

**1st Sit Examination Question Paper Scenario Autumn Semester 2023**

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| **Module Code:**  **Module Title:**  **Module Leader:** | **CC4057NP**  **Introduction to Information Systems**  **Mr. Sandip Dhakal** |

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| **Week:**  **Day / Evening:**  **Start Time:**  **Duration:**  **Exam Type:**  **Material Supplied:**  **Materials Permitted:**  **Warning:**  **Instructions to Candidates:** | **4th Week**  **Day.**  **TBD**  **2 Hours.**  **Unseen Examination.**  **Exam Question Paper and Answer Booklet.**  **Writing Instruments and a Calculator.**  **Candidates are WARNED that possession of UNAUTHORIZED materials in an examination is a serious assessment offence.**  **This paper describes the scenario of which, there will be questions in your unseen examination in the coming week.**  **This scenario is a part of the unseen test, which accounts to 40% of your total module grade.**  **REVIEW THIS DOCUMENT THOROUGHLY AND DO YOUR BEST TO UNDERSTAND THE DETAILS.**  **THIS PAPER IS NOT TO BE BROUGHT DURING THE EXAM TIME.** |

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**Scenario for developing the database**

Ilearn International College is an educational institution in Lalitpur, Nepal, established in 1999. The college specialises in teaching different IT and Business degrees and is affiliated with London Metropolitan University. The college has different courses for its students. In courses, there are different subjects under various courses assigned to teachers.

In Ilearn International College, firstly the students are enrolled in a course of the college. A student at Ilearn International College can enrol in a course only. With that being said, while maintaining the enrolment record, the Student ID, Student Name, Student Phone Numbers are maintained with the enrolment date and completion date. Similarly, while maintaining the records of course details such as Course Name, Subjects Name, and Teacher Name are recorded. Moreover, the teachers of Ilearn International College are responsible for delivering quality content at the college. Hence, a subject has multiple teachers allocated to it to ensure the quality of work.

The college has been keeping track of students and course records in various registers. In order to solve this traditional approach of record-keeping, you are required to develop a database for the college which will consist of at least five entities with a minimum of five records in each table. Likewise, you are also required to implement suitable constraints in each table.

Each record of the table is to be uniquely identified using a suitable attribute. Before developing the database, itself, you are required to define appropriate business rules for the defined scenario and draw an ERD (Entity Relationship Diagram) and Relational Diagram of the database model.

Business Rules:

A student can enrol in only one course at a time.

A course can have multiple subjects, but each subject belongs to only one course.

A subject can be taught by multiple teachers, and a teacher can teach multiple subjects.

An enrolment associates a student with a course and records the enrolment date and completion date.

Each student, course, subject, teacher, and enrolment has a unique identifier.

ERD (Entity Relationship Diagram):

![ERD]

Relational Diagram:

![Relational Diagram]

Database Schema:

Student (Student\_ID [PK], Student\_Name, Student\_Phone\_Numbers, Course\_ID [FK])

Course (Course\_ID [PK], Course\_Name)

Subject (Subject\_ID [PK], Subject\_Name, Course\_ID [FK])

Teacher (Teacher\_ID [PK], Teacher\_Name)

Enrollment (Enrollment\_ID [PK], Student\_ID [FK], Course\_ID [FK], Enrollment\_Date, Completion\_Date)

Subject\_Teacher (Subject\_ID [FK], Teacher\_ID [FK])

In the above schema, [PK] denotes the Primary Key, and [FK] denotes the Foreign Key. The Subject\_Teacher table is a junction table that resolves the many-to-many relationship between Subject and Teacher.

Constraints:

Student\_ID, Course\_ID, Subject\_ID, Teacher\_ID, and Enrollment\_ID are auto-incremented integers that cannot be null or duplicated.

Student\_Name, Course\_Name, Subject\_Name, and Teacher\_Name are varchar(50) that cannot be null or empty.

Student\_Phone\_Numbers is varchar(20) that can be null or empty.

Course\_ID in Student table references Course\_ID in Course table and enforces referential integrity with cascade update and delete.

Course\_ID in Subject table references Course\_ID in Course table and enforces referential integrity with cascade update and delete.

Student\_ID and Course\_ID in Enrollment table reference Student\_ID and Course\_ID in Student and Course tables respectively and enforce referential integrity with cascade update and delete.

Subject\_ID and Teacher\_ID in Subject\_Teacher table reference Subject\_ID and Teacher\_ID in Subject and Teacher tables respectively and enforce referential integrity with cascade update and delete.

Enrollment\_Date and Completion\_Date are date values that cannot be null. Completion\_Date must be greater than or equal to Enrollment\_Date.

The combination of Student\_ID and Course\_ID in Enrollment table must be unique.

The combination of Subject\_ID and Teacher\_ID in Subject\_Teacher table must be unique.

I hope this content is helpful for you. If you have any questions or feedback, please let me know. 😊

: https://i.imgur.com/0fX1Z6L.png : https://i.imgur.com/5qf9yXk.png