

**Autonomous University of Zacatecas**

ACADEMIC UNIT OF ELECTRICAL ENGINEERING

ACADEMIC PROGRAM OF SOFTWARE ENGINEERING



DATABASE SYSTEMS LABORATORY II PRACTICE 7 -  
DATA RETRIEVAL USING THE SQL SELECT  
STATEMENT

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# **1 Introduction**

SQL language allows the realization of projection and selection of data to satisfy the needs of reports that may be required for a programmer, developer or end user.

The SQL SELECT statement is fundamental to the retrieving of data from a database, in this practice we going to review important theory points analysing situations of the SELECT statement in different contexts.

## 2 Development

### Activity 1

Write the section that describes the Work developed in the following activities. Read all the choices carefully because there might be more than one correct answer. Choose all the correct answers for each question. Explain the reason for your answer.

#### LIST THE CAPABILITIES OF SQL SELECT STATEMENTS

**1. Which query creates a projection of the DEPARTMENTNAME and LOCATIONID columns from the DEPARTMENTS table? (Choose the best answer.)**

- A. SELECT DISTINCT DEPARTMENTNAME, LOCATIONID FROM DEPARTMENTS;
- B. SELECT DEPARTMENTNAME AS "LOCATIONID" FROM DEPARTMENTS;
- C. SELECT DEPTNAME, LOCID FROM DEPT;
- D. SELECT DEPARTMENTNAME, LOCATIONID FROM DEPARTMENTS;

Answer: A , D

The projection is for retrieving columns data from a table, the letter B only use one table and we need two, the letter C statement is not using the correct names, and the letters A and D are retrieving the columns, the only one difference is that letter A is retrieving no repeated data.

**2. After describing the EMPLOYEES table, you discover that the SALARY column has a data type of NUMBER(8,2). Which SALARY value(s) will not be permitted in this column?**

- A. SALARY=12345678
- B. SALARY=12.34
- C. SALARY=12345.678
- D. SALARY=123456
- E. SALARY=123456.78

Answer: A , C

The salary column has a data type NUMBER(8,2) that means that it can contain a number with 6 digits that represent an integer and 2 digits for the decimals, the maximum value is 999999.99 and the minimum value is -999999.99 a number out of this parameters is not permitted

**3. After describing the JOBHISTORY table, you discover that the STARTDATE and ENDDATE columns have a data type of DATE. Consider the expression ENDDATE-STARTDATE. (Choose two correct statements.)**

- A. A value of DATE data type is returned.
- B. The expression represents the days between the ENDDATE and STARTDATE less one day.
- C. A value of type VARCHAR2 is returned.
- D. The expression is invalid since arithmetic cannot be performed on columns with DATE data types.
- E. A value of type NUMBER is returned.

Answer: B , E

The select statement returns the difference of days, and that is a number because it is the result of an arithmetic expression.

**4. The DEPARTMENTS table contains a DEPARTMENTNAME column with data type VARCHAR2(30). (Choose two true statements about this column.)**

- A. This column can store character data up to a maximum of 30 characters.
- B. This column can store data in a column with data type VARCHAR2(50) provided that the contents are at most 30 characters long.
- C. The VARCHAR2 data type is replaced by the CHAR data type.
- D. This column must store character data that is at least 30 characters long.

Answer:A , B

A data type VARCHAR2(30) means that the column can content a string with a maximum length of 30 characters, that means i can store a VARCHAR2(30) value in a VARCHAR2(50) because 30<50 and the VARCHAR2(50) can contain a maximum of 50 characters.

### EXECUTE A BASIC SELECT STATEMENT

5. Which statement reports on unique JOBID values from the EMPLOYEES table? (Choose all that apply.)

- A. SELECT JOBID FROM EMPLOYEES;
- B. SELECT DISTINCT JOBID FROM EMPLOYEES;
- C. SELECT DISTINCT JOBID, EMPLOYEEID FROM EMPLOYEES;
- D. SELECT UNIQUE JOBID FROM EMPLOYEES;

Answer: B, D

The SELECT DISTINCT returns all the values but without repeated values, and the UNIQUE do practically the same because it returns only unique values.

6. Choose the two illegal statements. The two correct statements produce identical results. The two illegal statements will cause an error to be raised:

- A. select department id — ' represents the ' — department name — ' Department' "Department Info" from departments;
- B. SELECT DEPARTMENT ID — ' represents the — DEPARTMENT NAME — 'Department' as "Department Info" FROM DEPARTMENTS;
- C. SELECT DEPARTMENT ID — ' represents the ' — DEPARTMENT NAME — 'Department' as "Department Info" FROM DEPARTMENTS;
- D. SELECT DEPARTMENT ID represents the DEPARTMENT NAME Department as "Department Info" FROM DEPARTMENTS;

Answer: B , D

The letter B statement is not respecting the use of ( ' ' ) and that cause an error, and the letter D statements do not use ( ' ' ) with the literal values and that cause an error.

**7. Which expressions do not return NULL values? (Choose all that apply.)**

- A. select ((12 + 90) \* 55) + null from dual;
- B. select null——'test'——null as "Test" from dual;
- C. select null/0 from dual;
- D. select 'this is a '——null——'test with nulls' from dual;

Answer: B , D

All the arithmetic expressions that use null values always return null, the letter B returns an error because it is an incorrect form to do a SELECT, and the letter D returns a literal value.

**8. Choose the correct syntax to return all columns and rows of data from the EMPLOYEES table.**

- A. select \* from employees;
- B. select employee id, first name, last name, first name, department id from employees;
- C. select
- D. select all from employees;
- E. select \*.\* from employees

Answer: A

SELECT \* FROM TABLE NAME; is the basic syntax to return all of a table.

#### DELETE ROWS FROM A TABLE

9. The following character literal expression is selected from the DUAL table: **SELECT 'Coda"s favorite fetch toy is his orange ring' FROM DUAL;** (Choose the result that is returned.)

- A. An error would be returned due to the presence of two adjacent quotes
- B. 'Coda"s favorite fetch toy is his orange ring'
- C. Coda"s favorite fetch toy is his orange ring
- D. Coda's favorite fetch toy is his orange ring

Answer:D

That statement returns a correct literal value, that is because there are not quotes without its pair and that represents an only one literal value.

10. There are four rows of data in the REGIONS table. Consider the following SQL statement:

**SELECT '6 \* 6' "Area" FROM REGIONS;** How many rows of results are returned and what value is returned by the Area column? (Choose the best answer.)

- A. 4 rows returned, Area column contains value 6 \* 6 for all 4 rows
- B. 4 rows returned, Area column contains value 36 for all 4 rows
- C. 1 row returned, Area column contains value 6 \* 6
- D. 1 row returned, Area column contains value 36
- E. A syntax error is returned

Answer: E

When you use the SELECT statement to retrieving data from a table you need to specify which data with columns values and this statement do not specify it.

## Activity 2:

Propose an answer to the following issues:

a) You want to construct and execute queries against tables stored in an Oracle database. Are you confined to using SQL Developer? I think use the

SQL Developer is the most comfortable option but you can use SQL plus, or you can create a program with a programming language that connects and interacts with the data base, i think there are more options but depends of the situation.

b) To explore your database environment further, you would like a list of tables, owned by your current schema, available for you to query. How do you interrogate the database dictionary to provide this metadata?

I don not know how to interact with the database dictionary but i think that these problems can be solved using views, or watching the structures of the schemes with the SQL DEVELOPER

c) When querying the JOBS table for every row containing just the JOBID and MAXSALARY columns, is a projection, selection, or join being performed?

It is a PROJECTION because you are retrieving all the values of those columns, when you are looking for records you are using SELECTION, and when there are 2 tables or more you are using a JOIN.

d) An alias provides a mechanism to rename a column or an expression. Under what conditions should you enclose an alias in double quotes?

It is a PROJECTION because you are retrieving all the values of those columns, when you are looking for records you are using SELECTION, and when there are 2 tables or more you are using a JOIN.

e) When working with character literal values that include single quotation marks, how should you specify these literals in the SELECT clause without raising an error?

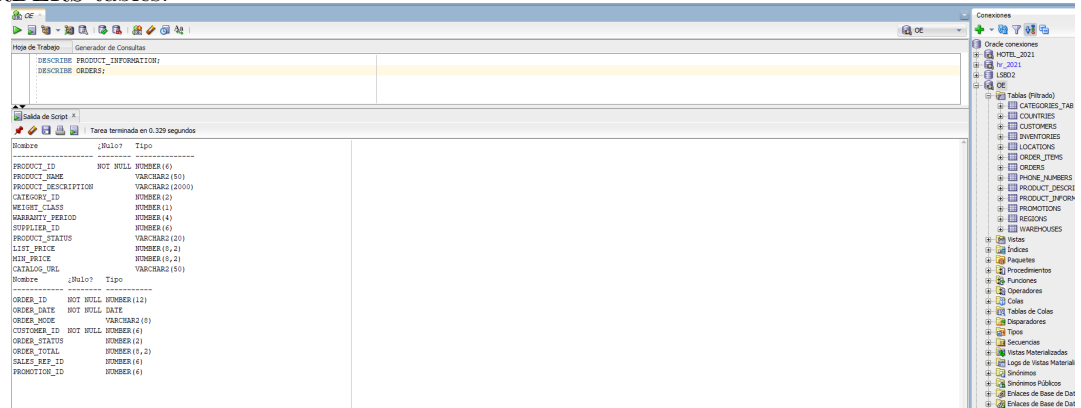
You can use the alternative quote (q) operator to use the single quotation marks without problem, or you can make sure of use the quotes correctly to do not get an error



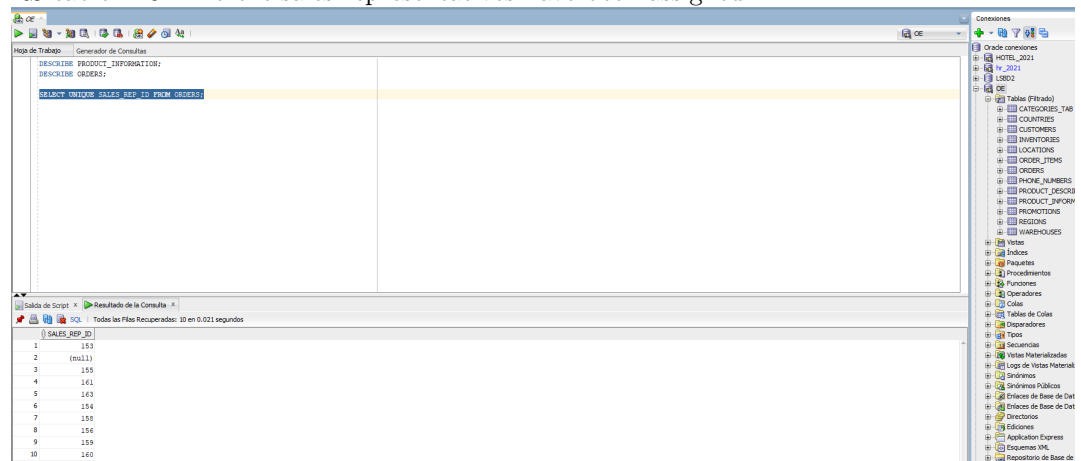
## Activity 3:

Connect to the OE schema and complete the following tasks.

1. Obtain structural information for the PRODUCT INFORMATION and ORDERS tables.



2. Select the unique SALES REP ID values from the ORDERS table. How many different sales representatives have been assigned to orders in the ORDERS table? 10 Different sales representatives have been assigned



3. Create a results set based on the ORDERS table that includes the ORDER ID, ORDER DATE, and ORDER TOTAL columns. Notice how the ORDER DATE output is formatted differently from the START DATE and END

DATE columns in the HR.JOB ID table. I did not see difference in the format both are dd/mm/yy

The screenshot shows the Oracle SQL Developer interface. The main window displays a query in the 'SQL' tab:

```

SELECT ORDER_ID, ORDER_DATE, ORDER_TOTAL FROM ORDERS;

```

The results are shown in the 'Resultado de la Consulta' tab, displaying 20 rows of data. The columns are ORDER\_ID, ORDER\_DATE, and ORDER\_TOTAL.

ORDER_ID	ORDER_DATE	ORDER_TOTAL
1	2485 14/08/07	71279.4
2	2397 18/11/07	42283.2
3	2484 02/10/07	6093.4
4	2394 14/07/08	44287
5	2385 08/01/08	7026
6	2381 14/08/08	23034.6
7	2446 11/06/07	70576.9
8	2387 08/01/04	59072.4
9	2394 10/02/08	21863
10	2435 03/09/07	62003
11	2455 20/06/07	14607.5
12	2379 16/05/07	17040.2
13	2396 02/02/04	84930
14	2404 29/04/07	2254.2
15	2434 13/09/07	26063.0
16	2434 02/08/07	6394.0
17	2446 27/07/07	103479.3
18	2447 27/07/08	33993.4
19	2432 14/08/07	10523
20	2433 13/09/07	78

4. The PRODUCT INFORMATION table stores data regarding the products available for sale in a fictitious IT hardware store. Produce a set of results that will be useful for a sales person. Extract product information in the format PRODUCT NAME with code: PRODUCT ID has status of: PRODUCT STATUS. Alias the expression as “Product.” The results should provide the LIST PRICE, the MIN PRICE, the difference between LIST PRICE, and MIN PRICE aliased as “Max Actual Savings,” along with an additional expression that takes the difference between LIST PRICE and MIN PRICE and divides it by the LIST PRICE and then multiplies the total by 100. This last expression should be aliased as “Max Discount”

PRODUCT	LIST_PRICE	MIN_PRICE	MAXIMUM ACTUAL SAVINGS	MAX % DISCOUNT
1 LCD Monitor 11/8W/MTB CODE:17248AS STATUS Of:under development	259	208	51	19.69111969111969111969111969111969111969
1 LCD Monitor 9/8W/MTB CODE:13968AS STATUS Of:orderable	249	204	45	17.24974352208341364811847898982329
3 Monitor 17/8W/MTB CODE:10408AS STATUS Of:orderable	259	250	45	16.3875696462207357856531725732800361204
4 Monitor 17/8W/MTB CODE:10418AS STATUS Of:orderable	350	302	48	13.71428571428571428571428571428571428571
5 Monitor 17/8W/MTB CODE:10578AS STATUS Of:orderable	349	320	49	13.27913279132791327913279132791327913279
6 Monitor 19/8W/MTB CODE:10418AS STATUS Of:orderable	499	437	42	12.42494949397979797979797979797979797979
7 Monitor 19/8W/MTB CODE:10418AS STATUS Of:orderable	512	420	92	17.96875
8 Monitor 21/8W/MTB CODE:10458AS STATUS Of:orderable	999	875	124	12.41241241241241241241241241241241241241
9 Monitor 21/8W/MTB CODE:13318AS STATUS Of:orderable	879	785	94	10.69397042093287827076223980698407281
10 Monitor 21/8W/MTB CODE:12518AS STATUS Of:obsolete	859	717	172	19.347815523059617547806524184476943925
11 Monitor 21/8W/MTB CODE:10468AS STATUS Of:planned	1023	909	114	11.14365014466275659240466202111436501
12 Monitor Range - 8W/MTB CODE:11538AS STATUS Of:orderable	49	42	7	14.28571428571428571428571428571428571429
13 Monitor Range - 8W/MTB CODE:10348AS STATUS Of:orderable	39	34	5	12.82051282051282051282051282051282051282
14 Plasma Monitor 10/LE/8W/MTB CODE:13508AS STATUS Of:orderable	740	630	110	14.86484848484848484848484848484848484848
15 Plasma Monitor 10/FT/8W/MTB CODE:12168AS STATUS Of:under development	844	843	101	10.47717842323651452323237676249547717842
16 Plasma Monitor 10/8W/MTB CODE:10548AS STATUS Of:orderable	600	519	81	13.5
17 Compact 400/8W/MTB CODE:17828AS STATUS Of:obsolete	125	108	17	13.6
18 Compact 400/8W/MTB CODE:14308AS STATUS Of:orderable	175	143	32	18.28571428571428571428571428571428571429
19 Industrial 400/8W/MTB CODE:17908AS STATUS Of:orderable	225	180	45	20
20 Industrial 700/8W/MTB CODE:17918AS STATUS Of:orderable	275	239	36	13.09090909090909090909090909090909090909
21 Injex 8/8W/MTB CODE:13028AS STATUS Of:orderable	150	121	29	19.333333333333333333333333333333333333333
22 Injex C/8W/MTB CODE:14538AS STATUS Of:orderable	195	174	21	10.76923076923076923076923076923076923077
23 PS 220V /8W/MTB CODE:12078AS STATUS Of:orderable	53	46	7	13.2075471698337348939798036144875313253
24 PS 220V /8S/8W/MTB CODE:13708AS STATUS Of:orderable	91	75	16	17.58241758241758241758241758241758241758
25 Injex C/8/8W/MTB CODE:17978AS STATUS Of:orderable	349	288	61	17.4788100263296128939828800282626103
26 Laserflo 1200/8/8W/MTB CODE:14598AS STATUS Of:under development	699	668	31	10.74105865822174535800071530758226037196
27 Laserflo 600/8/8W/MTB CODE:13178AS STATUS Of:orderable	490	444	46	10.14827848939798036144875313253012040326
28 SD 1008 /MTB CODE:13148AS STATUS Of:obsolete	453	371	82	18.1013452535611448753264645516114780287
29 SD 1008 /MTB CODE:13148AS STATUS Of:obsolete	453	371	82	18.1013452535611448753264645516114780287

5. Calculate the surface area of the Earth using the DUAL table. Alias this expression as “Earth’s Area.” The formula for calculating the area of a sphere is:  $4\pi r^2$ . Assume, for this example, that the earth is a simple sphere with a radius of 3,958.759 miles and that PI is 22/7. This calculation approximates that planet Earth’s surface area is 197016572.595304 square miles.

E AREA
197016572.595304

## Activity 4:

In this step-by-step activity a connection is made using SQL Developer as the HR user. Use expressions and operators to answer three questions related to the SELECT statement:

Using Select Statement

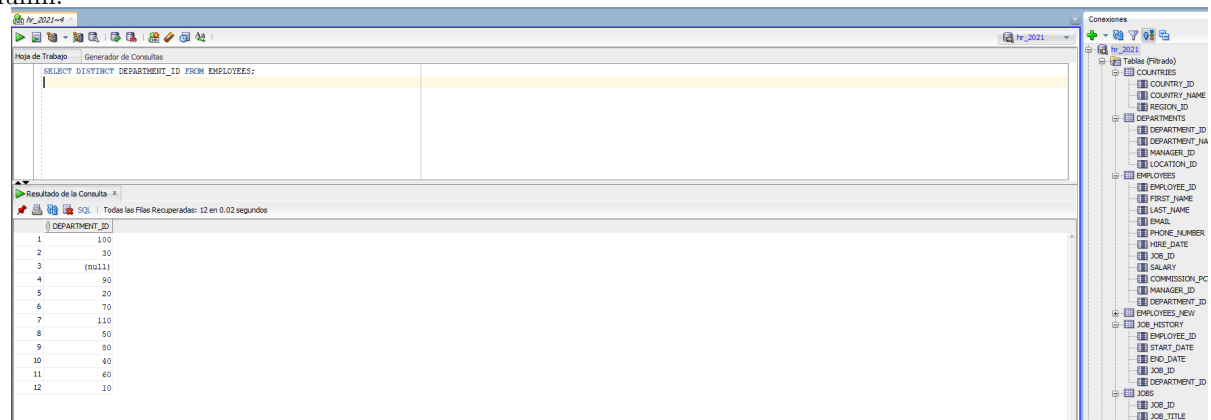
Question 1: How many unique departments have employees currently working in them? 1. Start SQL\*Plus and connect to the HR schema.

2. You may initially be tempted to find the answer in the DEPARTMENTS table. A careful examination reveals that the question asks for information about employees. This information is contained in the EMPLOYEES table.

3. The word “unique” should guide you to use the DISTINCT keyword.

4. Combining steps 2 and 3, you can construct the following SQL statement:

5. As shown in the following illustration, this query returns 12 rows. Notice that the third row is empty. This is a null value in the DEPARTMENTID column.



The screenshot shows the SQL Developer interface. The 'Hoja de Trabajo' (Worksheet) pane contains the SQL query: `SELECT DISTINCT DEPARTMENT_ID FROM EMPLOYEES;`. The 'Resultado de la Consulta' (Query Result) pane displays the results of the query. The results are as follows:

	DEPARTMENT_ID
1	100
2	30
3	(null)
4	90
5	20
6	70
7	110
8	50
9	80
10	40
11	60
12	10

The 'Conecciones' (Connections) pane on the right shows the 'hr\_2021' connection selected. The 'Tables (Filtro)' pane shows the schema structure, including tables like COUNTRIES, DEPARTMENTS, EMPLOYEES, and EMPLOYEES\_NEW.

6. The answer to the first question is therefore: Eleven unique departments have employees working in them, but at least one employee has not been assigned to a department.

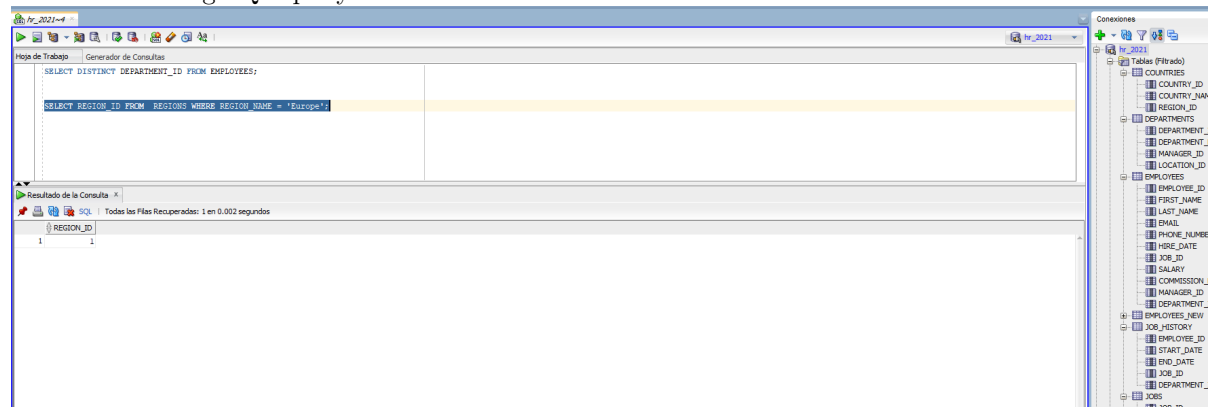
Question 2: How many countries are there in the Europe region?

1. This question comprises two parts. Consider the REGIONS table, which contains four regions each uniquely identified by a REGIONID value, and the COUNTRIES table, which has a REGIONID column indicating which region a country belongs to.

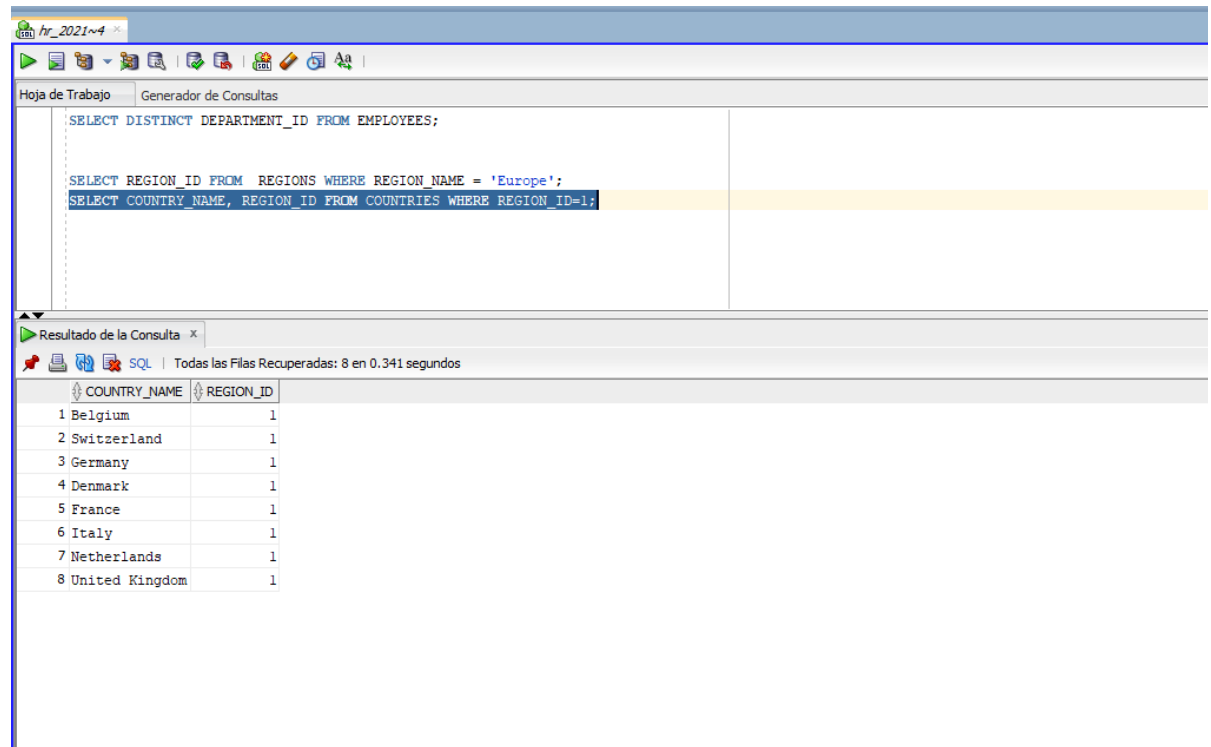
2. The first query needs to identify the REGIONID of the Europe region. This is accomplished by the SQL statement:

3. The following illustration shows that the Europe region has a REGIONID value of 1:

4. To identify which countries have 1 as their REGIONID, you need to execute the following SQL query



5. Manually counting the country rows with a REGIONID of 1 in the following illustration helps answer the second question:



6. The answer to the second question is therefore: There are eight countries in the Europe region as far as the HR data model is concerned.

### Question3:

The HR schema contains seven tables representing a data model of a fictitious Human Resources department. The EMPLOYEES table, which stores details of the staff, and the DEPARTMENTS table, which contains the details of the departments in the organization, have been described. In this step-by-step exercise, a connection is made using SQL Developer as the HR user and the remaining five sample tables are described. They are the JOBS table, which keeps track of the different job types available in the organization, and the JOB-HISTORY table, which keeps track of the job details of employees who changed jobs but remained in the organization. To understand the data model further, the LOCATIONS, COUNTRIES, and REGIONS tables, which keep track of the geographical information pertaining to departments in the organization, will be described.

1. Launch SQL Developer and choose New from the File menu. Choose Database Connection. If this is the first time you are connecting to the database from SQL Developer, you are required to create a connection. Provide a descriptive connection name and input HR as the username. The remaining connection details should be obtained from your database administrator. Once the connection is saved, choose the Connect button.

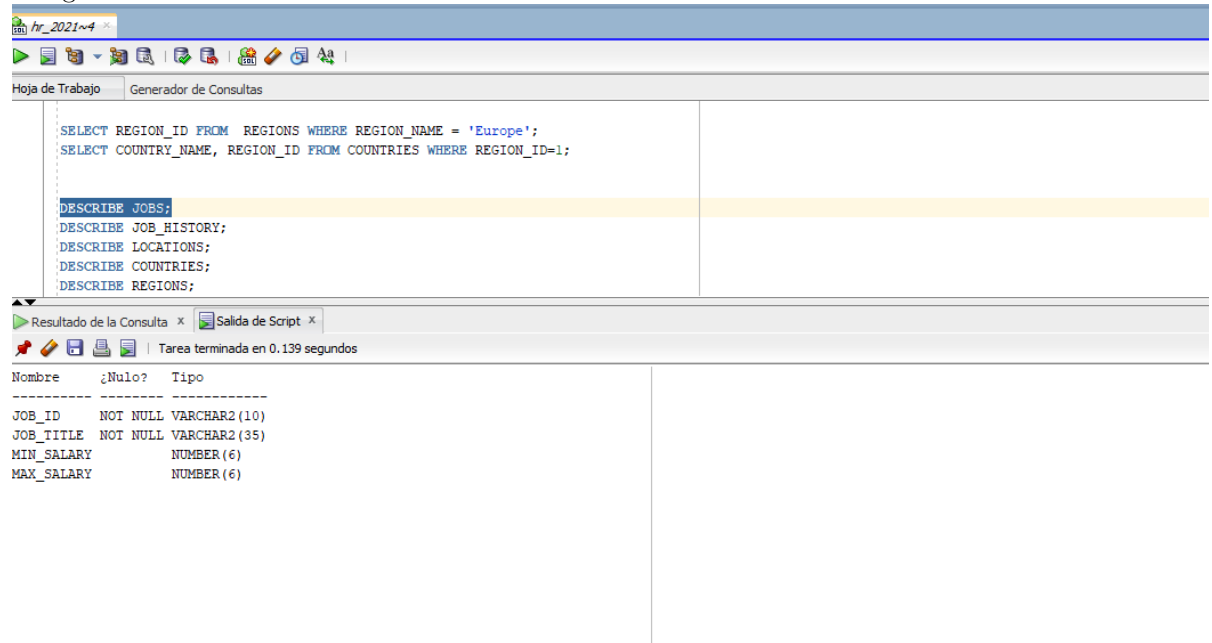
2. Navigate to the SQL Editor, which is the section titled Enter SQL State-

ment.

3. Type in the command: DESCRIBE JOBS. Terminating this command with a semicolon is optional.

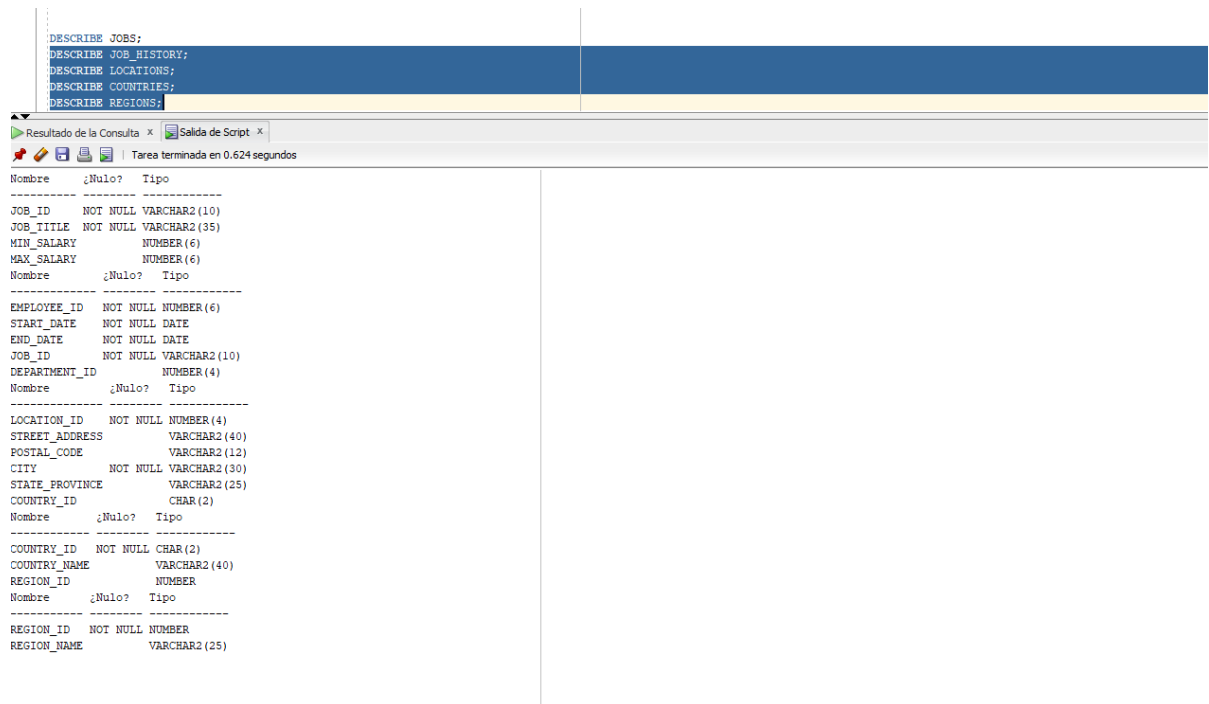
4. Execute the DESCRIBE command, either by pressing the F5 key or by clicking the solid green triangular arrow icon located on the toolbar above the SQL Editor.

5. The JOBS table description appears in the Results frame as shown in the following illustration.



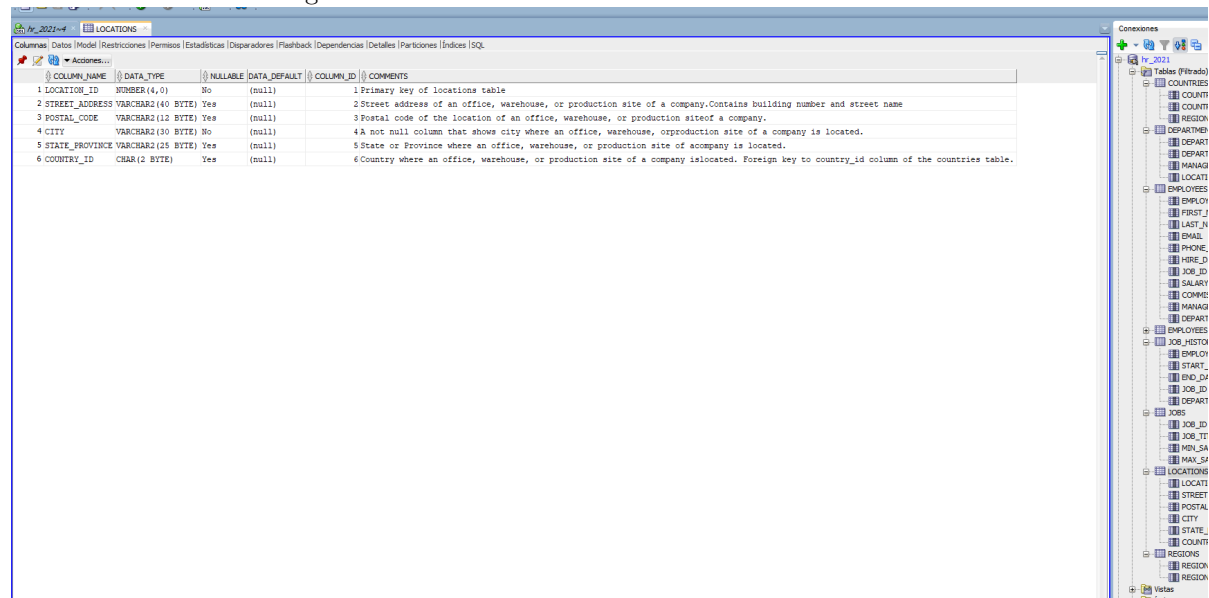
6. Steps 3 to 5 can be repeated to describe the remaining JOBHISTORY, LOCATIONS, COUNTRIES, and REGIONS tables.

7. SQL Developer provides an alternative to the DESCRIBE command when it comes to obtaining the structural information of tables.



8. Navigate to the LOCATIONS table using the Tree navigator located on the left frame underneath the connection name.

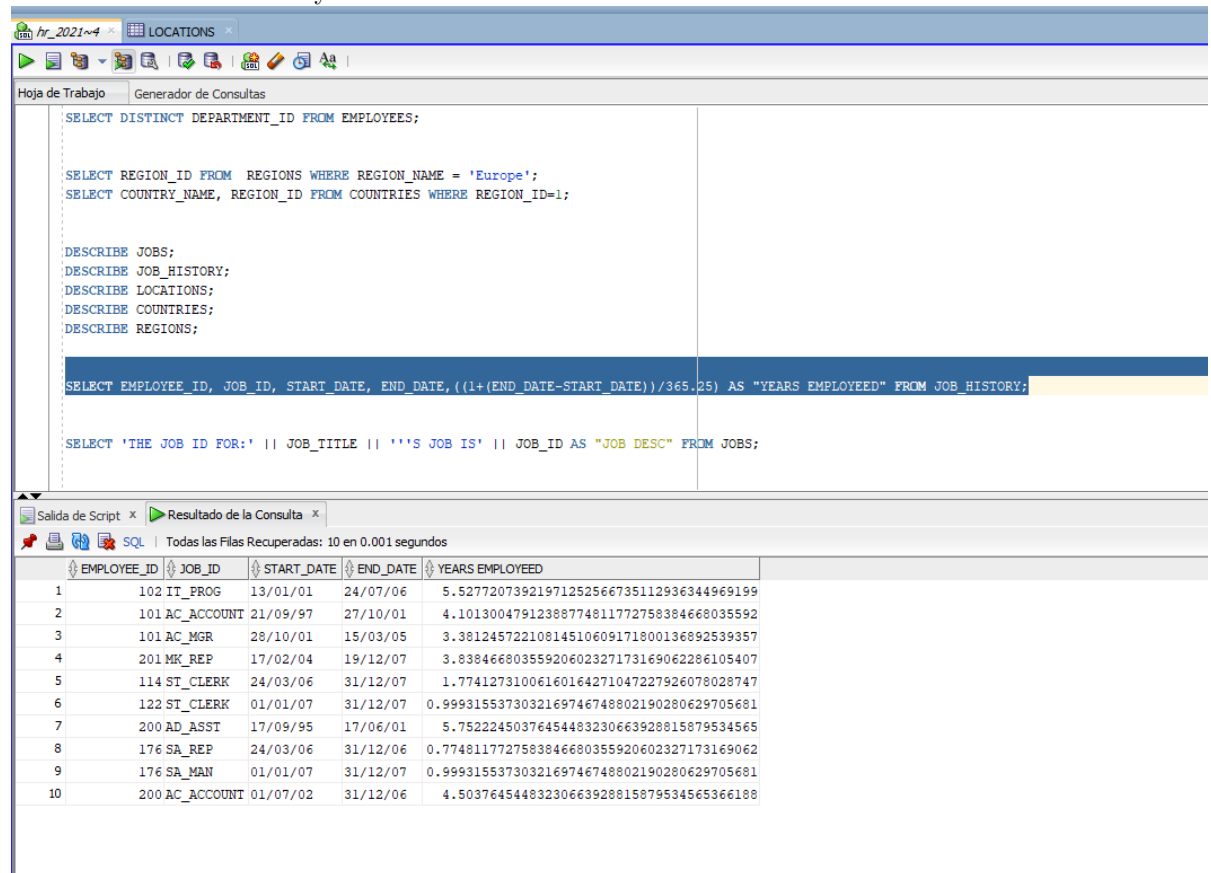
9. SQL Developer describes the table automatically on the right side of the tool as shown in the following illustration





Question 4: It was demonstrated earlier how the number of days for which staff were employed in a job could be calculated. For how many years were staff employed while fulfilling these job roles and what were their EMPLOYEEID, JOBID, STARTDATE, and ENDDATE values? Alias the expression column in your query with the alias Years Employed. Assume that a year consists of 365.25 days.

1. Start SQL Developer and connect to the HR schema.
2. The projection of columns required includes EMPLOYEEID, JOBID, STARTDATE, ENDDATE, and an expression called “Years Employed” from the *JOB\_HISTORY* table.
3. The expression can be calculated by dividing one plus the difference between ENDDATE and STARTDATE by 365.25 days, as shown next:
4. Execute the statement y show the results



The screenshot shows the SQL Developer interface with a query window titled 'Hoja de Trabajo' and 'Generador de Consultas'. The query is as follows:

```
SELECT DISTINCT DEPARTMENT_ID FROM EMPLOYEES;

SELECT REGION_ID FROM REGIONS WHERE REGION_NAME = 'Europe';
SELECT COUNTRY_NAME, REGION_ID FROM COUNTRIES WHERE REGION_ID=1;

DESCRIBE JOBS;
DESCRIBE JOB_HISTORY;
DESCRIBE LOCATIONS;
DESCRIBE COUNTRIES;
DESCRIBE REGIONS;

SELECT EMPLOYEE_ID, JOB_ID, START_DATE, END_DATE, ((1+(END_DATE-START_DATE))/365.25) AS "YEARS EMPLOYEED" FROM JOB_HISTORY;

SELECT 'THE JOB ID FOR:' || JOB_TITLE || ''S JOB IS' || JOB_ID AS "JOB DESC" FROM JOBS;
```

The results window shows the output of the query, displaying 10 rows of data. The columns are EMPLOYEE\_ID, JOB\_ID, START\_DATE, END\_DATE, and YEARS EMPLOYEED.

	EMPLOYEE_ID	JOB_ID	START_DATE	END_DATE	YEARS EMPLOYEED
1	102	IT_PROG	13/01/01	24/07/06	5.52772073921971252566735112936344969199
2	101	AC_ACCOUNT	21/09/97	27/10/01	4.10130047912388774811772758384668035592
3	101	AC_MGR	28/10/01	15/03/05	3.38124572210814510609171800136892539357
4	201	MK_REP	17/02/04	19/12/07	3.83846680355920602327173169062286105407
5	114	ST_CLERK	24/03/06	31/12/07	1.77412731006160164271047227926078028747
6	122	ST_CLERK	01/01/07	31/12/07	0.9993155373032169746748802190280629705681
7	200	AD_ASST	17/09/95	17/06/01	5.75222450376454483230663928815879534565
8	176	SA_REP	24/03/06	31/12/06	0.7748117727583846680355920602327173169062
9	176	SA_MAN	01/01/07	31/12/07	0.9993155373032169746748802190280629705681
10	200	AC_ACCOUNT	01/07/02	31/12/06	4.50376454483230663928815879534565366188

Question 5: Query the JOBS table and return a single expression of the form The Job Id for the `jjobtitle's` job is: `jjobid`. Take note that the `jobtitle` should have an apostrophe and an “s” appended to it to read more naturally. A sample of this output for the organization president is: “The Job Id for the President’s job is: ADPRES.” Alias this column expression as “Job Description” using the AS keyword.

1. There are multiple solutions to this problem. The approach chosen here is to handle the naturally occurring single quotation marks with an additional single quote.

2. A single expression aliased as “Job Description” is required and may be constructed by dissecting the requirement into the literal “The Job Id for the” being concatenated to the `JOBTITLE` column. This string is then concatenated to the literal “s job is;” which is further concatenated to the `JOBID` column. An additional single quotation mark is added to yield the SELECT statement that follows:

3. Execute the statement y show the results.

The screenshot shows the Oracle SQL Developer interface. The top tab is 'Hoja de Trabajo' (Worksheet) with the title 'Generador de Consultas'. It contains a SQL script with several queries. The bottom tab is 'Resultado de la Consulta' (Query Result), showing the output of the last query. The status bar indicates 'Todas las Filas Recuperadas: 19 en 0.382 segundos'.

```

SELECT DISTINCT DEPARTMENT_ID FROM EMPLOYEES;

SELECT REGION_ID FROM REGIONS WHERE REGION_NAME = 'Europe';
SELECT COUNTRY_NAME, REGION_ID FROM COUNTRIES WHERE REGION_ID=1;

DESCRIBE JOBS;
DESCRIBE JOB_HISTORY;
DESCRIBE LOCATIONS;
DESCRIBE COUNTRIES;
DESCRIBE REGIONS;

SELECT EMPLOYEE_ID, JOB_ID, START_DATE, END_DATE, ((1+(END_DATE-START_DATE))/365.25) AS "YEARS EMPLOYEED" FROM JOB_HISTORY;

SELECT 'THE JOB ID FOR:' || JOB_TITLE || ''S JOB IS' || JOB_ID AS "JOB DESC" FROM JOBS;

```

JOB DESC
1 THE JOB ID FOR:President'S JOB ISAD_PRES
2 THE JOB ID FOR:Administration Vice President'S JOB ISAD_VP
3 THE JOB ID FOR:Administration Assistant'S JOB ISAD_ASST
4 THE JOB ID FOR:Finance Manager'S JOB ISFI_MGR
5 THE JOB ID FOR:Accountant'S JOB ISFI_ACCOUNT
6 THE JOB ID FOR:Accounting Manager'S JOB ISAC_MGR
7 THE JOB ID FOR:Public Accountant'S JOB ISAC_ACCOUNT
8 THE JOB ID FOR:Sales Manager'S JOB ISSA_MAN
9 THE JOB ID FOR:Sales Representative'S JOB ISSA_REP
10 THE JOB ID FOR:Purchasing Manager'S JOB ISPU_MAN
11 THE JOB ID FOR:Purchasing Clerk'S JOB ISPU_CLERK
12 THE JOB ID FOR:Stock Manager'S JOB ISST_MAN
13 THE JOB ID FOR:Stock Clerk'S JOB ISST_CLERK
14 THE JOB ID FOR:Shipping Clerk'S JOB ISSH_CLERK
15 THE JOB ID FOR:Programmer'S JOB ISIT_PROG
16 THE JOB ID FOR:Marketing Manager'S JOB ISMK_MAN
17 THE JOB ID FOR:Marketing Representative'S JOB ISMK_REP
18 THE JOB ID FOR:Human Resources Representative'S JOB ISHR_REP
19 THE JOB ID FOR:Public Relations Representative'S JOB ISPR_REP

Question 6: Using the DUAL table, calculate the area of a circle with radius 6000 units, with pi being approximately 22/7. Use the formula: Area = pi × radius × radius. Alias the result as “Area.”

1. Working with the DUAL table may initially seem curious. You get used to it as its functionality becomes more apparent. This question involves selecting a literal arithmetic expression from the DUAL table to yield a single row calculated answer that is not based on the column values in any table. Name the result column “Area”.

2. The expression may be calculated using the following SQL statement:

3. The results returned show the approximate area of the circle as 113142857.14 square units.

4. Show your own results.

The screenshot shows the Oracle SQL Developer interface. The top toolbar includes icons for running queries, saving, and other standard database operations. The main window is titled "Generador de Consultas" and contains a script editor with the following SQL queries:

```
SELECT DISTINCT DEPARTMENT_ID FROM EMPLOYEES;

SELECT REGION_ID FROM REGIONS WHERE REGION_NAME = 'Europe';
SELECT COUNTRY_NAME, REGION_ID FROM COUNTRIES WHERE REGION_ID=1;

DESCRIBE JOBS;
DESCRIBE JOB_HISTORY;
DESCRIBE LOCATIONS;
DESCRIBE COUNTRIES;
DESCRIBE REGIONS;

SELECT EMPLOYEE_ID, JOB_ID, START_DATE, END_DATE, ((1+(END_DATE-START_DATE))/365.25) AS "YEARS EMPLOYEED" FROM JOB_

SELECT 'THE JOB ID FOR:' || JOB_TITLE || ''S JOB IS' || JOB_ID AS "JOB DESC" FROM JOBS;

SELECT (22/7)*(6000*6000) AS "AREA" FROM DUAL;
```

The last query is highlighted in yellow. Below the script editor, the "Resultado de la Consulta" window is open, showing the results of the last query. The results are displayed in a table with one column labeled "AREA" and one row containing the value 113142857.142857142857142857142857.

AREA
1 113142857.142857142857142857142857

## Activity 5:

**In this practice, you write simple SELECT queries. The queries cover most of the SELECT clauses and operations that you learned in this lesson.**

Part 1 Test your knowledge:

1. The following SELECT statement executes successfully:  
SELECT lastname, jobid, salary AS Sal FROM employees;

True/False Explain the reason.

Answer: True

you can use that alias also without the double quotes, it is just as valid

2. The following SELECT statement executes successfully: SELECT \*  
FROM jobgrades;

True/False Explain the reason.

Answer: False

By not putting the instruction that any field in the table has that alias, we will get an error because that table does not exist

3. There are four coding errors in the following statement. Can you identify them? Explain the reason.

SELECT employeeid, lastname sal x 12 ANNUAL SALARY FROM employees;

Yes, there is no parenthesis for the operation, the multiply symbol is a \* and there is no "as" word to use aliases and the name variable has no underscore


Part 2 You have been hired as a SQL programmer for Antiguo Maestro Corporation. Your first task is to create some reports based on data from the Human Resources tables.

4. Your first task is to determine the structure of the DEPARTMENTS table and its contents.

```
DESCRIBE DEPARTMENTS;
SELECT * FROM DEPARTMENTS;
```

Salida de Script x

Resultado de la Consulta 1 x

 SQL | Todas las Filas Recuperadas: 27 en 0.003 segundos

	DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
1	10	Administration	200	1700
2	20	Marketing	201	1800
3	30	Purchasing	114	1700
4	40	Human Resources	203	2400
5	50	Shipping	121	1500
6	60	IT	103	1400
7	70	Public Relations	204	2700
8	80	Sales	145	2500
9	90	Executive	100	1700
10	100	Finance	108	1700
11	110	Accounting	205	1700
12	120	Treasury	(null)	1700

5. Determine the structure of the EMPLOYEES table

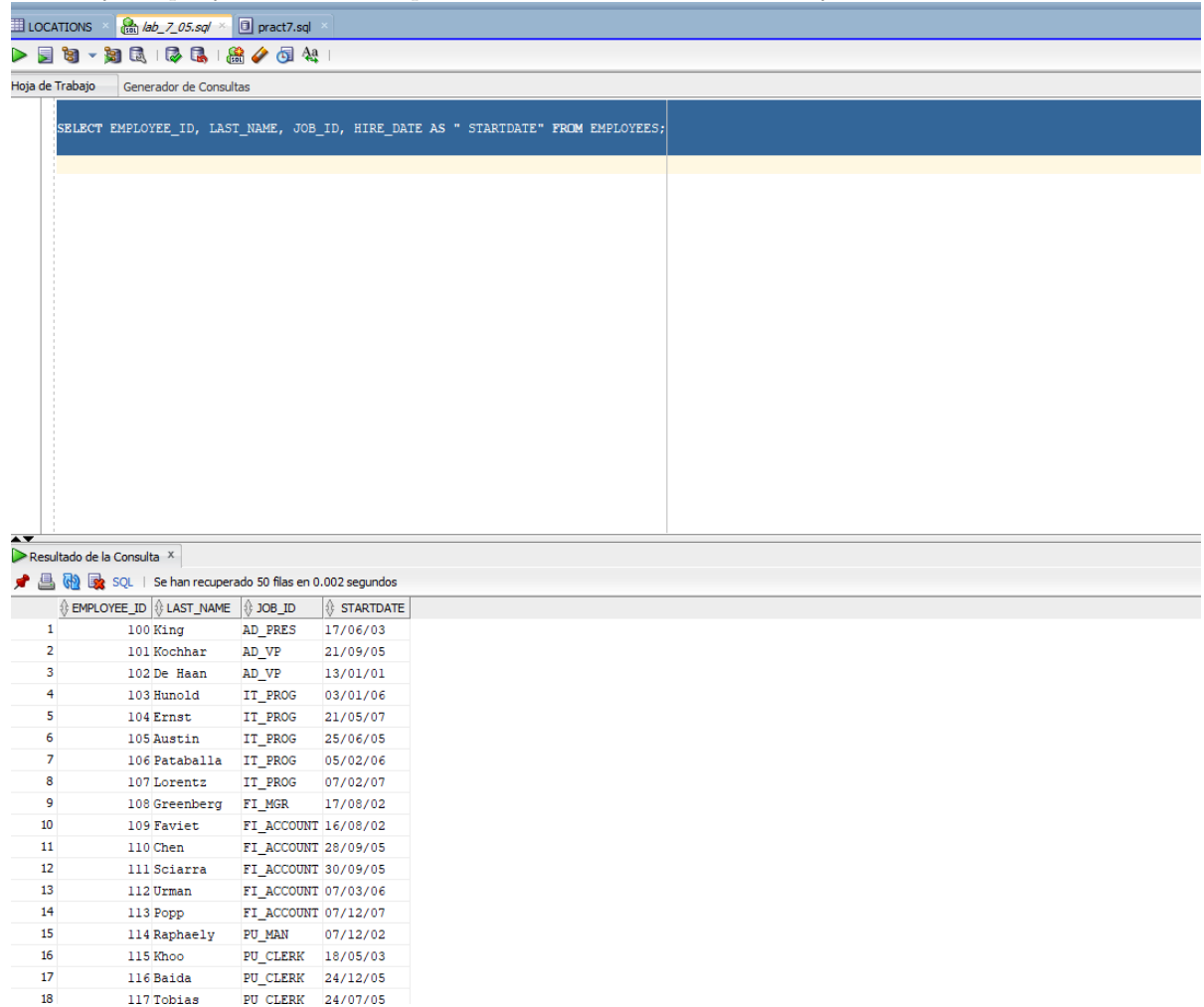
```
DESCRIBE EMPLOYEES;
```

Salida de Script x  
Tarea terminada en 0.042 segundos

Nombre	¿Nulo?	Tipo
EMPLOYEE_ID	NOT NULL	NUMBER(6)
FIRST_NAME		VARCHAR2(20)
LAST_NAME	NOT NULL	VARCHAR2(25)
EMAIL	NOT NULL	VARCHAR2(25)
PHONE_NUMBER		VARCHAR2(20)
HIRE_DATE	NOT NULL	DATE
JOB_ID	NOT NULL	VARCHAR2(10)
SALARY		NUMBER(8,2)
COMMISSION_PCT		NUMBER(2,2)
MANAGER_ID		NUMBER(6)
DEPARTMENT_ID		NUMBER(4)

The HR department wants a query to display the last name, job ID, hire date, and employee ID for each employee, with the employee ID appearing first. Provide an alias STARTDATE for the HIREDATE column. Save your SQL statement to a file named lab705.sql so that you can dispatch this file to the HR department.

6. Test your query in the lab705.sql file to ensure that it runs correctly.



The screenshot shows an SQL IDE interface. The top pane displays the following SQL query:

```
SELECT EMPLOYEE_ID, LAST_NAME, JOB_ID, HIRE_DATE AS "STARTDATE" FROM EMPLOYEES;
```

The bottom pane shows the results of the query, titled "Resultado de la Consulta". It indicates that 50 rows were retrieved in 0.002 seconds. The results are displayed in a table with the following columns: EMPLOYEE\_ID, LAST\_NAME, JOB\_ID, and STARTDATE.

	EMPLOYEE_ID	LAST_NAME	JOB_ID	STARTDATE
1	100	King	AD_PRES	17/06/03
2	101	Kochhar	AD_VP	21/09/05
3	102	De Haan	AD_VP	13/01/01
4	103	Hunold	IT_PROG	03/01/06
5	104	Ernst	IT_PROG	21/05/07
6	105	Austin	IT_PROG	25/06/05
7	106	Pataballa	IT_PROG	05/02/06
8	107	Lorentz	IT_PROG	07/02/07
9	108	Greenberg	FI_MGR	17/08/02
10	109	Faviet	FI_ACCOUNT	16/08/02
11	110	Chen	FI_ACCOUNT	28/09/05
12	111	Sciarra	FI_ACCOUNT	30/09/05
13	112	Urman	FI_ACCOUNT	07/03/06
14	113	Popp	FI_ACCOUNT	07/12/07
15	114	Raphaely	PU_MAN	07/12/02
16	115	Khoo	PU_CLERK	18/05/03
17	116	Baida	PU_CLERK	24/12/05
18	117	Tobias	PU_CLERK	24/07/05



7. The HR department wants a query to display all unique job IDs from the EMPLOYEES table.

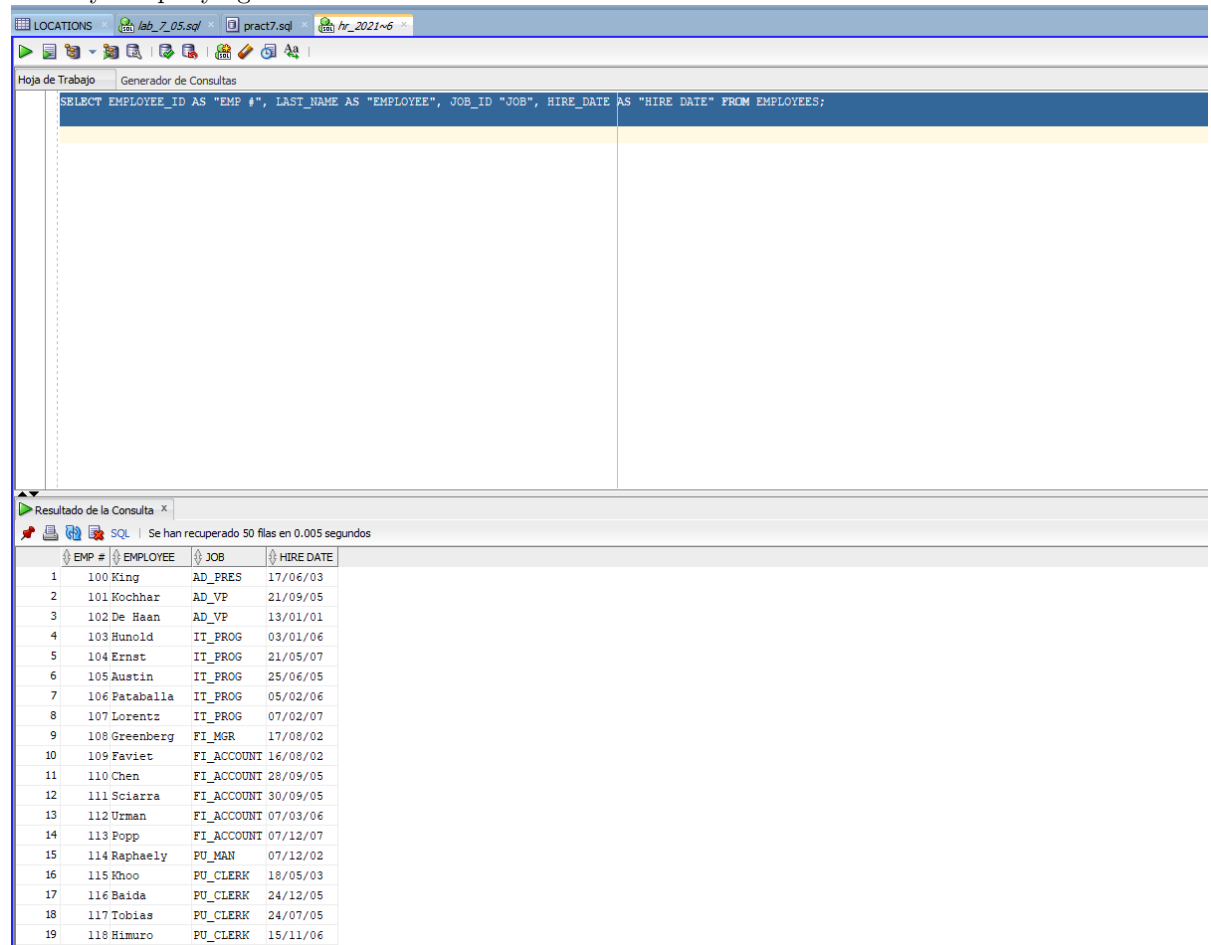
The screenshot shows the Oracle SQL Developer interface. At the top, there are tabs for 'LOCATIONS', 'lab\_7\_05.sql', and 'pract7.sql'. Below the tabs is a toolbar with various icons. The main window is divided into two panes: 'Hoja de Trabajo' (Worksheet) and 'Generador de Consultas' (Query Generator). The 'Hoja de Trabajo' pane contains the following SQL queries:

```
SELECT EMPLOYEE_ID, LAST_NAME, JOB_ID, HIRE_DATE AS "STARTDATE" FROM EMPLOYEES;  
  
SELECT JOB_ID FROM EMPLOYEES;
```

The 'Generador de Consultas' pane is empty. Below the main panes is a 'Resultado de la Consulta' (Query Result) pane. It shows the results of the second query, 'SELECT JOB\_ID FROM EMPLOYEES;'. The results are displayed in a table with one column, 'JOB\_ID', and 19 rows. The first row is highlighted in yellow. The status bar at the bottom indicates 'Se han recuperado 50 filas en 0.007 segundos'.

JOB_ID
1 AC_ACCOUNT
2 AC_MGR
3 AD_ASST
4 AD_PRES
5 AD_VP
6 AD_VP
7 FI_ACCOUNT
8 FI_ACCOUNT
9 FI_ACCOUNT
10 FI_ACCOUNT
11 FI_ACCOUNT
12 FI_MGR
13 HR_REP
14 IT_PROG
15 IT_PROG
16 IT_PROG
17 IT_PROG
18 IT_PROG
19 MGR

8. The HR department wants more descriptive column headings for its report on employees. Copy the statement from lab705.sql to a new SQL Worksheet. Name the column headings Emp , Employee, Job, and Hire Date, respectively. Then run your query again



The screenshot shows an SQL worksheet with a query editor at the top and a results pane at the bottom. The query editor contains the following SQL statement:

```
SELECT EMPLOYEE_ID AS "EMP #", LAST_NAME AS "EMPLOYEE", JOB_ID "JOB", HIRE_DATE AS "HIRE DATE" FROM EMPLOYEES;
```

The results pane displays the output of the query, showing 19 rows of employee data. The columns are labeled EMP #, EMPLOYEE, JOB, and HIRE DATE. The data is as follows:

EMP #	EMPLOYEE	JOB	HIRE DATE
1	100 King	AD_PRES	17/06/03
2	101 Kochhar	AD_VP	21/09/05
3	102 De Haan	AD_VP	13/01/01
4	103 Hunold	IT_PROG	03/01/06
5	104 Ernst	IT_PROG	21/05/07
6	105 Austin	IT_PROG	25/06/05
7	106 Pataballa	IT_PROG	05/02/06
8	107 Lorentz	IT_PROG	07/02/07
9	108 Greenberg	FI_MGR	17/08/02
10	109 Fawcett	FI_ACCOUNT	16/08/02
11	110 Chen	FI_ACCOUNT	28/09/05
12	111 Sciarra	FI_ACCOUNT	30/09/05
13	112 Urman	FI_ACCOUNT	07/03/06
14	113 Popp	FI_ACCOUNT	07/12/07
15	114 Raphaely	PU_MAN	07/12/02
16	115 Khoo	PU_CLERK	18/05/03
17	116 Baida	PU_CLERK	24/12/05
18	117 Tobias	PU_CLERK	24/07/05
19	118 Himuro	PU_CLERK	15/11/06

9. 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

The screenshot shows an SQL IDE interface with a query editor and a results pane. The query editor contains the following SQL code:

```

SELECT * FROM JOBGRADES;

SELECT EMPLOYEE_ID, LAST_NAME SALX12 ANNUAL SALARY;

DESCRIBE DEPARTMENTS;
SELECT * FROM DEPARTMENTS;

DESCRIBE EMPLOYEES;

--ACTIVIDAD 5
SELECT LAST_NAME || ',' || JOB_ID AS "EMPLOYEE AND TITLE" FROM EMPLOYEES;

```

The results pane shows the output of the last query, titled "EMPLOYEE AND TITLE". It displays 18 rows of data, each consisting of a concatenated last name and job ID, separated by a comma and space.

EMPLOYEE AND TITLE
1 Abel,SA_REP
2 Ande,SA_REP
3 Atkinson,ST_CLERK
4 Austin,IT_FROG
5 Baer,PR_REP
6 Baida,PU_CLERK
7 Banda,SA_REP
8 Bates,SA_REP
9 Bell,SH_CLERK
10 Bernstein,SA_REP
11 Bissot,ST_CLERK
12 Bloom,SA_REP
13 Bull,SH_CLERK
14 Cabrio,SH_CLERK
15 Cambrault,SA_MAN
16 Cambrault,SA_REP
17 Chen,FI_ACCOUNT
18 Chung,SH_CLERK

10. To familiarize yourself with the data in the EMPLOYEES table, create a query to display all the data from that table. Separate each column output by a comma. Name the column title THE<sub>O</sub>UTPUT

The screenshot shows an SQL IDE with a query editor and a results pane. The query editor contains the following SQL code:

```

SELECT * FROM JOBSGRADES;

SELECT EMPLOYEE_ID, LAST_NAME SALX12 ANNUAL SALARY;

DESCRIBE DEPARTMENTS;
SELECT * FROM DEPARTMENTS;

DESCRIBE EMPLOYEES;

--ACTIVIDAD 5
SELECT LAST_NAME || ',' || JOB_ID AS "EMPLOYEE AND TITLE" FROM EMPLOYEES;

SELECT EMPLOYEE_ID || ',' || FIRST_NAME || ',' || LAST_NAME || ',' || EMAIL || ',' || PHONE_NUMBER || ',' || HIRE_DATE || ',' || JOB_ID || ',' || SALARY || ',' || COMMISSION_PCT || ',' ||
MANAGER_ID || ',' || DEPARTMENT_ID
AS "THE OUTPUT" FROM EMPLOYEES;

```

The results pane shows the output of the last query, titled "THE OUTPUT". It displays 18 rows of data, each representing an employee's information formatted as a comma-separated string.

THE OUTPUT
1 100,Steven,King,SKING,515.123.4567,17/06/03,AD_PRES,24000,,,90
2 101,Neena,Kochhar,NKOCHHAR,515.123.4568,21/09/05,AD_VP,17000,,100,90
3 102,Lex,De Haan,LDEHAAN,515.123.4569,13/01/01,AD_VP,17000,,100,90
4 103,Alexander,Hunold,AHUNOLD,590.423.4567,03/01/06,IT_PROG,9000,,102,60
5 104,Bruce,Ernst,BERNST,590.423.4568,21/05/07,IT_PROG,6000,,103,60
6 105,David,Austin,DAUSTIN,590.423.4569,25/06/05,IT_PROG,4800,,103,60
7 106,Valli,Parabelli,VPARABAL,590.423.4560,05/02/06,IT_PROG,4800,,103,60
8 107,Diana,Lorentz,DLORENTZ,590.423.5567,07/02/07,IT_PROG,4200,,103,60
9 108,Nancy,Greenberg,NGREENBE,515.124.4569,17/08/02,FI_MGR,12008,,101,100
10 109,Daniel,Faviet,DFAVIET,515.124.4169,16/08/02,FI_ACCOUNT,9000,,108,100
11 110,John,Chen,JCHEN,515.124.4269,28/09/05,FI_ACCOUNT,8200,,108,100
12 111,Ismael,Sciarrar,ISCIARRA,515.124.4369,30/09/05,FI_ACCOUNT,7700,,108,100
13 112,Jose Manuel,Urman,UMURMAN,515.124.4469,07/03/06,FI_ACCOUNT,7800,,108,100
14 113,Luis,Popp,LPOPP,515.124.4567,07/12/07,FI_ACCOUNT,6900,,108,100
15 114,Den,Raphaely,DRAPHEAL,515.127.4561,07/12/02,PU_MAN,11000,,100,30
16 115,Alexander,Khoo,AKHOO,515.127.4562,18/05/03,PU_CLERK,3100,,114,30
17 116,Shelli,Beida,SBAIDA,515.127.4563,24/12/05,PU_CLERK,2900,,114,30
18 117,Sigal,Tobias,STOBIAS,515.127.4564,24/07/05,PU_CLERK,2800,,114,30

### 3 PRE-EVALUATION

Practices pre-Assessment for Database Systems Laboratory II Pre-Assessment  
PRACTICE 7 carried out by student

1 COMPLIES WITH THE REQUESTED FUNCTIONALITY  
YES

4 HAS THE CORRECT INDENTATION  
YES

6 HAS AN EASY WAY TO ACCESS THE PROVIDED FILES  
YES

7 HAS A REPORT WITH IDC FORMAT  
YES

8 REPORT INFORMATION IS FREE OF SPELLING ERRORS  
YES

9 DELIVERED IN TIME AND FORM  
YES

10 IS FULLY COMPLETED (SPECIFY THE PERCENTAGE COMPLETED)  
YES, 100 percent

## 4 Conclusion

In this practice, you will go over the topics seen in the theory class about table queries with the `SELECT` statement and others using aliases.

It was very helpful for me to continue understanding the topics and begin to master them.

I liked doing the practice because custom queries are something very interesting and at a certain point I like to play with it a bit, I learned much more by reviewing and I think that now I can dominate this topic.