

Library Information System (LIS)

This Library Information System is the relational database schema of the library services of an academic institute. Here, we consider a library having books to be issued by the faculty and students of the institute. The library needs an LIS to manage the books, the members, and the issue-return process.

Certain rules have to be followed in the LIS:

- There are different book titles, each having a unique ISBN.
- Each title may exist in multiple copies (each having a different accession number) in the library.
- Each book may have multiple authors, but one publisher and one year of publication.
- The book copies are issued by the members, who can be a faculty member or a student.
 - Members are of the following types:
 - Students having name, roll number, department code, gender, mobile number, date of birth, and degree.
 - PG: Postgraduate student
 - UG: Undergraduate student
 - RS: Research scholar
 - Faculty having name, employee id, department code, gender, mobile number, and date of joining.
 - FC
- The faculty members and the students belong to various departments.
- A book may not be issued to a member if another copy of the same book is already issued to the same member.
- Only one member can issue a particular book copy (having a unique accession number). In other words, no book copy may be issued by two members at the same time.
- Every member has a maximum quota (depending on the member type) for the number of books she/he can issue for and for the maximum duration she/he can retain a book.
- No issue will be done to a member if, at the time of issue, one or more books issued by the member has already exceeded the duration of the issue.
- No issue will also be allowed if the quota is exceeded for the member.
- The staffs of the library manage the LIS.

LIS schema

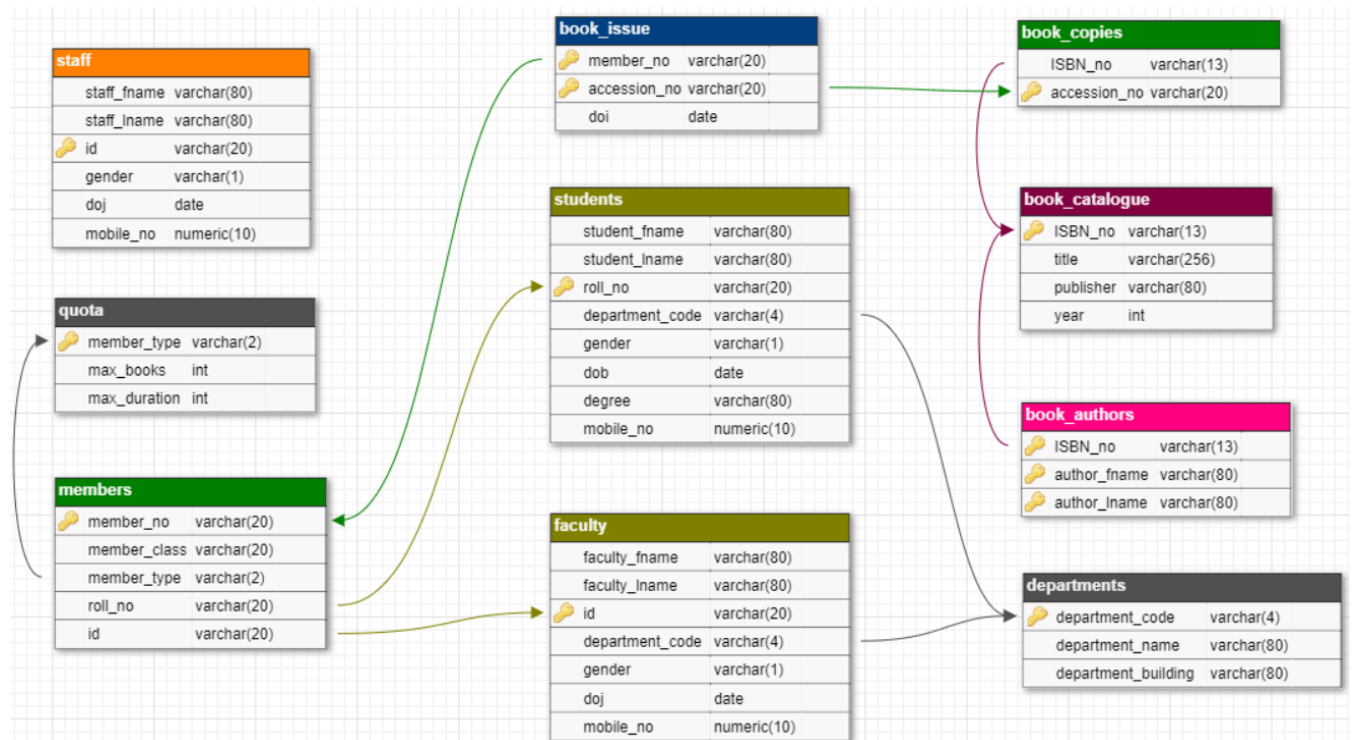


Table descriptions:

students table: (PK: roll_no)

- *student_fname*: first name of the student
- *student_lname*: last name of the student
- *roll_no*: roll number of the student, e.g., CS01, ME01
- *department_code*: department code of the student e.g., CS, ME, MCA
- *gender*: "M" means MALE, "F" means FEMALE
- *mobile_no*: mobile number of the students
- *dob*: date of birth of the student
- *degree*: e.g. B.tech, MCA

faculty table: (PK: id)

- *faculty_fname*: first name of the faculty
- *faculty_lname*: last name of the faculty
- *id*: faculty id, e.g. FCS01, FME02
- *department_code*: department code to which the faculty belong e.g. CS, ME, MCA
- *gender*: "M" means MALE, "F" means FEMALE
- *mobile_no*: mobile number of the faculty
- *doj*: date of joining

quota table: (PK: *member_type*)

- *member_type*: there are four member types "UG", "PG", "RS", "FC"
UG: UNDERGRADUATE STUDENT
PG: POSTGRADUATE STUDENT
RS: RESEARCH SCHOLAR
FC: FACULTY
- *max_books*: maximum no of book can be issued
- *max_duration*: maximum days can be kept

members table: (PK: *member_no*)

- *member_no*: member number, e.g. M0001
- *member_class*: faculty or student
- *member_type*: UG/PG/RS/FC
- *roll_no*: if a member is of student class, then it is the roll number of the student; otherwise, it is null.
- *id*: if a member is of faculty class, then it is the id of the faculty; otherwise it is null.

book_issue table: (PK: *member_no*, *accession_no*)

- *member_no*: member number issued by a book copy
- *accession_no*: accession number of the book copy
- *doi*: date of issue

book_catalogue table: (PK: *isbn_no*)

- *isbn_no*: ISBN of the book
- *title*: name of the book
- *publisher*: publisher of the book
- *year*: year of publishing

book_authors table: (PK: *isbn_no*, *author_fname*, *author_lname*)

- *isbn_no*: ISBN of the book
- *author_fname*: author's first name
- *author_lname*: author's last name

book_copies table: (PK: *accession_no*)

- *isbn_no*: ISBN of the book
- *accession_no*: accession number of the book copy.

department table: (PK: *department_code*)

- *department_code*: unique code for the department
- *department_name*: name of the department
- *department_building*: the building name where the department is located

staff table: (PK: *id*)

- *staff_fname*: staff's first name
- *staff_lname*: staff's last name
- *id*: staff id
- *gender*: "M" means MALE, "F" means FEMALE
- *mobile_no*: mobile number of the staff
- *doj*: date of joining