# Autonomous University of Zacatecas

## Academic Unit of Electrical Engineering

## Academic Program of Software Engineering




Database Systems Laboratory II
Practice 10 - Using Conversion Functions and Conditional Expressions

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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.

In the theory class we saw the topics of chapter 4, in this practice i am going to use SQL SELECT statements to retrieve data from a data base with different oracle single row functions to customize the output, and conditional expressions to use selection of data.

# 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.

**DESCRIBE VARIOUS TYPES OF CONVERSION FUNCTIONS AVAILABLE IN SQL**

**1. What type of conversion is performed by the following statement? SELECT LENGTH(3.14285) FROM DUAL; (Choose the best answer.)**

A. Explicit conversion
B. Implicit conversion
C. TONUMBER function conversion
D. None of the above

Answer : B
Is is an implicit conversion because oracle transforms the number to char to perform the function, and all this procedure is implicit.

**2. Choose any incorrect statements regarding conversion functions. (Choose all that apply.)**

A. TOCHAR may convert date items to character items.
B. TODATE may convert character items to date items.
C. TOCHAR may convert numbers to character items.
D. TODATE may convert date items to character items.

Answer: D
The incorrect statement is letter D, because TO DATE is used to convert character items to date items.

**USE THE TOCHAR,TONUMBER, AND TODATE CONVERSION FUNCTIONS**

**3. What value is returned after executing the following statement? SELECT TONUMBER(1234.49, '999999.9') FROM DUAL; (Choose the best answer.)**

A. 1234.49
B. 001234.5
C. 1234.5
D. None of the above

Answer: D
The number is invalid and the SELECT statement return an error, it is an error produced by the dot, the number has two float values and the conversion only accept one.

**4. What value is returned after executing the following statement? SELECT TOCHAR(1234.49, '999999.9') FROM DUAL; (Choose the best answer.)**

A. 1234.49
B. 001234.5
C. 1234.5
D. None of the above

Answer: C
The TO CHAR function convert the number to the format specified, only takes one float number, the original number has 2 float numbers, the function rounding to only one number, that is why the five in the answer.

**5. If SYSDATE returns 12-JUL-2009, what is returned by the following statement? SELECT TOCHAR(SYSDATE, 'fmMONTH, YEAR') FROM DUAL; (Choose the best answer.)**

A. JUL, 2009
B. JULY, TWO THOUSAND NINE
C. JUL-09
D. None of the above

Answer: B
The complete name of the month will be shown because you are using MONTH, and the year will be spelled out because you are using YEAR

**6. If SYSDATE returns 12-JUL-2009, what is returned by the following statement? SELECT TOCHAR(SYSDATE, 'fmDDth MONTH') FROM DUAL; (Choose the best answer.)**

A. 12TH JULY
B. 12th July
C. TWELFTH JULY
D. None of the above

Answer: A
Is will shown the number with the ordinal numbers suffix, and will spelled out the month, all in upper case

**USE THE TOCHAR,TONUMBER, AND TODATE CONVERSION FUNCTIONS**

**7. If SYSDATE returns 12-JUL-2009, what is returned by the following statement?**

**SELECT TOCHAR(TODATE(TOCHAR(SYSDATE,'DD'),'DD'),'YEAR') FROM DUAL; (Choose the best answer.)**

**A. 2009**
**B. TWO THOUSAND NINE**
**C. 12-JUL-2009**
**D. None of the above**

**Answer: B**
**It will spelled out the name of the current year in upper case.**

**8. What value is returned after executing the following statement? SELECT NVL2(NULLIF('CODA','SID'),'SPANIEL','TERRIER') FROM DUAL; (Choose the best answer.)**

**A. SPANIEL**
**B. TERRIER**
**C. NULL**
**D. None of the above**

**Answer: A**
**The statement will return SPANIEL. The NULLIF returns CODA because the two parameters are not not equals, CODA is not null then NVL2 will return its second parameter (SPANIEL).**

**9. What value is returned after executing the following statement? SELECT NVL(SUBSTR('AM I NULL',10),'YES I AM') FROM DUAL; (Choose the best answer.)**

**A. NO**
**B. NULL**
**C. YES I AM**
**D. None of the above**

**Answer: C**
**The function SUBSRT return a null value because the position 10 does not exist, that is why the NVL return 'YES I AM', because the value is nu**

**10. If SYSDATE returns 12-JUL-2009, what is returned by the following statement?**

**SELECT DECODE(TOCHAR(SYSDATE,'MM'),'02','TAX DUE','PARTY') FROM DUAL; (Choose the best answer.)**
**A. TAX DUE**
**B. PARTY**
**C. 02**
**D. None of the above**

**Answer: B**
**The TO CHAR function return 07 because the month is July, 07 is not equals to 02, that is why the DECODE return the default value ('PARTY').**

## Activity 2:

**Propose an answer to the following issues:**

**• Your task is to extract the day and month portion of a date column and compare it with the corresponding components of the current system date. Can such a comparison be performed?**

**Yes, it can be perform it, you can use the TO CHAR function with dates, with this function you can retrieve a char with the day and month, and later you can compare it with the char that you also retrieve with TO CHAR and SYSDATE**

**• A report of profit and loss is required with the results displayed as follows: if the amount is negative, it must be enclosed in angle brackets. The amount must be displayed with a leading dollar sign. Can results be retrieved in the specified format?**

**yes, you can use a CASE to return different results for different expressions, if the value is less than 0 return the specified value using TO CHAR with the number, if the value is not less to 0 display the original value but using the TO CHAR function to display the dollar sign.**

**• You are asked to input past employee data into the JOBHISTORY table from a paper-based source, but the start date information is only available as the year the employee started. Can this value be converted into the first of January of the year?**

**Yes, you can use CONCAT function to join the year with the month and later with the day, and using TO DATE you can make a new date and use it as input**

**• Are nested functions evaluated from the outermost level to the innermost level?**

**No, the nested functions are evaluated from the innermost level to the outermost lever, that means that the deeper functions are the firsts to be evaluated.**

**• Must all functions in a nested expression return the same data type?**

**No, it depends of the context, for example, you can use functions to determinate the parameters of another function, if the parameters are not of the same data type, that means there is no problem with different data types**

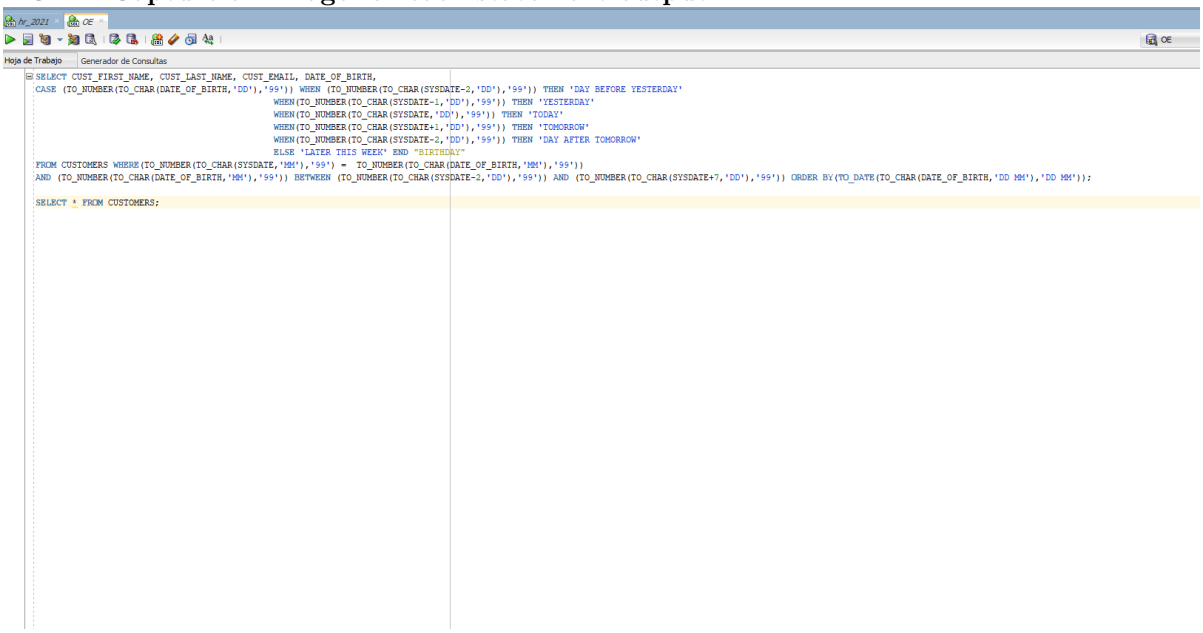
**• Is there a simpler way to display the SALARY information from the EMPLOYEES table in the form** $19,000 without using the following statement? SELECT'$**SUBSTR(SALARY,1, MOD(LENGTH(SALARY),3))**$——$**','**$—— **SUBSTR(SALARY, MOD (LENGTH(SALARY),3)+1)**

**Yes, you can use the function TO CHAR with the salary column, convert the salary to char and customize the char, using the coma, the dollar sign, and the number of numbers to display.**

## Activity 3:

**Connect to the OE schema and complete the following tasks. As part of a new marketing initiative, you are asked to prepare a list of customer birthdays that occur between two days ago and seven days from now. The list should retrieve rows from the CUSTOMERS table which include the CUSTFIRSTNAME, CUSTLASTNAME, CUSTEMAIL, and DATEOFBIRTH columns in ascending order based on the day and month components of the DATEOFBIRTH value. An additional expression aliased as BIRTHDAY is required to return a descriptive message based on the following table.**

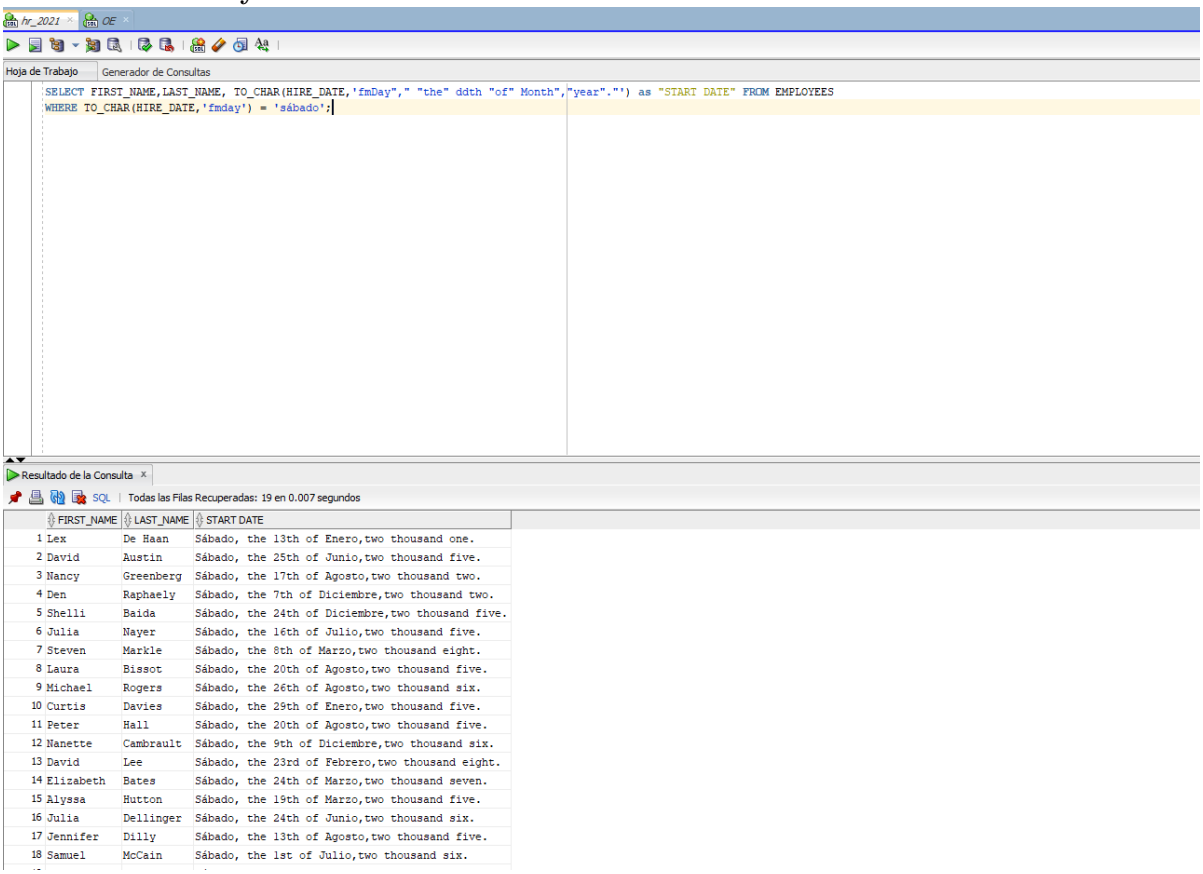
**NOTE: Capture an image for each statement output.**



# Activity 4:

**This exercise must be performed using HR schema.**

**• You are required to retrieve a list of FIRSTNAME and LASTNAME values and an expression based on the HIREDATE column for employees hired on a Saturday. The expression must be aliased as STARTDATE and a HIREDATE value of 17-FEB-1996 must return the following string: Saturday, the 17th of February, One Thousand Nine Hundred Ninety-Six.**




| | FIRST_NAME | LAST_NAME | START DATE |
|---|---|---|---|
| 1 | Lex | De Haan | Sábado, the 13th of Enero,two thousand one. |
| 2 | David | Austin | Sábado, the 25th of Junio,two thousand five. |
| 3 | Nancy | Greenberg | Sábado, the 17th of Agosto,two thousand two. |
| 4 | Den | Raphaely | Sábado, the 7th of Diciembre,two thousand two. |
| 5 | Shelli | Baida | Sábado, the 24th of Diciembre,two thousand five. |
| 6 | Julia | Nayer | Sábado, the 16th of Julio,two thousand five. |
| 7 | Steven | Markle | Sábado, the 8th of Marzo,two thousand eight. |
| 8 | Laura | Bissot | Sábado, the 20th of Agosto,two thousand five. |
| 9 | Michael | Rogers | Sábado, the 26th of Agosto,two thousand six. |
| 10 | Curtis | Davies | Sábado, the 29th of Enero,two thousand five. |
| 11 | Peter | Hall | Sábado, the 20th of Agosto,two thousand five. |
| 12 | Nanette | Cambrault | Sábado, the 9th of Diciembre,two thousand six. |
| 13 | David | Lee | Sábado, the 23rd of Febrero,two thousand eight. |
| 14 | Elizabeth | Bates | Sábado, the 24th of Marzo,two thousand seven. |
| 15 | Alyssa | Hutton | Sábado, the 19th of Marzo,two thousand five. |
| 16 | Julia | Dellinger | Sábado, the 24th of Junio,two thousand six. |
| 17 | Jennifer | Dilly | Sábado, the 13th of Agosto,two thousand five. |
| 18 | Samuel | McCain | Sábado, the 1st of Julio,two thousand six. |

• **You are required to return a set of rows from the EMPLOYEES table with DEPARTMENTID values of 100. The set must also contain FIRSTNAME and LASTNAME values and an expression aliased as NAMELENGTHS. This expression must return the string 'Different Length' if the length of the FIRSTNAME differs from that of the LASTNAME, else the string 'Same Length' must be returned.**

```
--2
SELECT FIRST_NAME, LAST_NAME, CASE LENGTH(FIRST_NAME) WHEN LENGTH(LAST_NAME) THEN 'Same lenght'
ELSE 'Different lenght' END "NAME_LENGHTS" FROM EMPLOYEES WHERE DEPARTMENT_ID=100;
```

Resultado de la Consulta

SQL | Todas las Filas Recuperadas: 6 en 0.007 segundos

| | FIRST_NAME | LAST_NAME | NAME_LENGHTS |
|---|---|---|---|
| 1 | Nancy | Greenberg | Different lenght |
| 2 | Daniel | Faviet | Same lenght |
| 3 | John | Chen | Same lenght |
| 4 | Ismael | Sciarra | Different lenght |
| 5 | Jose Manuel | Urman | Different lenght |
| 6 | Luis | Popp | Same lenght |

• **You are requested to query the LOCATIONS table for rows with the value US in the COUNTRYID column. An expression aliased as LOCATIONINFO is required to evaluate the STATEPROVINCE column values and returns different information as per the following table. Sort the output based on the LOCATION**$_{INFO}$ *expression. Use the decode function.*

## Activity 5:

**This practice provides a variety of exercises using TOCHAR and TODATE functions, and conditional expressions such as DECODE and CASE. Remember that for nested functions, the results are evaluated from the innermost function to the outermost function.**

**1. Create a report that produces the following for each employee: ¡employee last name¿ earns ¡salary¿ monthly but wants ¡3 times salary.¿. Label the column Dream Salaries.**

```
--5
SELECT LAST_NAME || ' ' || 'EARNS' || SALARY || 'MONTLHY BUT WANTS' || '$' || SALARY*3 AS "DREAM_SALARY" FROM EMPLOYEES;


--5
```

Resultado de la Consulta | Resultado de la Consulta 1

SQL | Se han recuperado 50 filas en 0.003 segundos

| | DREAM_SALARY |
|---|---|
| 1 | King EARNS24000MONTLHY BUT WANTS$72000 |
| 2 | Kochhar EARNS17000MONTLHY BUT WANTS$51000 |
| 3 | De Haan EARNS17000MONTLHY BUT WANTS$51000 |
| 4 | Hunold EARNS9000MONTLHY BUT WANTS$27000 |
| 5 | Ernst EARNS6000MONTLHY BUT WANTS$18000 |
| 6 | Austin EARNS4800MONTLHY BUT WANTS$14400 |
| 7 | Pataballa EARNS4800MONTLHY BUT WANTS$14400 |
| 8 | Lorentz EARNS4200MONTLHY BUT WANTS$12600 |
| 9 | Greenberg EARNS12008MONTLHY BUT WANTS$36024 |
| 10 | Faviet EARNS9000MONTLHY BUT WANTS$27000 |
| 11 | Chen EARNS8200MONTLHY BUT WANTS$24600 |
| 12 | Sciarra EARNS7700MONTLHY BUT WANTS$23100 |
| 13 | Urman EARNS7800MONTLHY BUT WANTS$23400 |

**2. Display each employee's last name, hire date, and salary review date, which is the first Monday after six months of service. Label the column REVIEW. Format the dates to appear in the format similar to "Monday, the Thirty-First of July, 2000."**

```
--5
SELECT LAST_NAME, TO_CHAR(HIRE_DATE, 'DD-MON-YY') AS HIRE_DATE, TO_CHAR(HIRE_DATE,'fmDay"," "the" ddsp "of" Month","YYYY"."') as "START DATE" FROM EMPLOYEES;
```

Resultado de la Consulta | Resultado de la Consulta 1 | Resultado de la Consulta 2 | Resultado de la Consulta 3

SQL | Se han recuperado 50 filas en 0.003 segundos

| | LAST_NAME | HIRE_DATE | START DATE |
|---|---|---|---|
| 1 | King | 17-JUN-03 | Martes, the seventeen of Junio,2003. |
| 2 | Kochhar | 21-SEP-05 | Miércoles, the twenty-one of Septiembre,2005. |
| 3 | De Haan | 13-ENE-01 | Sábado, the thirteen of Enero,2001. |
| 4 | Hunold | 03-ENE-06 | Martes, the three of Enero,2006. |
| 5 | Ernst | 21-MAY-07 | Lunes, the twenty-one of Mayo,2007. |
| 6 | Austin | 25-JUN-05 | Sábado, the twenty-five of Junio,2005. |
| 7 | Pataballa | 05-FEB-06 | Domingo, the five of Febrero,2006. |
| 8 | Lorentz | 07-FEB-07 | Miércoles, the seven of Febrero,2007. |
| 9 | Greenberg | 17-AGO-02 | Sábado, the seventeen of Agosto,2002. |
| 10 | Faviet | 16-AGO-02 | Viernes, the sixteen of Agosto,2002. |
| 11 | Chen | 28-SEP-05 | Miércoles, the twenty-eight of Septiembre,2005. |
| 12 | Sciarra | 30-SEP-05 | Viernes, the thirty of Septiembre,2005. |
| 13 | Urman | 07-MAR-06 | Martes, the seven of Marzo,2006. |

**3. Display the last name, hire date, and day of the week on which the employee started. Label the column DAY. Order the results by the day of the week, starting with Monday.**

```
--5_3
SELECT LAST_NAME, TO_CHAR(HIRE_DATE, 'DD-MON-YY') AS HIRE_DATE, TO_CHAR(HIRE_DATE,'FMDAY') AS DAY FROM EMPLOYEES;
```

Resultado de la Consulta | Resultado de la Consulta 1 | Resultado de la Consulta 2 | Resultado de la Consulta 3

SQL | Se han recuperado 50 filas en 0.003 segundos

| | LAST_NAME | HIRE_DATE | DAY |
|---|---|---|---|
| 1 | King | 17-JUN-03 | MARTES |
| 2 | Kochhar | 21-SEP-05 | MIÉRCOLES |
| 3 | De Haan | 13-ENE-01 | SÁBADO |
| 4 | Hunold | 03-ENE-06 | MARTES |
| 5 | Ernst | 21-MAY-07 | LUNES |
| 6 | Austin | 25-JUN-05 | SÁBADO |
| 7 | Pataballa | 05-FEB-06 | DOMINGO |
| 8 | Lorentz | 07-FEB-07 | MIÉRCOLES |
| 9 | Greenberg | 17-AGO-02 | SÁBADO |
| 10 | Faviet | 16-AGO-02 | VIERNES |
| 11 | Chen | 28-SEP-05 | MIÉRCOLES |
| 12 | Sciarra | 30-SEP-05 | VIERNES |
| 13 | Urman | 07-MAR-06 | MARTES |

**4. Create a query that displays the employees' last names and commission amounts. If an employee does not earn commission, show "No Commission." Label the column COMM.**

```
--55_4
SELECT LAST_NAME, COMMISSION_PCT,
CASE  WHEN COMMISSION_PCT = 'NULL' THEN 'NO COMISSION'
ELSE COMMISSION_PCT END "COMM"
FROM EMPLOYEES;
```

**5. Using the DECODE function, write a query that displays the grade of all employees based on the value of the column JOB$_ID, using the following data :**

```
--5_5
SELECT JOB_ID,
DECODE(JOB_ID, 'AD_PRES', 'A',
               'ST_MAN','B',
               'IT_PROG','C',
               'SA_REP','D',
               'ST_CLERK','E',
               'O'
              )
               GRADE
FROM EMPLOYEES;
```

Resultado de la Consulta

SQL | Se han recuperado 50 filas en 0.003 segundos

| | JOB_ID | GRADE |
|---|---|---|
| 1 | AC_ACCOUNT | O |
| 2 | AC_MGR | O |
| 3 | AD_ASST | O |
| 4 | AD_PRES | A |
| 5 | AD_VP | O |
| 6 | AD_VP | O |
| 7 | FI_ACCOUNT | O |
| 8 | FI_ACCOUNT | O |
| 9 | FI_ACCOUNT | O |
| 10 | FI_ACCOUNT | O |
| 11 | FI_ACCOUNT | O |
| 12 | FI_MGR | O |
| 13 | HR_REP | O |
| 14 | IT_PROG | C |
| 15 | IT_PROG | C |
| 16 | IT_PROG | C |
| 17 | IT_PROG | C |
| 18 | IT_PROG | C |
| 19 | MK_MAN | O |

**6. Rewrite the statement in the preceding exercise using the CASE syntax.**

```
--55_6
SELECT JOB_ID,
CASE JOB_ID WHEN 'AD_PRES' THEN 'A'
            WHEN 'ST_MAN' THEN 'B'
            WHEN 'IT_PROG' THEN 'C'
            WHEN 'SA_REP' THEN 'D'
            WHEN 'ST_CLERK' THEN 'E'
       ELSE 'O' END "GRADE"
FROM EMPLOYEES;
```

Resultado de la Consulta

SQL | Se han recuperado 50 filas en 0.003 segundos

| | JOB_ID | GRADE |
|---|---|---|
| 1 | AC_ACCOUNT | O |
| 2 | AC_MGR | O |
| 3 | AD_ASST | O |
| 4 | AD_PRES | A |
| 5 | AD_VP | O |
| 6 | AD_VP | O |
| 7 | FI_ACCOUNT | O |
| 8 | FI_ACCOUNT | O |
| 9 | FI_ACCOUNT | O |
| 10 | FI_ACCOUNT | O |
| 11 | FI_ACCOUNT | O |
| 12 | FI_MGR | O |
| 13 | HR_REP | O |
| 14 | IT_PROG | C |
| 15 | IT_PROG | C |
| 16 | IT_PROG | C |
| 17 | IT_PROG | C |
| 18 | IT_PROG | C |
| 19 | MK_MAN | O |

# 3 PRE-EVALUATION

**Practices pre-Assessment for Database Systems Laboratory II Pre-Assessment PRACTICE 10 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,90 percent**

# 4 Conclusion

**This kind of practices are important to improve our skills retrieving data from a data base, i reviewed the knowledge learned in the theory class about the chapter 4 of the oracle content about conversion functions, this was a very full practice and very useful to still practicing the subject content. I have learned a lot from chapter 4, I was practically able to do most of the exercises proposed in this practice.**