Laboratory work 4

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?

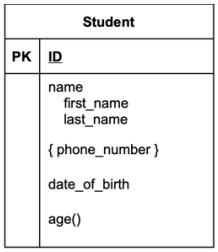
- Physical Design – Deciding on the physical layout of the database

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

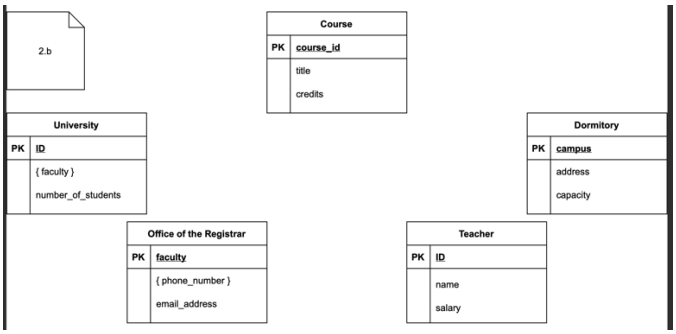
Is a graphical illustration of data elements and their relations. Models an enterprise as a collection of entities and relationships

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

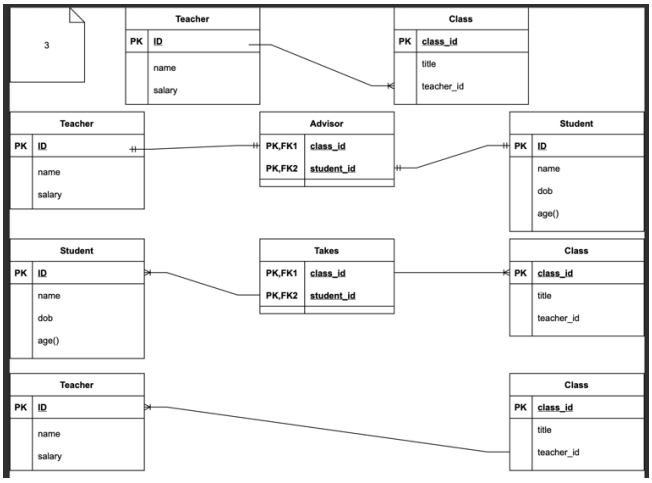
2.a) Create entity “Student” with at least 5 attributes (One for each type of attribute: simple, composite, derived, multivalued)



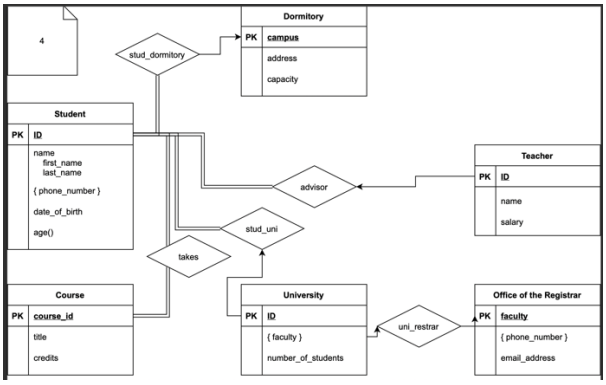
2.b) Create entities “University”, “Course”, “Dormitory”, “Teacher”, “Office of the Registrar” with at least 3 attributes each. (Entity types should be correct on data model)



3. Give examples for one-to-many, one-to-one, many-to-many, many-to-one relations. (Draw the examples as a scheme)



4. Create ER data model with relations using data from the second task.



5. Create ER data model for IT company. (At least 5 entities and 8 relations)