Database Design Project

Oracle Baseball League Store Database

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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.

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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.

	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
1	c00001	bob.thornberry@heatmail.com	Robert	Thornberry	01234567898	150	sr01	t001	(null)
2	c00012	Jjones@freemail.com	Jennifer	Jones	01505214598	0	(null)	(null)	lc1015
3	c00101	unknown@here.com	John	Doe	03216547808	987.5	sr01	t002	(null)
4	c00103	MurciaA@globaltech.com	Andrew	Murcia	07715246890	85	(null)	(null)	lc2341
5	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	(null)
6	c02001	brainrog@hootech.com	Brian	Rogers	01654564898	-5	(null)	(null)	Ic4587

2. teams.

	ID	NAME	NUMBER_OF_PLAYERS	DISCOUNT
1	t001	Rockets	25	10
2	t002	Celtics	42	20
3	t003	Rovers	8	(null)
4	t004	Jets	10	5

3. items

	ITM_NUMBER	NAME	DESCRIPTION	CATEGORY	COLOR	Size	ILT_ID
1	im01101044	gloves	catcher mitt	clothing	brown	m	il010230124
2	im01101045	under shirt	top worn under the game top	clothing	white	s	il010230125
3	im01101046	socks	team socks with emblem	clothing	range	l	il010230126
4	im01101047	game top	team shirt with emblem	clothing	range	m	il010230127
5	im01101048	premium bat	high quaity basball bat	equipment	(null)	(null)	il010230128

Part 2: Selecting Specific Columns

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

```
SELECT ctr_number, first_name, last_name, email, phone_number
FROM customers;
```

	CTR_NUMBER	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER
1	c00001	Robert	Thornberry	bob.thornberry@heatmail.com	01234567898
2	c00012	Jennifer	Jones	Jjones@freemail.com	01505214598
3	c00101	John	Doe	unknown@here.com	03216547808
4	c00103	Andrew	Murcia	MurciaA@globaltech.com	07715246890
5	c01986	Maria	Galant	margal87@delphiview.com	01442736589
6	c02001	Brian	Rogers	brainrog@hootech.com	01654564898

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

```
SELECT name, number_of_players
FROM teams;
```

	NAME	NUMBER_OF_PLAYERS
1	Rockets	25
2	Celtics	42
3	Rovers	8
4	Jets	10

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

```
SELECT name, description, category
FROM items;
```

	NAME	DESCRIPTION	CATEGORY
1	gloves	catcher mitt	clothing
2	under shirt	top worn under the game top	clothing
3	socks	team socks with emblem	clothing
4	game top	team shirt with emblem	clothing
5	premium bat	high quaity basball bat	equipment

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Section 6 Lesson 6 Exercise 2: 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: Using Arithmetic Operators

1. Every customer has been told they can pay off their current balance over a 12 month period. Display the customer's first name, last name, current balance and monthly payment.

```
SELECT first_name, last_name, current_balance/12 AS monthly_payment
FROM customers;
```

	FIRST_NAME	LAST_NAME	MONTHLY_PAYMENT
1	Robert	Thornberry	12.5
2	Jennifer	Jones	0
3	John	Doe	82.291666666666666666666666666666666666667
4	Andrew	Murcia	7.083333333333333333333333333333333333333
5	Maria	Galant	10.470833333333333333333333333333333333333

2. Obl is considering giving a gift card to all its customers of 5.00 that can be used to reduce their current balance. Write a query that will show the customers first name, last name, customer number, current balance and the value of their balance minus the gift value.

```
SELECT first_name, last_name, ctr_number, current_balance-5 AS balance_minus_giftvalue
FROM customers;
```

	FIRST_NAME	LAST_NAME	CTR_NUMBER	BALANCE_MINUS_GIFTVALUE
1	Robert	Thornberry	c00001	145
2	Jennifer	Jones	c00012	-5
3	John	Doe	c00101	982.5
4	Andrew	Murcia	c00103	80
5	Maria	Galant	c01986	120.65

3. What would be the problem with implementing this scheme?

   The collumns name aren't clear and less descriptive

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).

```
SELECT
    first_name AS "First Name",
    last_name AS "Last Name",
    current_balance As "Balance",
    current_balance/12 AS "Monthly Repayments"
FROM customers;
```

	First Name	Last Name	Balance	Monthly Repayments
1	Robert	Thornberry	150	12.5
2	Jennifer	Jones	0	0
3	John	Doe	987.5	82.291666666666666666666666666666666666667
4	Andrew	Murcia	85	7.083333333333333333333333333333333333333
5	Maria	Galant	125.65	10.470833333333333333333333333333333333333

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.

```
SELECT
    'The '||name||' team has '||number_of_players||' players and receives a discount of '||TO_CHAR(discount)||' percent.'
    AS "Team Information"
FROM teams;
```

	Team Information
1	The Rockets team has 25 players and receives a discount of 10 percent.
2	The Celtics team has 42 players and receives a discount of 20 percent.
3	The Rovers team has 8 players and receives a discount of percent.
4	The Jets team has 10 players and receives a discount of 5 percent.

2. Why does the last team not show a discount?

   Because it has NULL value on discount

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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.

```
SELECT * FROM customers
WHERE ctr_number = 'c01986';
```

	CTR_NUMBER	EMAIL	FIRST_NAME	LAST_NAME	PHONE_NUMBER	CURRENT_BALANCE	SRE_ID	TEM_ID	LOYALTY_CARD_NUMBER
1	c01986	margal87@delphiview.com	Maria	Galant	01442736589	125.65	sr03	t003	(null)

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.

```
SELECT
    first_name AS "First Name",
    last_name AS "Last Name",
    ctr_number AS "Customer Number",
    current_balance AS "Balance"
FROM customers
WHERE current_balance > 100;
```

	First Name	Last Name	Customer Number	Balance
1	Robert	Thornberry	c00001	150
2	John	Doe	c00101	987.5
3	Maria	Galant	c01986	125.65

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.

```
SELECT
    id AS "Order ID",
    odr_date AS "Order Date",
    TO_CHAR(odr_time,'DD/MM/YY') AS "OOrder Time"
FROM orders
WHERE odr_date < '28-May-2019';
```

	Order ID	Order Date	OOrder Time
1	or0101250	17/04/2017	17/04/17
2	or0101350	24/05/2017	24/05/17
3	or0101425	28/05/2017	28/05/17
4	or0101681	02/06/2017	02/06/17
5	or0101750	18/06/2017	18/06/17

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.

```
SELECT
    id AS "Inventory ID",
    cost AS "Cost",
    units AS "Number Of Units"
FROM inventory_list
WHERE cost BETWEEN 3.00 AND 15.00;
```

	Inventory ID	Cost	Number Of Units
1	il010230125	7.99	250
2	il010230126	5.24	87

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.

```
SELECT
    id AS "Inventory ID",
    cost AS "Cost",
    units AS "Number Of Units"
FROM inventory_list
WHERE units IN (50,100,150,200);
```

	Inventory ID	Cost	Number Of Units
1	il010230124	2.5	100

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.

```
SELECT
    id AS "Inventory ID",
    cost AS "Cost",
    units AS "Number Of Units"
FROM inventory_list
WHERE units NOT IN (50,100,150,200);
```

	Invent...	Cost	Number Of Units
1	il010230125	7.99	250
2	il010230126	5.24	87
3	il010230127	18.95	65
4	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.

```
SELECT
    itm_number AS "Item Number",
    name AS "Name"
FROM items
WHERE name LIKE 'g%';
```

	Item Number	Name
1	im01101044	gloves
2	im01101047	game top

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.

```
SELECT
    itm_number AS "Item Number",
    name AS "Name"
FROM items
WHERE name LIKE '_o%';
```

	Item Number	Name
1	im01101046	socks

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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.

```
SELECT
    'The '||name||' team has '||number_of_players||' and does not receive a discount.' AS "Team Information"
FROM teams
WHERE discount IS NULL;
```

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

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.

```
SELECT
    'The '||name||' team has '||number_of_players||' receive a discount of '||discount||' percent.' AS "Team Information"
FROM teams
WHERE discount IS NOT NULL;
```

	Team Information
1	The Rockets team has 25 receive a discount of 10 percent.
2	The Celtics team has 42 receive a discount of 20 percent.
3	The Jets team has 10 receive 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.

```
SELECT
    ctr_number AS "Customer Number",
    address_line_1 AS "Street Address",
    zip_code AS "Postal Code"
FROM customers_addresses
WHERE city = 'Liverpool' AND address_line_2 = 'Starford';
```

	Customer Number	Street Address	Postal Code
1	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.

```
SELECT
    ctr_number AS "Customer Number",
    address_line_1 AS "Street Address",
    zip_code AS "Postal Code"
FROM customers_addresses
WHERE city = 'Liverpool' OR address_line_2 = 'Starford';
```

	Customer Number	Street Address	Postal Code
1	c00001	17 Gartsquare Road	LP89JHK
2	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.

```
SELECT
    ctr_number AS "Customer Number",
    address_line_1 AS "Street Address",
    zip_code AS "Postal Code"
FROM customers_addresses
WHERE city NOT IN ('Liverpool');
```

	Customer Number	Street Address	Postal Code
1	c00101	54 Ropehill Crescent	ST45AGV
2	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.

```
SELECT
    name AS "Team Name",
    number_of_players AS "Players"
FROM teams
ORDER BY name;
```

	Team Name	Players
1	Celtics	42
2	Jets	10
3	Rockets	25
4	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.

```
SELECT
    name AS "Team Name",
    number_of_players AS "Players"
FROM teams
ORDER BY number_of_players DESC;
```

	Team ...	Players
1	Celtics	42
2	Rockets	25
3	Jets	10
4	Rovers	8

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.

```
SELECT
    name AS "Team Name",
    number_of_players AS "Players"
FROM teams
ORDER BY name DESC;
```

	Team Name	Players
1	Rovers	8
2	Rockets	25
3	Jets	10
4	Celtics	42

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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.

```
SELECT
    ROWNUM AS "Customer Number",
    first_name||' '||last_name AS "Customer Name"
FROM (SELECT first_name,last_name FROM CUSTOMERS)
WHERE ROWNUM <= 3;
```

	Customer Number	Customer Name
1	1	Robert Thornberry
2	2	Jennifer Jones
3	3	John Doe

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.

```
SELECT
    first_name AS "First Name",
    last_name AS "Last Name",
    commission_rate AS "Commission Rate"
FROM sales_representatives
ORDER BY last_name;
```

	First Name	Last Name	Commission Rate
1	Charles	Raymond	10
2	Barry	Speed	5
3	Victoria	Wright	5