2020

Lab Manual

Databases lab

Retrieving Data Using the SQL SELECT Statement

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Student information:

Student name	
Student number	
Grade	

Overview

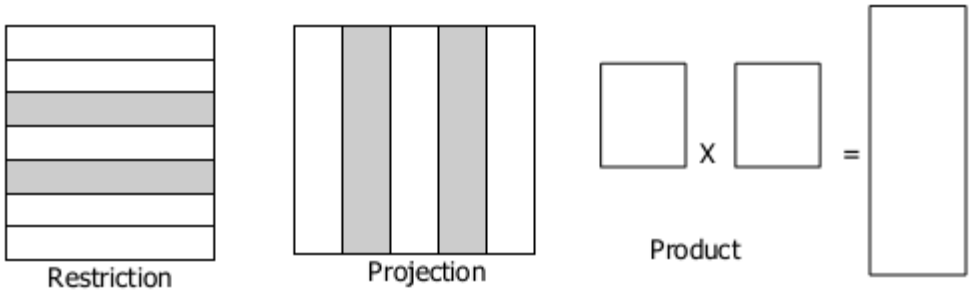
The purpose of this lab is to get you familiar with Oracle and its use in our environment. Even though the material is not very challenging, please do the lab. I'm available during lab time to resolve any system related problems.

Objectives

After completing this lesson, you should be able to do the following:

- List the capabilities of SQL SELECT statements
- Execute a basic SELECT statement

Capabilities of SQL SELECT Statements



Entering SQL Commands

There are a few things you should note before you start typing:-

- Commands may be on a single line, or many lines
- You should place different clauses on separate lines for the sake of readability - also make use of
- tabs and indents
- SQL Command words cannot be split or abbreviated
- SQL commands are not case sensitive

Tasks:

Task 1: Basic SELECT Statement

```
SELECT *| {[DISTINCT] column | expression [alias],...}
FROM table
```

- **SELECT** identifies the columns to be displayed
- **FROM** identifies the table containing those columns

Task 2: Selecting Specific Columns

Example 1

```
SELECT first_name  FROM EMPLOYEES;
```

The above statement will select the first_name column from the EMPPLOYEES table.

Example 2

```
SELECT employee_id,first_name,salary  FROM EMPLOYEES;
```

would produce output as follows:- (write the output in the empty place)

Task 3: Selecting All Columns

You can use a * to specify all columns:

Example 3

```
SELECT *  FROM EMPLOYEES;
```

would produce output as follows:- (write the output in the empty place)

Task 4: Arithmetic Expressions

At some point you may want to perform some arithmetic calculations based on the data returned by the SELECT statement. This can be achieved using SQL's arithmetic operators:

Operator	Description
+	Add
-	Subtract
*	Multiply
/	Divide

Example 4: To find the annual salary of all employees:

```
SELECT LAST_NAME, SALARY,  SALARY + 300 FROM EMPLOYEES;
```

LAST _NAME	SALARY	SALARY+300
King	24000	24300
Rochhar	17000	17300
DeHaan	17000	17300
Hunold	9000	9300
Ernst	6000	6300

Task 5: Defining a Column Alias

A column alias:

- Renames a column heading
- Is useful with calculations
- Immediately follows the column name (There can also be the optional AS keyword between the column name and alias.)
- Requires double quotation marks if it contains spaces or special characters or if it is case sensitive

Example 5: To find the annual salary of all employees:

```
SELECT LAST_NAME, SALARY,  SALARY*12 Annual FROM EMPLOYEES;
```

LAST _NAME	SALARY	Annual
King	24000	28000
Rochhar	17000	34000
DeHaan	17000	34000
Hunold	9000	18000
Ernst	6000	12000

Example 5: To find the annual salary of all employees:

```
SELECT LAST_NAME "Employee Name", SALARY,  SALARY*12 "Annual Salary" FROM
EMPLOYEES;
```

Employee Name	SALARY	Annual Salary
King	24000	28000
Rochhar	17000	34000
DeHaan	17000	34000
Hunold	9000	18000
Ernst	6000	12000

Task 6: Concatenation Operator

Links columns or character strings to other columns. Concatenation is represented by two vertical bars (II). Creates a resultant column that is a character expression.

Example 6:

```
SELECT FIRST_NAME || LAST_NAME "Employee Name", salary from employees
```

Write the output

Example 6:

```
SELECT ename  ||  'works in department'  || deptno  literal FROM emp;
```

Write the output

Task 7: Duplicate Rows

The default display of queries is all rows, including duplicate rows.

Example 7:

```
SELECT department_id FROM emp;
```

will give something like:

Department_id

10

20

20

30

10

40

50

50

You can prevent duplicate rows from being selected by using the DISTINCT keyword. Simply follow the SELECT keyword with DISTINCT;

Example 8:

```
SELECT DISTINCT department_id FROM emp;
```

would give:

DEPTNO

10

20

30

40

50

Lab exercises:

Exercise 1:

You need to determine the structure of the employee table.

Exercise 2:

The HR department needs a query to display all unique job codes from the employees table.

Exercise 3:

The HR department has requested a report of all employees and their job IDs. Display the last name concatenated with the job ID separated by a comma and space, and name the column "Employee and Title"