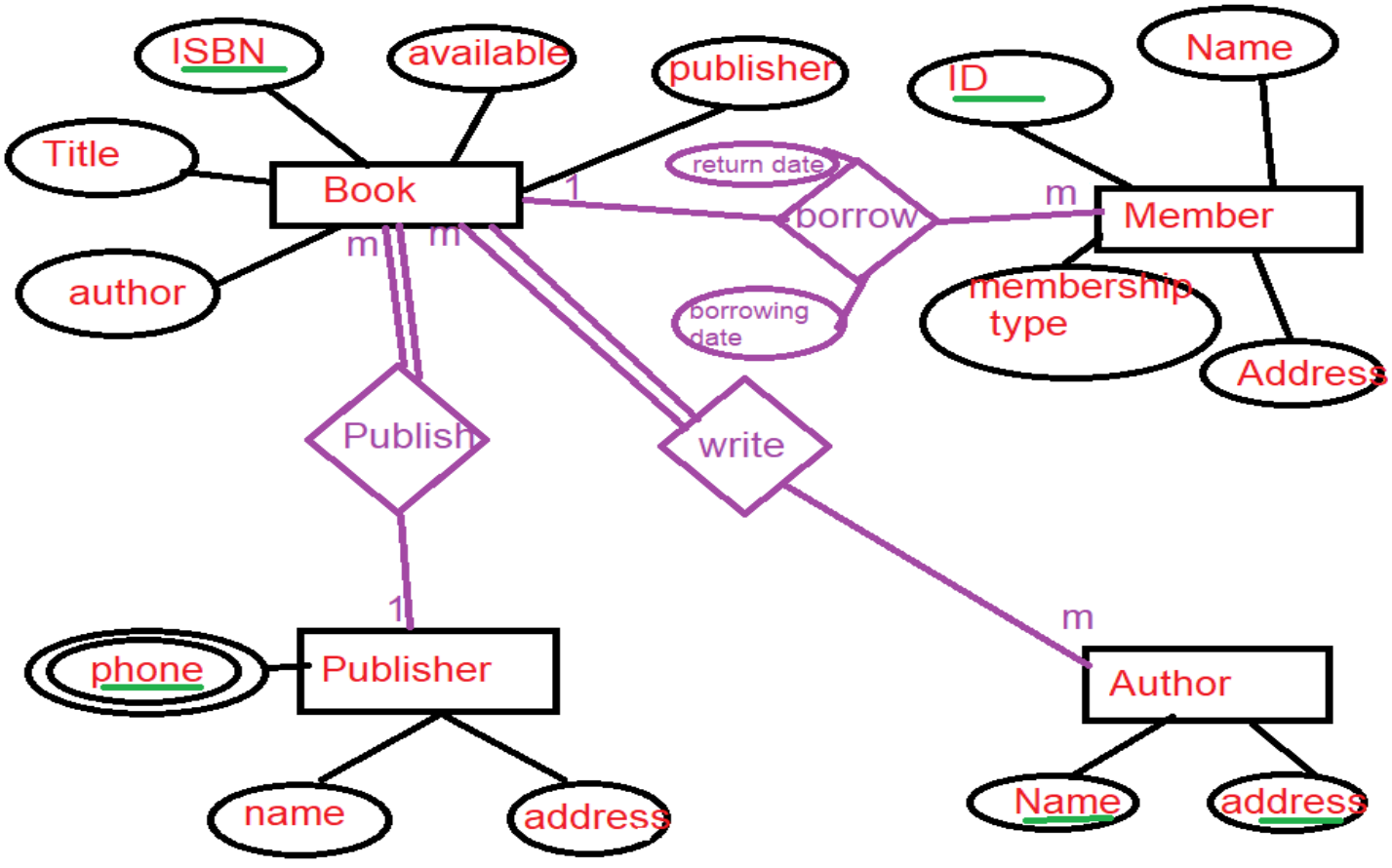
ERD Problems

Problem 1: Library Management System

Design a database for a library system. The system keeps track of each book in the library. Data recorded about each book are (ISBN, Title, Author, Publisher and if it is available for borrowing or not). One or more authors may write a book. Each author has a name and an address. Each book is published through one publisher only. Each publisher has a Name, Address and more than one Phone. Library members can borrow just one book at a certain time. Borrowing date and return date must be recorded for every borrowed book. Each member has an ID, Name, Address and membership type (Premium / Regular)



Problem 2: University Management System

1. Assiut University is divided into several faculties: Faculty of Arts, Faculty of Engineering..etc. Each faculty is administrasted by a dean.

2. Each Faculty is composed of several departments.

3. Each department offers several courses.

4. Each department employs several professors, but each professor is assigned to a single department.

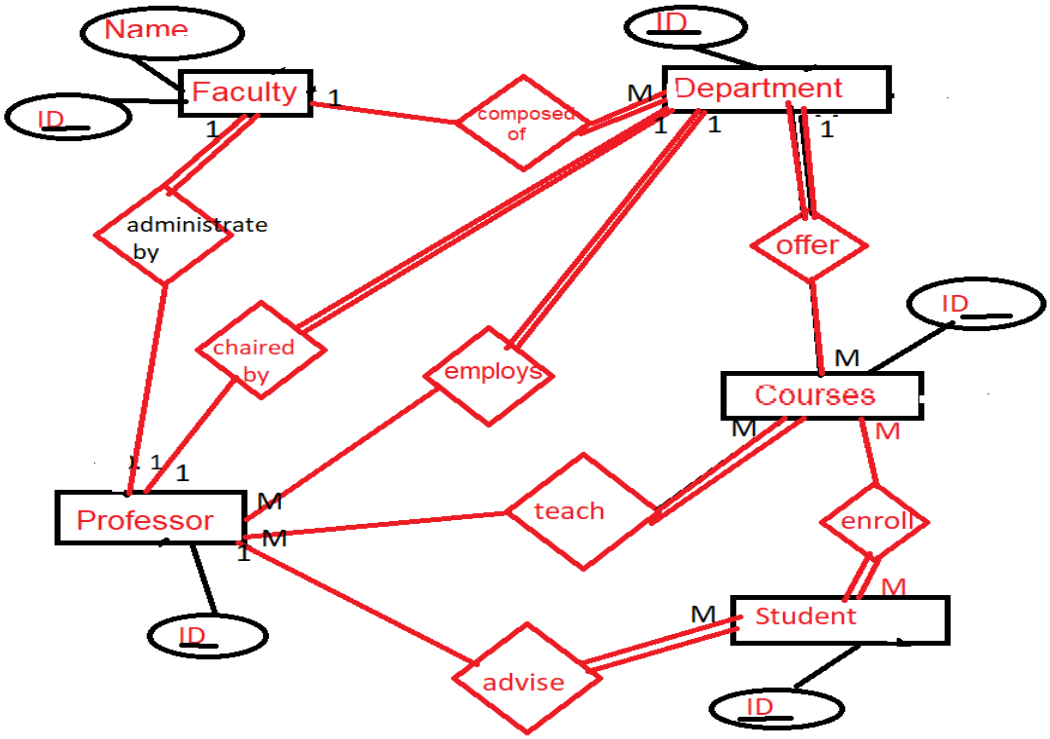
5. Each department is chaired by a department chair, who is a professor.

6. Each professor may teach several courses. A professor may also be on research contract and teach no courses at all.

7. Each course is taught by several professors.

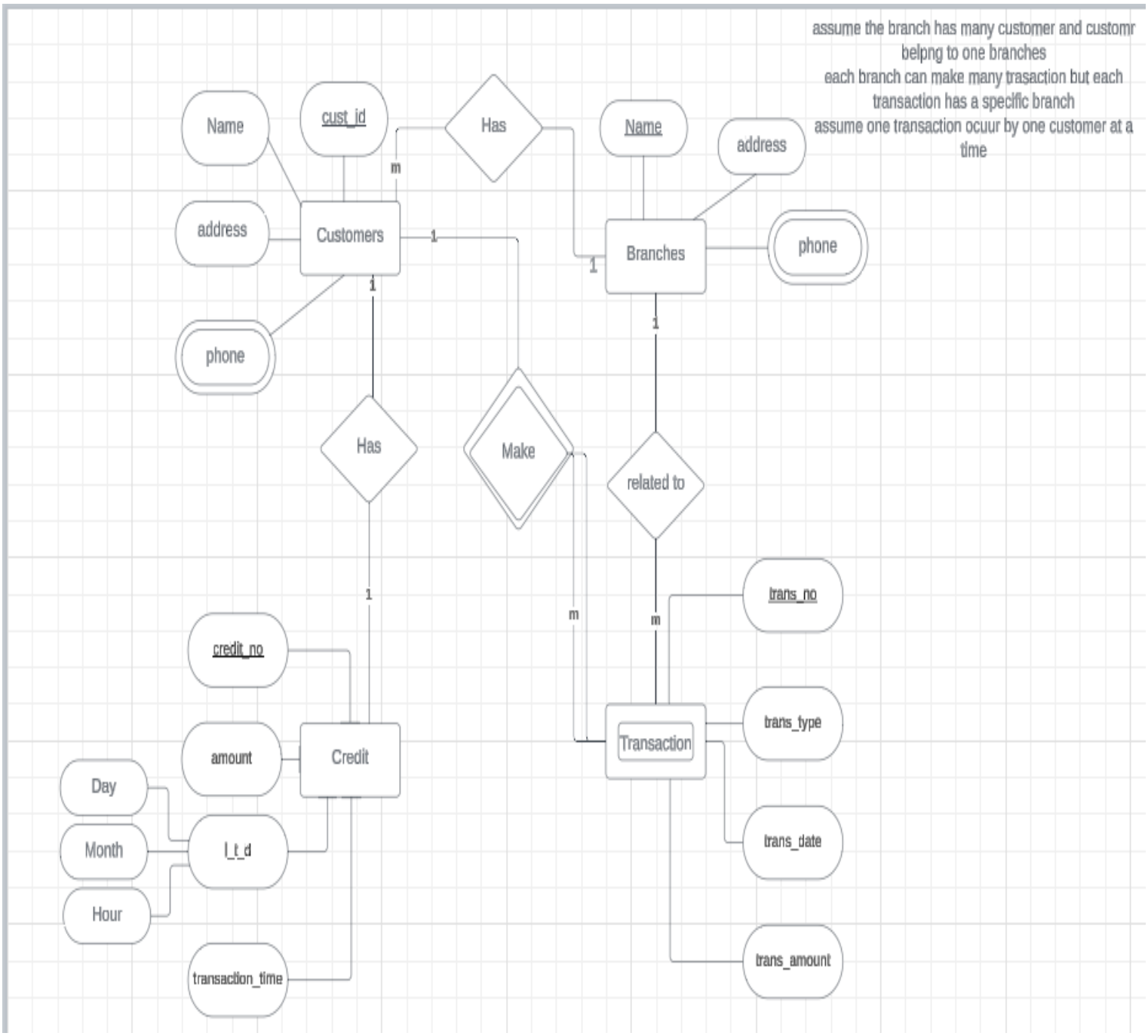
8. Each student can enroll in several courses.

9. Each student has an advisor in his department. Each advisor advises several students. An advisor is also a professor, but not all professors advises students.



Problem 3: . **Estimate any missing assumptions**

A database for a banking system is used to control withdrawal, deposit and loan transactions with customers, banks which use this system has many branches, each branch has a unique name, address (unique) and phone .The system stores information about customers as cust_id (unique), name, address, and phones. each customer has one credit identified by credit_no (unique), amount and last_transaction_date(day,month,hour),transaction_time. Customer can make any type of transactions(withdrawal,deposit) from any branch of the bank .the system record trans_no, trans_type, trans_date, trans_amount .system record the branch name where the transaction occurred.



Problem 4 :license issuing process of vehicles

Design an ER diagram for a license issuing process of vehicles. The data requirements are as follows:

- The country is divided into departments (Cairo, Giza, Alex…etc). Each department is described by a code (unique), name (unique), and several service locations (e.g., for Cairo department, there are: Heliopolis, Nasr City, etc.).

- Each vehicle is described by a vehicle no, model(ex. Hyundai accent, Hyundai matrix ,fiat 128,fiat punto) , type(private, limousine, taxi,…etc), color, motor capacity, number of seats, manufacturing year, license issue date, license expiry date, owner, tax rate, and a set of fins. The owner, type and tax rate information are mandatory for each vehicle. Each vehicle model is identified by a code (unique), name (unique) and tax category. Each tax category has a specific tax rate and category_id. The tax category has one or more vehicle models.

- Each vehicle fin is described by a number (unique), type, date, and vehicle no. Each fin type has a specific value and description.
- Each owner is described by id (unique), name, type (individual, organization, government, etc.), address, and set of phone numbers.