



ETSII – DataBases – SQL II

Note: This assignment includes several *join* exercises. Remember that joining multiple tables can be performed by:

- including multiple tables in the *FROM* clause and linking PK/FK in the *WHERE* clause
- or explicitly using the appropriate *JOIN* in the *FROM* clause.

For maximum benefit, try performing these exercises in all possible ways and compare the results.

Multiple Tables:

SELECT ... FROM a, b ... WHERE ...

1. Names and surnames of professors in the Department of “Lenguajes y Ciencias de la Computacion”.
2. Using the NVL function, extract a list with the code and name of the courses in which Nicolas Bersabe Alba is enrolled. Also provide the number of practical credits, but if it's null, it should display "It does not have" in the list. *Note:* practical credits are NUMBER and the literal " It does not have " is VARCHAR2.
3. For each professor in the " Ingeniería de Comunicaciones " department, provide the number of complete weeks they have been working in the department and indicate the day a full week cycle is completed. Use the TO_CHAR and NEXT_DAY functions. Keep in mind that if the day of the week for the cycle completion is the current day, NEXT_DAY will move to the following week, when it should indicate the cycle completes today.
4. Students who have passed the “Bases de Datos” course.
5. Obtain a list showing the identifier of the professors, their names and surnames, as well as the code and name of the courses they teach.

Reflexive Queries:

SELECT ... FROM a, a ... WHERE ...

6. Names and ages of pairs of students who have the same last name.
7. Combinations of last names that can be created with the first surnames of students born between 2000 and 2001, inclusive. It is recommended to use the BETWEEN ... AND ... operator to express the range of values.
8. Names and surnames of pairs of professors whose difference in seniority (absolute value) is less than two years and belong to the same department. Show each person's years of seniority.
9. Create a list showing all possible heterosexual pairings that can be formed among students enrolled in the course with code 112, where the woman's grade is higher than the man's, and both enrolled in the same week. The list should show the woman's name first, followed by the man's name. Label the columns as "She" and "He," respectively. Use the TO_CHAR function to calculate the week.
10. Trios of courses within the same subject area. Present the names of the three courses followed by the code of the subject area they belong to.

Multiple Tables and Sorting:**SELECT ... FROM ... WHERE ... ORDER BY ...**

11. Show the name, surname, course name, and grades obtained by all students over 22 years old. Use the DECODE function to display grades as follows: Honors (MH), Outstanding (SB), Notable (NT), Pass (AP), Fail (SP), or Not Presented (NP). Sort by the surname and name of the student.
12. Names and surnames of all students taught by Enrique Soler. Use the SUBJECT, GROUP, and YEARS attributes from the TEACH and ENROL tables. Each student should appear only once. Sort by surname and name.
13. Names and surnames of students enrolled in courses taught by professors in the Department of "Lenguajes y Ciencias de la Computacion". The list should be sorted alphabetically.
14. List of the course names, its subject area, and the names, surnames, and credit loads of the professors who teach these courses. Sort by subject area code and in reverse alphabetical order by course name.
15. List of the course name, department to which it belongs, total credits, and the percentage of practical credits, sorted in descending order by the percentage of practical credits. Courses without specified total, practical, or theoretical credits should not appear in the list.

Set Operations:**(SELECT ...) UNION/MINUS/INTERSECT (SELECT ...)**

16. Use "set operations" to extract the codes of courses not taught by any professor.
17. Display all emails stored in the database (from the Professors and Students tables). If an email appears in both tables, it should appear twice in the query results. Exclude NULL values.
18. Use "set operations" to find students who may be related to a professor (i.e., either their first or second surname matches the first or second surname of a professor, even if not in the same order). Only show the common surnames.
19. Last names containing the letters "ll" from both students and professors.
20. Similar to the previous query, but replace "ll" with "y". Use REPLACE.

Outer Joins: SELECT ...**FROM ... a (LEFT/RIGHT) OUTER JOIN b ... ON () WHERE ...**

21. Find an inconsistency in the database, i.e., courses where the sum of theoretical and practical credits is not equal to the total credits. Also show the professors teaching these courses.
22. Display the full names of all professors in alphabetical order, along with their advisors, if applicable (if the advisor's name is unknown, leave this field blank, but still show the professor).
23. Show the name and surname of each professor along with that of their thesis advisor and the number of research segments of the advisor. The names of each professor and their advisor should appear in the following format: "The advisor of Angel Mora Bonilla is Manuel Enciso Garcia-Oliveros".
24. List all student names in alphabetical order. If a student enrolled at the same time as another, show the second student's name alongside.

25. List all course names. For each course, if applicable, display the course level, group, and name and surname of the professor teaching it.

Subqueries:

SELECT ... FROM ... WHERE ... (NOT) IN/EXISTS (SELECT ...)

26. Names and identifiers of professors who are not currently teaching any groups.
27. Names and surnames of two female students enrolled in the course with code 115. Use ROWNUM to limit the number of tuples returned (2 in this case). Duplicate tuples should also be filtered out.
28. Display all data for professors who are not thesis advisors.
29. List the name and code of courses that have another course in the same level with more credits than them.
30. Use “set operations” and the previous query to display courses that have the maximum number of credits for their level.