

A research laboratory commissioned you the development of an application for the support and presentation of its activities.

You must design and implement a relational database that will maintains data about:

- The members of the research laboratory, which can be: Dep (faculty) members, researchers, candidate lecturers, undergraduate / postgraduate students. The data it will maintain is: name, rank (for Dep (faculty) members), surname, web page, e-- mail, phone, short CV.
- The publications of the members of the laboratory. For each publication you should hold the information about the category of the publication (article in magazine, conference minutes or book), topic, writers, year published, conference name / magazine / publisher.
- The research projects. For the projects hold the following information: title, scientific supervisor, funder, budget, start date and end date of project, if it is currently completed.
- News - Laboratory announcements (date posted, announcement text)
- Lessons supported by the laboratory (undergraduate, postgraduate). For the lessons we have the following data: course title, semester offered, members of laboratory that teach the course. One lesson can be taught from more than one member. Researchers and candidate lecturers can also teach.

QUESTIONS

- 1) Present the entity relationship diagram and the relational model of above database.
- 2) Implement the corresponding database and insert values.
- 3) Create the SQL commands for the below reports.
 - a) Report with the tasks (authors, title, conference name / magazine / publisher, year published) that were published from members of the laboratory in a specific time period. The user will introduce the time period.
 - b) Report with the tasks of members of the laboratory that contain specific keywords. The report will displays writers, work title, where it got published (magazine name, conference or publishing house) and publication year. The user will introduce keywords based on which the recovery of publications will be done.
 - c) Report with the number of publications per Dep member (faculty) and publication category for a specific time period. The user must set the following criteria for the creation of the report: time period of publications (From - To).
 - d) Report with the dep (faculty) members that have the most publications for the last 5 years.
 - e) Report with postgraduate students that take part in each publication, for a specific time period.
 - f) Report with the laboratory members that take part in 3 or more publications per year.

g) Create a report where the data of Dep members (faculty) that are supervising projects are displayed and the corresponding total budget of projects, sorted with descending order per total budget. The user must set the following criteria for the creation of the report: time period of projects, Date From - Until.

h) Create a report that will show the lessons that are supported from members of the laboratory per semester, lesson title and the full name of the members of the laboratory (dep (faculty) members, postgraduates) that teach each lesson.

i) Report with the research projects (code, title) on which one specific member of the laboratory takes part and the period in which he / she worked on it.

j) Write one example of an SQL query in order to show how to use indexes. You will set the index to be used.

4) Implement one Trigger that will be activated each time the database gets updated with new research projects that start, or with projects that are completed in the laboratory (INSERT, UPDATE of equivalent table) and will insert in a CurrentProject table (Date, TimeCreated, TotalProj, TotalBudget) the total number and budget of active projects.