# Guideline of ISOM3000 Course Project

The group-based database development project is the highlight of this course. You will get hands-on experiences in how to design a database system to meet business requirements. Students need to develop a **library database system** for a body\*. Tasks include analyzing user requirements, developing modules with tables and relationships, and documenting the design to support user requirements and implementing the project.

You are required to\*:

1. Define the characteristics of the attributes for the following tables using the format shown below.
2. Reader
3. Book
4. Publisher
5. Employee
6. Transaction

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **READER ENTITY** | | | | |
| **Attributes** | **Data Type** | **Length** | **Required?** | **Indexed?** |
| ReaderID | Short Text | 15 | Yes | Yes(No duplicates) |
| ReaderName | Short Text | 30 | Yes | No |
| Address | Short Text | 50 | Yes | No |
| Gender | Short Text | 1 | Yes | No |
| Quota | Number | Long Integer | Yes | No |
| No-of-CheckOut | Number | Long Integer | Yes | No |

1. Transform all entities to respective relations and create a relational schema consisting of referential integrity constraints, and diagram the functional dependencies. Note: the relations must be in 3NF.
2. Use MS Access to build/design the following(**submit the dump screen pages/screenshots only**)
   1. input forms for
      1. record creation of new students/readers
      2. record creation of new books
   2. reports(make sure the reports details are logically organized and easier to read)
3. a report showing at least 5 new students/readers with details
4. a report showing at least 5 new books with details
5. a report showing those books which have been overdue(at least 3 items). Please note that a student may have more than one book overdue. (results of the report must indicate the *student no*, *name of student*, *book name*, *due date).* ***Note: you need to create a query and then create a report based on the results of the query.***
6. Write SQL statements to update the database including
   1. Creation of records for new students/books/publishers/employees(at least 5 records for each relation)
   2. Perform check-out procedure for students when borrowing books(you need to write 3 separate SQL statements, one for Book/Transaction/Reader entity respectively)
   3. Write the following queries:
      1. Use book ID to search the availability of a book(the results of the query must show the *book name*, *name of author(s)*, *name of publisher*, *location* and *status*)

SELECT Book.[Book Name], Book.[Author 1], Book.[Author 2], Book.[Author 3], Publisher.[Publisher Name] , Publisher.[Location],Book.Status

FROM Book，Publisher

JOIN Publisher ON Book.Publisher ID = Publisher.Publisher ID

WHERE Book ID = '02351';

* + 1. Use student no. to search the quota and the no. of books checked out(the results of the query must show *student no*., *student name*, *quota and no. of books checked out)* by a student

SELECT Reader.[Reader ID], Reader.[Reader Name], Reader.Quota, Reader.[No of Check Out]

FROM Reader

WHERE Reader ID = 'bc209436';

Find a reader who has the most books overdue. Note: you need to show the student no., student name and the no. of books overdue.

SELECT t.Reader\_ID, t.Reader\_Name, COUNT(\*) AS Overdue\_Count

FROM Transaction AS t

JOIN Book AS b ON t.Book\_ID = b.Book\_ID

WHERE t.Return\_Date > b.Due\_Date

GROUP BY t.Reader\_ID, t.Reader\_Name

ORDER BY Overdue\_Count DESC

LIMIT 1;

1. Prepare a report based on item 5(b)(iii) above(Hint: please show report details by student information first(e.g. student no and student name etc.) and then followed by book details, as a student may have more than one book checked out.
2. Prepare a statement on the following:
   1. Strengths of the system(selling points)
   2. Limitation and future development

1. Submit a hard copy of the final report(Part I and Part II) including the dump screen pages/screenshots and SQL programs to **my office (E22-3046)** on or before 5:00pm, 29 November. For Part I, include both ERD(dump screens/screenshots) and business rules.
2. Upload the only the database(created using MS Access) onto Moodle on or before 5:00pm, 29 November. **(the submission will be responsible by the GROUP LEADER only)**