

1. a) What are the main phases in the database design? What is done on each development phase?

Initial phase -- characterize fully the data needs of the prospective database users.

- Second phase -- choosing a data model • Applying the concepts of the chosen data model

- Translating these requirements into a conceptual schema of the database. • A fully developed conceptual schema indicates the functional requirements of the enterprise.

- Describe the kinds of operations (or transactions) that will be performed on the data.

Final Phase -- Moving from an abstract data model to the implementation of the database

- Logical Design –Deciding on the database schema. • Database design requires that we find a “good” collection of relation schemas.

- Business decision –What attributes should we record in the database?

- Computer Science decision –What relation schemas should we have and how should the attributes be distributed among the various relation schemas?

- Physical Design –Deciding on the physical layout of the database

- b) What is the entity-relationship (ER) data model?

Entity Relationship Model (covered in this chapter) • Models an enterprise as a collection of entities and relationships

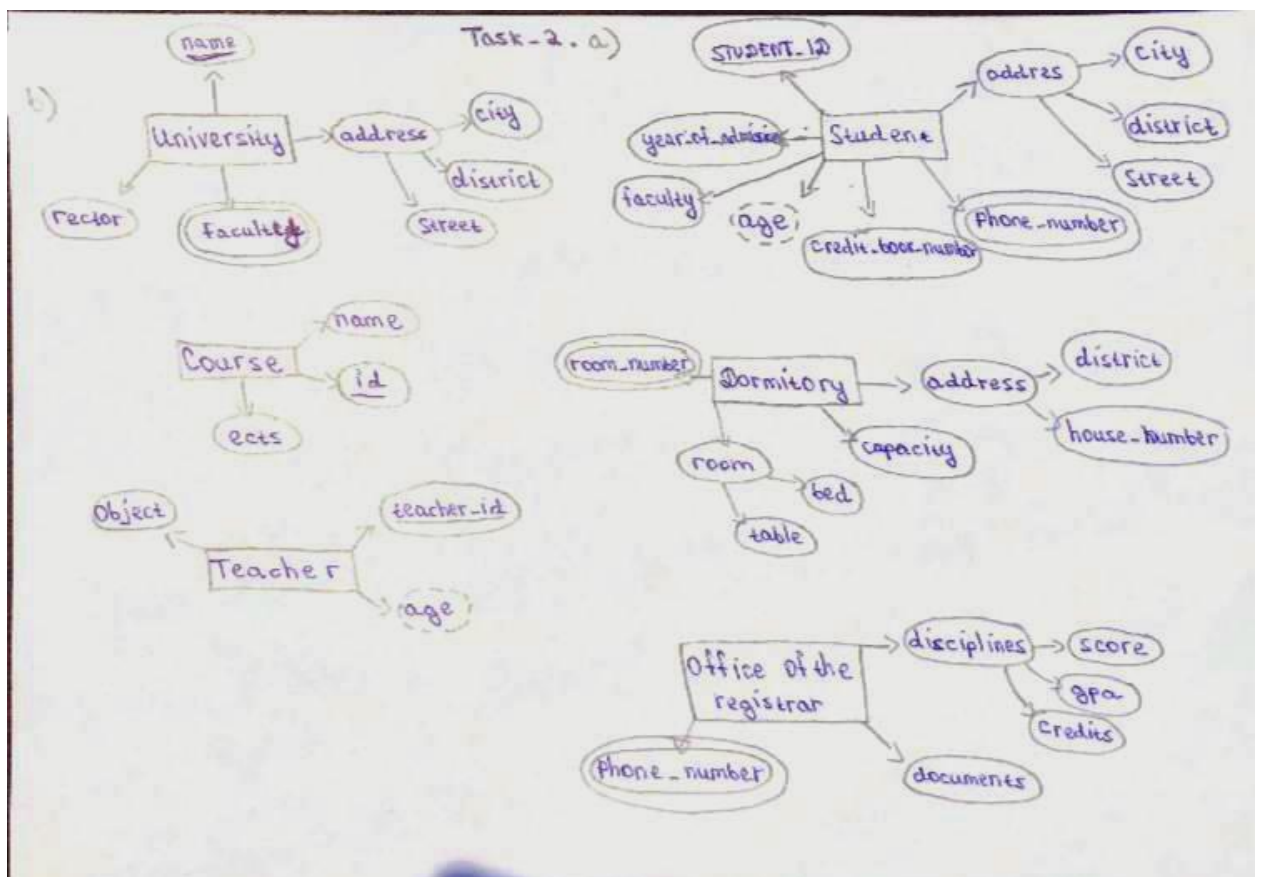
- Entity: a “thing” or “object” in the enterprise that is distinguishable from other objects

- Described by a set of attributes • Relationship: an association among several entities

- Represented diagrammatically by an entity-relationship diagram:

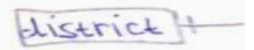
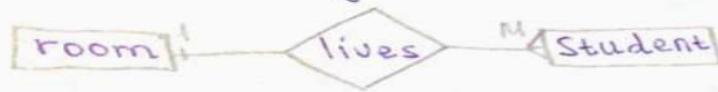
- Formalize what designs are bad, and test for them

2.



3.

3. one-to-many



one-to-one



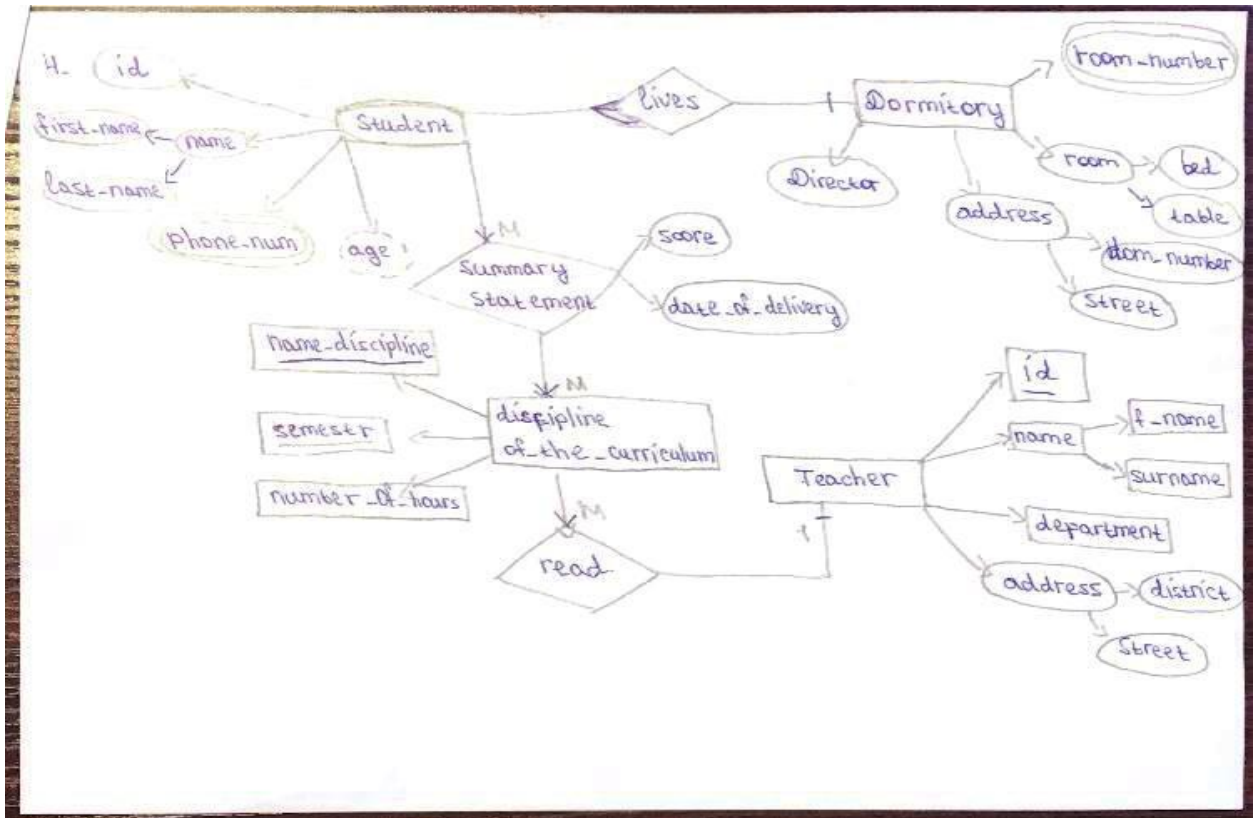
many-to-many



many-to-one



4.



5.

