

Group 15: 202012057, 202012058, 202012059, 202012060, 202018029, 202018030

Title: University Library Management System

Scope:

The University Library management system is intended to record all the library activities in a systematic way such as maintaining the details of the books, journals and thesis present in the library. This system also provides ease of access to the students and faculties by maintaining the record of the borrowers and shelves containing the books. If the borrower misses to return the books then he/she is subjected to fine. This also helps the librarians in providing information about number of copies of a particular book, list of books in a certain category, shelf number of a particular book, journals and thesis. The library also has the facility of reading room where students and faculties can sit and read the books, journals or thesis and a register records the entry and exit.

Usually university library also has facility of online resources which can be accessed through computers but this system is not taken in consideration in designing this database.

Database Requirements:

- University library maintains the records of students, faculties and staff of library.
- University library has books, journals and thesis for the students and faculties.
- Multiple copies of each book and multiple books are present in the library with unique book_id and student can borrow one book at a time.
- All the material available has a specific category like Engineering, Biology, Arts and Humanities, philosophy, psychology, botany, mathematics, computer science, etc and each of this category has multiple sub-topics.

- Category is recorded as category_id, category_name and subtopics.
- Each book has book_id, title, ISBN, Author, Price, Pages, Edition, Publication Name.
- Each journal has journal_id, title, category, volume, no_of_articles, pages, release_month, publisher, price.
- Each thesis has thesis_id, title, author, pages.
- All the books, journals and thesis belong to a specific category.
- One book can be written by multiple authors (ex. Database Management Systems ; Authors: Abraham Silberschaz, F. Korth and Sudarshan) and one author can write multiple books.
- Each thesis can have only one author but one author may have written multiple thesis.
- There can be an author who has written multiple thesis as well as multiple books.
- Library staff details are stored as staff_id, name, age, gender, designation (i.e. admin, assistant or clerk), salary.
- Student can borrow one book at a time for 15 days and faculty can borrow multiple books at a time where each can be borrowed for 20 days.
- Books, journals and thesis are stored in shelves, and shelf has shelf_id, no_of books, no_of journals, no_of_thesis which usually belongs to same category.
- Multiple shelves can have books, journals and thesis of same category but different category material can't be placed together in same shelf; so that confusion could be avoided.
- As the books are borrowed so is the return to be done and fine is taken from the students if book is not returned in-time.
- Journals cannot be borrowed neither by students nor the faculties but can be read within the library.
- Thesis cannot be borrowed by the students but faculty can borrow it for the duration of 20 days and library staff can issue it.
- Details of borrower are recorded as id, name, designation (i.e. student or faculty), issue_date, return_date, days_delayed, fine.
- Library staff can only issue the book to the student or faculty.

- Student have student_id, student_name, program_name, joining_year, address, contact_no, email_id, date_of_birth, SPI
- Faculty have Faculty_id, faculty_name, department_name, address, contact_no, email_ids, salary.
- The department offers multiple programs and one program belongs to only one department.
- There can be departments which offer no academic programs.
- Each faculty belongs to one and only one department but one department has multiple faculties.
- A student can be enrolled to only one program and a program can have multiple students enrolled in.
- Books, Journals and thesis can be read without borrowing them by visiting to the library and library has a register in which user makes entry at the time of entering and it has the details such as Id, name, designation(i.e student or faculty), date, time_of_entry, time_of_leave.

Queries:

1. List the name of faculties who have currently borrowed any book.
2. List all the books by an author with name 'abc'.
3. Find the total number of students of 'pqr' department who have borrowed book with title 'xyz'.
4. List the number of thesis present in the library which fall under the category of 'biology'.
5. Retrieve the names of the faculties who have borrowed a thesis and belongs to 'axd' department.
6. List the names of students who have visited the library to read a journal.
7. List the name and id of students who have paid any fine in past.
8. List the names of authors who have written a book and thesis of same category.
9. Find the total number of copies of a book with title 'abc'.

10. Retrieve the names of library staff who have issued book with title 'abc'.
11. List out name of all the borrowers who paid fine for late submission of any book in the month of August 2020.
12. Retrieve the name of all students and faculties who borrowed a particular book.
13. Retrieve the name of book, which have no copies left in the library.
14. Retrieve the name of all students who borrowed book on a particular date.
15. List out the name of all the authors who wrote the book named 'Database Management System'.