all items that have a trade cost of between 3.00 and 15.00.

SQL Worksheet

ClearFindActions

```
1 SELECT ID,COST,UNITS
2 FROM INVENTORY_LIST
3 WHERE COST BETWEEN 3.00 AND 15.00;
```

ID	COST	UNITS
il010230125	7.99	250
il010230126	5.24	87

Download CSV

Part 3: Membership Conditions: IN Operator

1. Display the inventory id, cost and number of units using appropriate aliases for all items that have 50, 100, 150 or 200 units in stock.

SQL Worksheet

ClearFindActionsSaveRun

```
1 SELECT ID,COST,UNITS
2 FROM INVENTORY_LIST
3 WHERE UNITS IN (50,100,150,200);
```

ID	COST	UNITS
il010230124	2.5	100

Download CSV

Part 4: Membership Conditions: NOT IN Operator

1. Display the inventory id, cost and number of units using appropriate aliases for all items that do not have 50, 100, 150 or 200 units in stock.

SQL Worksheet

ClearFindActionsSaveRun

```
1 SELECT ID,COST,UNITS
2 FROM INVENTORY_LIST
3 WHERE UNITS NOT IN (50,100,150,200);
```

ID	COST	UNITS
il010230125	7.99	250
il010230126	5.24	87
il010230127	18.95	65
il010230128	97.46	8

Part 5: Pattern Matching: LIKE Operator

1. Display item number and name of all items that have a name that begins with g. Use an appropriate alias for your column headings.

SQL Worksheet

ClearFindActionsSaveRun

```
1 SELECT ITM_NUMBER,NAME
2 FROM ITEMS
3 WHERE NAME LIKE 'g%';
```

ITM_NUMBER	NAME
im01101044	gloves
im01101047	game top

Download CSV

2 rows selected.

Part 6 : Pattern Matching: Combining Wildcard Characters with the LIKE Operator

1. Display item number and name of all items that have a name that contain a lowercase o. Use an appropriate alias for your column headings.

SQL Worksheet

ClearFindActionsSaveRun

```
1 SELECT ITM_NUMBER,NAME
2 FROM ITEMS
3 WHERE NAME LIKE '%o%';
```

ITM_NUMBER	NAME
im01101044	gloves
im01101046	socks
im01101047	game top

Download CSV

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Section 6 Lesson 7 Exercise 2: Restricting Data Using WHERE

Limit rows using WHERE (S6L7 Objective 1)

In this exercise you will refine the data that is returned in your query by adding a WHERE clause to your SELECT statement.

Part 1: Using the NULL Conditions

1. Write a query that will display information for teams that don't receive a discount in the following format:

The Rovers team has 25 players and does not receive a discount.

Use **Team Information** as the column alias.

SQL Worksheet

SQL Worksheet

Clear Find Actions

Clear Find Actions

```
1 SELECT 'The ' || NAME || ' team has ' || NUMBER_OF_PLAYERS || ' players and does not receive a discount' "Team Information"
2 FROM TEAMS
3 WHERE DISCOUNT IS NULL;
```

Team Information
The Rovers team has 8 players and does not receive a discount

Download CSV

2. Write a query that will display information for only teams that receive a discount in the following format:

The Rockets team has 25 players and receives a discount of 10 percent.

Use **Team Information** as the column alias.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT 'The ' || NAME || ' team has ' || NUMBER_OF_PLAYERS || ' players receives a discount of ' || DISCOUNT || ' percent' "Team Information"
2 FROM TEAMS
3 WHERE DISCOUNT IS NOT NULL;
```

Team Information
The Rockets team has 25 players receives a discount of 10 percent
The Celtics team has 42 players receives a discount of 20 percent
The Jets team has 10 players receives a discount of 5 percent

Part 2: Logical Operators: AND

1. Write a query that will display the customer number, address line 1 and postal code for customers that live in the starford area of Liverpool. Use Customer Number, Street Address and Postal Code as the column aliases.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT CTR_NUMBER "Customer Number",ADDRESS_LINE_1 "Street Address",ZIP_CODE "Postal Code"
2 FROM CUSTOMERS_ADDRESSES
3 WHERE CITY='Liverpool'
4 AND ADDRESS_LINE_2='Starford';
```

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK

Part 3: Logical Operators: OR

1. Write a query that will display the customer number, address line 1 and postal code for customers that live in either starford or Liverpool in general. Use Customer Number, Street Address and Postal Code as the column aliases.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT CTR_NUMBER "Customer Number",ADDRESS_LINE_1 "Street Address",ZIP_CODE "Postal Code"
2 FROM CUSTOMERS_ADDRESSES
3 WHERE CITY='Liverpool'
4 OR ADDRESS_LINE_2='Starford';
```

Customer Number	Street Address	Postal Code
c00001	17 Gartsquare Road	LP89JHK
c00001	63 Acacia Drive	LP83JHR

Part 4: Logical Operators: NOT Equal To

1. Write a query that will display the customer number, address line 1 and postal code for customers that do not live in Liverpool. Use Customer Number, Street Address and Postal Code as the column aliases.

SQL Worksheet

Clear Find Actions Save Run

```
1 SELECT CTR_NUMBER "Customer Number",ADDRESS_LINE_1 "Street Address",ZIP_CODE "Postal Code"
2 FROM CUSTOMERS_ADDRESSES
3 WHERE CITY NOT IN ('Liverpool');
```

Customer Number	Street Address	Postal Code
c00101	54 Ropehill Crescent	ST45AGV
c01986	36 Watercress Lane	JP23YTH

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Section 6 Lesson 8 Exercise 1: Sorting Data Using ORDER BY

Use the ORDER BY Clause to Sort SQL Results (S6L8 Objective 1)

In this exercise you will sort the order of the data that is returned in your query by adding an ORDER BY clause to the end of your SELECT statement.

1. Display the team name and number of players alphabetically in order of team name. Use an appropriate alias for your column headings.

```
1 SELECT NAME,NUMBER_OF_PLAYERS
2 FROM TEAMS
3 ORDER BY NAME;
```

NAME	NUMBER_OF_PLAYERS
Celtics	42
Jets	10
Rockets	25
Rovers	8

2. Display the team name and number of players in descending order of number of players. Use an appropriate alias for your column headings.

The screenshot shows the Live SQL interface with the following SQL query entered:

```
1 SELECT NAME,NUMBER_OF_PLAYERS
2 FROM TEAMS
3 ORDER BY NUMBER_OF_PLAYERS DESC;
```

The result set is displayed as a table with the following data:

NAME	NUMBER_OF_PLAYERS
Celtics	42
Rockets	25
Jets	10
Rovers	8

Footer text: 2023 Oracle - Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym
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3. Display the team name and number of players alphabetically in order of team name. Use Team Name for the name alias and Players for the number of players. Sort the output in descending order of name using the alias in the ORDER BY clause.

The screenshot shows the Live SQL interface with the following SQL query entered:

```
1 SELECT NAME "Team Name",NUMBER_OF_PLAYERS "Players"
2 FROM TEAMS
3 ORDER BY NAME DESC;
```

The result set is displayed as a table with the following data:

Team Name	Players
Rovers	8
Rockets	25
Jets	10
Celtics	42

Footer text: 2023 Oracle - Live SQL 23.4.2, running Oracle Database 19c EE Extreme Perf - 19.17.0.0.0 - Database Documentation - Ask Tom - Dev Gym
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Section 6 Lesson 8 Exercise 2: Sorting Data Using ORDER BY

Part 1 : TOP-N-ANALYSIS (S6L8 Objective 3)

1. The customers are numbered sequentially with each new customer being assigned a higher customer number. Use TOP-N-ANALYSIS to only show the First and last name of the first three customers. Show the customers first and last name in the same column using Customer Name as the column alias.

```
1 SELECT ROWNUM "First Three Customers", FIRST_NAME || ' ' || LAST_NAME "Customer Name"
2 FROM
3     (SELECT FIRST_NAME, LAST_NAME
4      FROM CUSTOMERS
5      ORDER BY CTR_NUMBER)
6 WHERE ROWNUM <= 3;
```

First Three Customers	Customer Name
1	Brian Rogers
2	Robert Thornberry
3	Jennifer Jones

Part 2 : Using a Substitution Variable (S6L8 Objective 4)

- 1. Use a substitution variable that will allow you to enter the commission rate for the sales representatives. The first and last names should be displayed to screen for any sales representatives that earn that commission rate and the output should be ordered by their last name. Use an appropriate alias for your column headings.

```
1 SELECT FIRST_NAME, LAST_NAME
2 FROM SALES_REPRESENTATIVES
3 WHERE COMMISSION_RATE = :Rate
4 ORDER BY LAST_NAME;
```

Bind Variable	Value
:RATE	5

First Name	Last_Name
Barry	Speed
Victoria	Wright