

1) Draw an EER model for GMAIL. Pick at least 5 use cases, e.g. contacts.

2) Library Management System of IIT Mandi: A course instructor prescribes 1 or more books as reference books and a single text book for the course. The IIT Mandi library purchases one or more copies of the prescribed books by the instructor. Each book has 1 or more authors, a publisher, edition, etc. For the purpose of record, the library needs to track when the book is purchased by the library. The library can buy more copies of the book subsequently.

Students, Faculty as well as any other university library can issue books from IIT Mandi library.

Students are of three types – Btech, MS, and PhD. Depending on the category of the student, issuing rules vary. For example, a BTech student can issue up to 5 books out of which only 2 books can be text books, rest have to be reference books. MS and PhD students can borrow up to 8 books belonging to any category. Please note that a reference book for 1 course may be a textbook for some other course. The duration for which they can use the book before returning is different for each of the above categories. Make suitable assumptions about the duration. Each student can reissue the book only a fixed number of times.

If the issuer of the book does not return the book within the due date, then he/she is charged a fine.

Faculty is a special issuer, he/she can issue up to 10 books, keep it with him/her for 6 months. He/She is exempted from paying fine even if the due date has passed.

The library wants to analyze the behavior of the borrower as well as the book's usage. So it needs to track book issue/return history, borrower pattern. Further, it needs to track whether the book is currently available or is issued. If it is issued, then it must know details like person issuing it, its return date, etc.

Please design the EER-model: clearly indicating Strong / Weak Entities, their relationships, participation constraint using Min-max notation, class hierarchy, union types, aggregation.