Tutorial: Simple Queries

Students at the National University of Ngendipura (NUN) buy books for their studies. They also lend and borrow books to and from other students. Your company, Apasaja Private Limited, is commissioned by NUN Students Association (NUNStA) to implement an online book exchange system that records information about students, books that they own and books that they lend and borrow.

The database records the name, faculty, and department of each student. Each student is identified in the system by her email. The database also records the date at which the student joined the university (year attribute).

The database records the title, authors, publisher, year and edition and the ISBN-10 and ISBN-13 for each book. The International Standard Book Number, ISBN-10 or -13, is an industry standard for the unique identification of books. It is possible that the database records books that are not owned by any students (because the owners of a copy graduated or because the book was advised by a lecturer for a course but not yet purchased by any student.)

The database records the date at which a book copy is borrowed and the date at which it is returned. We refer to this information as a loan record.

For auditing purposes the database records information about the books, the copies and the owners of the copies as long as the owners are students or as there are loan records concerning the copies. For auditing purposes the database records information about graduated students as long as there are loan records concerning books that they owned.

This tutorial uses the schema and data for the database created in "Tutorial: Creating and Populating Tables" including all the updates done during the tutorial.

Questions

Not all questions will be discussed during tutorial. You are expected to attempt them before coming to the tutorial. You may be randomly called to present your answer during tutorial. You are encouraged to discuss them on Canvas Discussion.

Important: This tutorial is designed to be solved using **simple queries only**. This means your answers should not contain nested or aggregate queries.

1. **Single-Table Queries**.

   (a) Print the different departments.

   (b) Print the different departments in which students are enrolled.

   (c) For each copy that has been borrowed and returned, print the ISBN13 of the book and the duration of the loan. Order the results in ascending order of the ISBN13 and descending order of duration. Remember to use only one single table.

2. **Multi-Table Queries**.

   (a) For each loan of a book published by Wiley that has not been returned, print the title of the book, the name and faculty of the owner and the name and faculty of the borrower.

   (b) Let us check the integrity of the data. Print the different emails of the students who borrowed or lent a copy of a book before they joined the University. There should not be any.

   (c) Print the emails of the different students who borrowed or lent a copy of a book on the day that they joined the university.

   (d) Print the emails of the different students who borrowed and lent a copy of a book on the day that they joined the university.

   (e) Print the emails of the different students who borrowed but did not lend a copy of a book on the day that they joined the university.

   (f) Print the different ISBN13 of the books that have never been borrowed.

References

[1] S. Bressan and B. Catania. *Introduction to Database Systems*. McGraw-Hill Education, 2006. ISBN: 9780071246507.

[2] Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widom. *Database Systems: The Complete Book*. 2nd ed. Prentice Hall Press, 2008. ISBN: 9780131873254.

[3] Raghu Ramakrishnan and Johannes Gehrke. *Database Management Systems*. 2nd. USA: McGraw-Hill, Inc., 2000. ISBN: 0072440422.

[4] *W3schools Online Web Tutorials*. https://www.w3schools.com/. [Online; last accessed 2025].