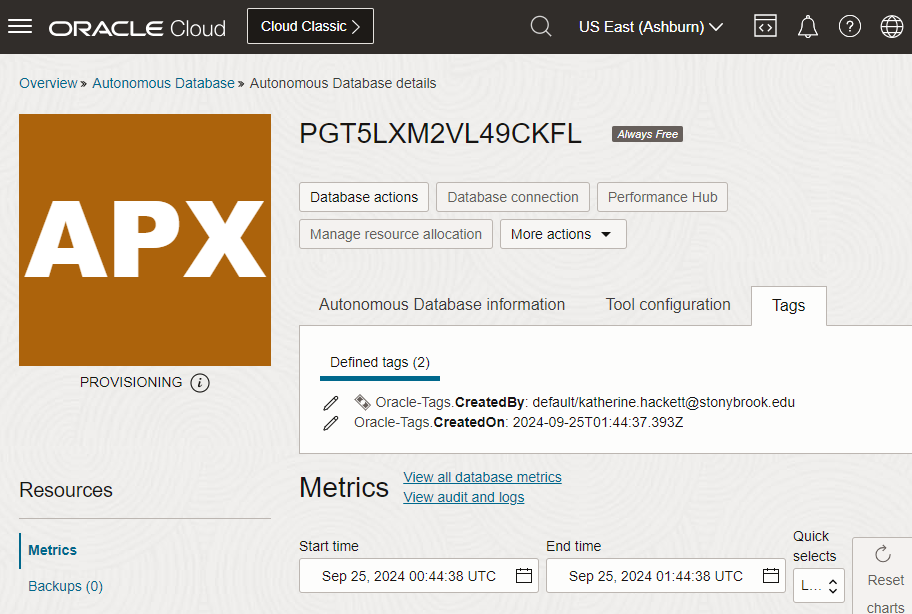
Oracle Programming 2,3

APEX learner: I’m not seeing the option to right click on Apex from the More Actions drop down menu to provide a link to my account from the instructions. The screenshots aren’t the same as what I see online. I think because it’s still “provisioning”



1.3

-

– \*

-

- PROJECTION

- null

- aliases

- arithmetic operators?

- SELECTION

- the select statement

-A select clause

-A from clause

-keyword

-clause

-statement

1. Select salary
2. what/where is DJs on demand client table??
3. He should have added parentheses:
   1. SELECT last\_name, salary, .05\*(salary+.50)
   2. FROM f\_staffs;
4. SELECT all
5. A?
6. Keywords: select, from
   1. Clauses: employee ID, last name
   2. Statements: employees?
7. A: selection B: projection
8. Null- no idea, the powerpoint doesn’t explain those types of examples so I’m not sure
9. B?
10. Idk bc it only talks about showing all columns, but the question asks about showing all rows

Database Programming with SQL

2-1: Working with Columns, Characters, and Rows

Practice Activities

Objectives

• Apply the concatenation operator to link columns to other columns, arithmetic expressions, or constant values to create a character expression

• Use Column Aliases to rename columns in the query result

• Enter literal values of type character, number, or date into a SELECT statement

• Define and use DISTINCT to eliminate duplicate rows

• Display the structure of a table using DESCRIBE or DESC

• Edit, execute, and save SQL statements in Oracle Application Express

Vocabulary

**Identify the vocabulary word for each definition below.**

Distinct - A command that suppresses duplicates

Concatenation operator - Links two columns together to form one character data column

Character string - A group of character data

Describe - An SQL plus command that displays the structure of a table

Try It / Solve It

1. The manager of Global Fast Foods would like to send out coupons for the upcoming sale. He wants to send one coupon to each household. Create the SELECT statement that returns the customer last name and a mailing address.

SELECT last\_name, mailing list

2. Each statement below has errors. Correct the errors and execute the query in Oracle Application Express.

a.

SELECT first name - first\_name (missing underscore)

FROM f\_staffs;

b.

SELECT first\_name |" " | last\_name AS "DJs on Demand Clients" - space between second quote and line

FROM d\_clients;

c.

SELECT DISCTINCT f\_order\_lines - DISTINCT misspelled

FROM quantity;

d.

SELECT order number - order\_number (missing underscore)

FROM f\_orders;

3. Sue, Bob, and Monique were the employees of the month. Using the f\_staffs table, create a SELECT statement to display the results as shown in the Super Star chart.

Super Star

\*\*\* Sue \*\*\* Sue \*\*\*

\*\*\* Bob \*\*\* Bob \*\*\*

\*\*\* Monique \*\*\* Monique \*\*\*

4. Which of the following is TRUE about the following query? - how do I know, is there a list with this data somewhere?!

SELECT first\_name, DISTINCT birthdate

FROM f\_staffs;

a. Only two rows will be returned.

b. Four rows will be returned.

c. Only Fred 05-Jan-1988 and Lizzie 10-Nov-1987 will be returned.

d. No rows will be returned.

5. Global Fast Foods has decided to give all staff members a 5% raise. Prepare a report that presents the output as shown in the chart.

EMPLOYEE LAST NAME

CURRENT SALARY

SALARY WITH 5% RAISE

6. Create a query that will return the structure of the Oracle database EMPLOYEES table. Which columns are marked “nullable”? What does this mean? – where is this data?

7. The owners of DJs on Demand would like a report of all items in their D\_CDs table with the following column headings: Inventory Item, CD Title, Music Producer, and Year Purchased. Prepare this report.

8. True/False -- The following SELECT statement executes successfully:

SELECT last\_name, job\_id, salary AS Sal

FROM employees;

9. True/False -- The following SELECT statement executes successfully:

SELECT \*

FROM job\_grades;

10.There are four coding errors in this statement. Can you identify them?

SELECT employee\_id, last\_name

sal x 12 ANNUAL SALARY

FROM employees;

11.In the arithmetic expression salary\*12 - 400, which operation will be evaluated first?

12.Which of the following can be used in the SELECT statement to return all columns of data in the Global Fast Foods f\_staffs table?

a. column names

b. \* - this one

c. DISTINCT id

d. both a and b

13.Using SQL to choose the columns in a table uses which capability?

a. selection

b. Projection - this one

c. partitioning

d. join

14.SELECT last\_name AS "Employee". The column heading in the query result will appear as:

a. EMPLOYEE - this one?

b. employee

c. Employee

d. "Employee:

15.Which expression below will produce the largest value?

a. SELECT salary\*6 + 100

b. SELECT salary\* (6 + 100)

c. SELECT 6(salary+ 100) - this one?

d. SELECT salary+6\*100

16.Which statement below will return a list of employees in the following format?

Mr./Ms. Steven King is an employee of our company.

a. SELECT "Mr./Ms."||first\_name||' '||last\_name 'is an employee of our company.' AS "Employees"

FROM employees;

b. SELECT 'Mr./Ms. 'first\_name,last\_name ||' '||'is an employee of our company.'

FROM employees; - this one?

c. SELECT 'Mr./Ms. '||first\_name||' '||last\_name ||' '||'is an employee of our company.' AS "Employees"

FROM employees ; - not this

d. SELECT Mr./Ms. ||first\_name||' '||last\_name ||' '||"is an employee of our company." AS "Employees"

FROM employees - not this

17.Which is true about SQL statements?

a. SQL statements are case-sensitive - this one

b. SQL clauses should not be written on separate lines.

c. Keywords cannot be abbreviated or split across lines.

d. SQL keywords are typically entered in lowercase; all other words in uppercase.

18.Which queries will return three columns each with UPPERCASE column headings?

a. SELECT "Department\_id", "Last\_name", "First\_name"

FROM employees;

b. SELECT DEPARTMENT\_ID, LAST\_NAME, FIRST\_NAME

FROM employees;

c. SELECT department\_id, last\_name, first\_name AS UPPER CASE

FROM employees

d. SELECT department\_id, last\_name, first\_name

FROM employees; - this one

19.Which statement below will likely fail?

a. SELCT \* FROM employees; - this one

b. Select \* FROM employees;

c. SELECT \* FROM EMPLOYEES;

d. SelecT\* FROM employees;

20.Click on the History link at the bottom of the SQL Commands window. Scroll or use the arrows at the bottom of the page to find the statement you wrote to solve problem 3 above. (The one with the column heading SuperStar). Click on the statement to load it back into the command window. Execute the command again, just to make sure it is the correct one that works. Once you know it works, click on the SAVE button in the top right corner of the SQL Commands window, and enter a name for your saved statement. Use your own initials and “\_superstar.sql”, so if your initials are CT then the filename will be CT\_superstar.sql.

Log out of OAE, and log in again immediately. Navigate back to the SQL Commands window, click the Saved SQL link at the bottom of the page and load your saved SQL statement into the Edit window. This is done by clicking on the script name. Edit the statement, to make it display + instead of \*. Run your amended statement and save it as initials\_superplus.sql.

2-2: Limit Rows Selected

Practice Activities

Objectives

• Apply SQL syntax to restrict the rows returned from a query

• Demonstrate application of the WHERE clause syntax

• Explain why it is important, from a business perspective, to be able to easily limit data retrieved from a table

• Construct and produce output using a SQL query containing character strings and date values

Vocabulary

Identify the vocabulary word for each definition below.

Restricts the rows returned by a select statement - WHERE

Compares one expression to another value or expression- comparison operators

Try It / Solve It - where is this database??

1. Using the Global Fast Foods database, retrieve the customer’s first name, last name, and address for the customer who uses ID 456.

2. Show the name, start date, and end date for Global Fast Foods' promotional item “ballpen and highlighter” giveaway.

3. Create a SQL statement that produces the following output:

Oldest

The 1997 recording in our database is The Celebrants Live in Concert

4. The following query was supposed to return the CD title “Carpe Diem" but no rows were returned. Correct the mistake in the statement and show the output.

SELECT produce, title

FROM d\_cds

WHERE title = 'carpe diem' ;

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5. The manager of DJs on Demand would like a report of all the CD titles and years of CDs that were produced before 2000.

6. Which values will be selected in the following query? - employee salary, so b. 0-4999

SELECT salary

FROM employees

WHERE salary < = 5000;

a. 5000

b. 0 - 4999

c. 2500

d. 5

For the next three questions, use the following table information:

TABLE NAME: students

COLUMNS:

studentno NUMBER(6)

fname VARCHAR2(12)

lname VARCHAR(20)

sex CHAR(1)

major VARCHAR2(24)

7. Write a SQL statement that will display the student number (studentno), first name (fname), and last name (lname) for all students who are female (F) in the table named students.

8. Write a SQL statement that will display the student number (studentno) of any student who has a PE major in the table named students. Title the studentno column Student Number.

9. Write a SQL statement that lists all information about all male students in the table named students.

10.Write a SQL statement that will list the titles and years of all the DJs on Demand CDs that were not produced in 2000.

11.Write a SQL statement that lists the Global Fast Foods employees who were born before 1980.

2-3: Comparison Operators

Practice Activities

Objectives

• Apply the proper comparison operator to return a desired result

• Demonstrate proper use of BETWEEN, IN, and LIKE conditions to return a desired result

• Distinguish between zero and the value of NULL as unavailable, unassigned, unknown, or inapplicable

• Explain the use of comparison conditions and NULL

Vocabulary

This option identifies that the escape characters should be interpreted literally % or \

Condition tests for null values - is null

Displays rows based on a range of values - BETWEEN…AND

Including the specified limits and the area between them; the numbers 1-10, inclusive- between…and with WHERE or IN??

Selects rows that match a character pattern - like?? %?

Tests for values in a specified list of values - IN condition

Try It / Solve It

1. Display the first name, last name, and salary of all Global Fast Foods staff whose salary is between $5.00 and $10.00 per hour.

2. Display the location type and comments for all DJs on Demand venues that are Private Home.

3. Using only the less than, equal, or greater than operators, rewrite the following query:

SELECT first\_name, last\_name

FROM f\_staffs

WHERE salary BETWEEN 20.00 and 60.00;

4. Create a list of all the DJs on Demand CD titles that have “a” as the second letter in the title.

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5. Who are the partners of DJs on Demand who do not get an authorized expense amount?

6. Select all the Oracle database employees whose last names end with “s”. Change the heading of the column to read Possible Candidates.

7. Which statement(s) are valid?

a. WHERE quantity <> NULL;

b. WHERE quantity = NULL;

c. WHERE quantity IS NULL;

d. WHERE quantity != NULL;

8. Write a SQL statement that lists the songs in the DJs on Demand inventory that are type code 77, 12, or 1.

3-1: Logical Comparisons and Precedence Rules

Practice Activities

Objectives

• Evaluate logical comparisons to restrict the rows returned based on two or more conditions

• Apply the rules of precedence to determine the order in which expressions are evaluated and calculated

Vocabulary

Inverts the value of the condition - NOT

Both conditions must be true for a record to be selected - AND

Rules that determine the order in which expressions are evaluated and calculated- rules of precedence

Either condition can be true for a record to be selected - OR

Try It / Solve It

1. Execute the two queries below. Why do these nearly identical statements produce two different results? Name the difference and explain why.

SELECT code, description

FROM d\_themes

WHERE code >200 AND description IN('Tropical', 'Football', 'Carnival');

SELECT code, description

FROM d\_themes

WHERE code >200 OR description IN('Tropical', 'Football', 'Carnival');

2. Display the last names of all Global Fast Foods employees who have “e” and “i” in their last names.

3. I need to know who the Global Fast Foods employees are that make more than $6.50/hour and their position is not order taker.

4. Using the employees table, write a query to display all employees whose last names start with “D” and have “a” and “e” anywhere in their last name.

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5. In which venues did DJs on Demand have events that were not in private homes?

6. Which list of operators is in the correct order from highest precedence to lowest precedence?

a. AND, NOT, OR

b. NOT, OR, AND

c. NOT, AND, OR

For questions 7 and 8, write SQL statements that will produce the desired output.

7. Who am I?

I was hired by Oracle after May 1998 but before June of 1999. My salary is less than $8000 per month, and I have an “en” in my last name.

8. What's my email address?

Because I have been working for Oracle since the beginning of 1996, I make more than $9000 per month. Because I make so much money, I don't get a commission.

3-2: Sorting Rows

Practice Activities

Objectives

• Construct a query to sort a result set in ascending or descending order

• State the order in which expressions are evaluated and calculated based on the rules of precedence

• Construct a query to order a result set using a column alias

• Construct a query to order a result set for single or multiple columns

Vocabulary

Identify the vocabulary word for each definition below.

Orders the rows in ascending order (the default order); A-Z - ORDER BY Clause

Orders the rows in descending order: Z-A - specifying DESC after column name in ORDER BY clause

To arrange according to class, kind, or size

Try It / Solve It

1. In the example below, assign the employee\_id column the alias of “Number.” Complete the SQL statement to order the result set by the column alias.

SELECT employee\_id, first\_name, last\_name

FROM employees;

2. Create a query that will return all the DJs on Demand CD titles ordered by year with titles in alphabetical order by year.

3. Order the DJs on Demand songs by descending title. Use the alias “Our Collection” for the song title.

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2

4. Write a SQL statement using the ORDER BY clause that could retrieve the information needed. Do not run the query.

Create a list of students who are in their first year of school. Include the first name, last name, student ID number, and parking place number. Sort the results alphabetically by student last name and then by first name. If more than one student has the same last name, sort each first name in Z to A order. All other results should be in alphabetical order (A to Z).

5. Write a SQL statement using the employees table and the ORDER BY clause that could retrieve the information in the following table. Return only those employees with employee\_id<125.

DEPARTMENT\_ID

LAST\_NAME

MANAGER\_ID

90

Kochhar

100

90

King

(null)

90

De Haan

100

60

Lorentz

103

60

Hunold

102

60

Ernst

103

50

Mourgos

100

Extension Activities

1. Limiting values with the WHERE clause is an example of:

a. Projection

b. Ordering

c. Joining

d. Grouping

e. Selection

2. You want to sort your CD collection by title, and then by artist. This can be accomplished using:

a. WHERE

b. SELECT

c. ORDER BY

d. DISTINCT

3. Which of the following are SQL keywords?

a. SELECT

b. ALIAS

c. COLUMN

d. FROM

4. Which of the following are true?

a. Multiplication and division take priority over addition.

b. Operators of the same priority are evaluated from left to right.

c. Parentheses can be used to override the rules of precedence.

d. None of the above are true.

5. The following query was written:

SELECT DISTINCT last\_name

FROM students

a. To select all the outstanding students

b. To choose last names that are duplicates

c. To select last names without duplicates

d. To select all last names

6. The following string was created using which SELECT clause?

Abby Rogers is an order taker for Global Fast Foods

a. SELECT first\_name ||' ' ||last\_name ||' is an ' staff\_type ' for Global Fast Foods'

b. SELECT Abby Rogers is an ||staff\_type||' for Global Fast Foods'

c. SELECT first\_name,last\_name '||staff\_type||' for Global Fast Foods'

d. SELECT first\_name ||' ' ||last\_name ||' is an '||staff\_type||' for Global Fast Foods'

7. Which of the following SELECT clauses will return uppercase column headings?

a. SELECT id, last\_name, address, city, state, zip, phone\_number;

b. SELECT ID, LAST\_NAME, ADDRESS, CITY, STATE, ZIP, PHONE\_NUMBER;

c. SELECT Id, Last\_name, Address, City, State, Zip, Phone\_number;

d. SELECT id AS ID, last\_name AS NAME, address AS ADDRESS, city AS CITY, state AS STATE, zip AS ZIP, phone\_number AS PHONE\_NUMBER;

8. Which SELECT statement will always return the last names in alphabetical order?

a. SELECT last\_name AS ORDER BY FROM employees

b. SELECT last\_name FROM employees ORDER BY last\_name

c. SELECT last\_name FROM employees

d. SELECT ASC last\_name FROM employees

9. Which SELECT clause will return a column heading for employee\_id called “New Employees”?

a. SELECT last\_name AS "New Employees"

b. SELECT employee\_id AS New Employees

c. SELECT employee AS "New Employees"

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d. SELECT employee\_id AS "New Employees"

10.Examine the following query:

SELECT last\_name, job\_id, salary

FROM employees

WHERE job\_id = 'SA\_REP' OR job\_id = 'AD\_PRES' AND salary >15000;

Which results could not have been returned from this query?

a. Joe Everyone, sales representative, salary 15000

b. Jane Hendricks, sales manager, salary 15500

c. Arnie Smithers, administration president, 20000

d. Jordan Lim, sales representative, salary 14000

11.Finish this query so it returns all employees whose last names start with “St”.

SELECT last\_name

FROM employees

12.What salary values will not be returned from this query?

SELECT last\_name, first\_name, salary

FROM employees

WHERE salary BETWEEN 1900 AND 2100;

13.Correct each WHERE clause:

a. WHERE department\_id NOT IN 101,102,103;

b. WHERE last\_name = King

c. WHERE start date LIKE "05-May-1998"

d. WHERE salary IS BETWEEN 5000 AND 7000

e. WHERE id =! 10

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14.SELECT prefix

FROM phone

WHERE prefix BETWEEN 360 AND 425

OR prefix IN (206,253,625)

AND prefix BETWEEN 315 AND 620;

Which of the following values could be returned?

625, 902, 410, 499

3-3: Introduction to Functions

Practice Activities

Objectives

• Identify appropriate applications of single-row functions in query statements

• Classify a function as a single-row or multi-row function

• Differentiate between single-row functions and multirow functions and the result returned by each

Try It / Solve It

1. For each task, choose whether a single-row or multiple row function would be most appropriate:

a. Showing all of the email addresses in upper case letters m

b. Determining the average salary for the employees in the sales department s

c. Showing hire dates with the month spelled out (September 1, 2004) m

d. Finding out the employees in each department that had the most seniority (the earliest hire date) s

e. Displaying the employees’ salaries rounded to the hundreds place m

f. Substituting zeros for null values when displaying employee commissions. m

2. The most common multiple-row functions are: AVG, COUNT, MAX, MIN, and SUM. Give your own definition for each of these functions. m

3. Test your definitions by substituting each of the multiple-row functions into this query. m

SELECT FUNCTION(salary)

FROM employees

Write out each query and its results.

a. Showing all of the email addresses in upper case letters m

c. Showing hire dates with the month spelled out (September 1, 2004) m

e. Displaying the employees’ salaries rounded to the hundreds place m

f. Substituting zeros for null values when displaying employee commissions. m

2. The most common multiple-row functions are: AVG, COUNT, MAX, MIN, and SUM. Give your own definition for each of these functions. m