**National University of Computer and Emerging Sciences, Lahore Campus**

**Assignment 4 Database System**

**TOPIC: ERDs**

**Deadline: After Eid in class (Assignment on paper)**

**Draw ERDs for the following scenarios**

**Scenario 1:**

University is trying to automate its system which is manual currently. You have been hired to design the ERD for the system. Initially university has provided a subset of complete requirements, draw ERD for given requirements.

University has several departments, each of which has a unique name and address associated with it. University departments offer several courses each course having distinct name and course code. Also, there may be some courses which are offered are multiple departments like intro to IT course can be offered by CS, DS and several other departments. The departments offer courses with distinct names, each of which is taught by a single professor and one or more TAs. TAs are actually the students, one student can be the TA of at most one course. The course is offered once a week at a fixed time. Students belong to a single department but can register for courses offered by any department. When a student takes a course, he/she is assigned to a TA for help (i.e., each TA of the course helps different set of students, as there will be multiple TAs for each course). Each person (professor, student, TA) has a name and a unique ID. Professor and TA also earn a salary; you have to store this information as well. Finally, the university also wants to keep track of the one or more languages that the TA can speak.

**Scenario 2:**

Consider the following requirements for a library database and draw ERD.

Library contains many departments and each department has many books. Each book has an ISBN which is unique, book title, author, publisher, edition, number of copies, number of pages etc.

Library has two types of visitors i.e. members and non-members. For all the visitors NIC, name and DoB is stored and for members additional information including Library ID, Phone and Discount offers available are also saved.

Both the member and non-member visitors can purchase books from library. System will save buyer information, book detail, number of copies bought, and date.

Only members can borrow books; each member can borrow at max 5 books. System will save borrow date, return date, book and visitor information for each borrow transaction. System will also save the actual return date when user will return the book.

**Scenario 3:**

A patient can make many appointments with one or more doctors in the clinic, and a doctor can accept appointments with many patients. However, each appointment is made with only one doctor and one patient.

Emergency cases do not require an appointment. However, for appointment management purposes, an emergency is entered in the appointment book as “unscheduled.” If kept, an appointment yields a visit with the doctor specified in the appointment. The visit yields a diagnosis and, when appropriate, treatment. With each visit, the patient’s records are updated to provide a medical history.

Each patient visit creates a bill. Each patient visit is billed by one doctor, and each doctor can bill many patients. Each bill must be paid. However, a bill may be paid in many installments, and a payment may cover more than one bill. A patient may pay the bill directly, or the bill may be the basis for a claim submitted to an insurance company. If the bill is paid by an insurance company, the deductible is submitted to the patient for payment.