# Molchanov Semen
# Laboratory work 4

1.

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

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

2.

a) Create entity **"Student"** with at least **5 attributes** (One for each type of attribute: **simple, composite, derived, multivalued**)

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**)

## Answers

1.

a) There are 3 phases of the database design.

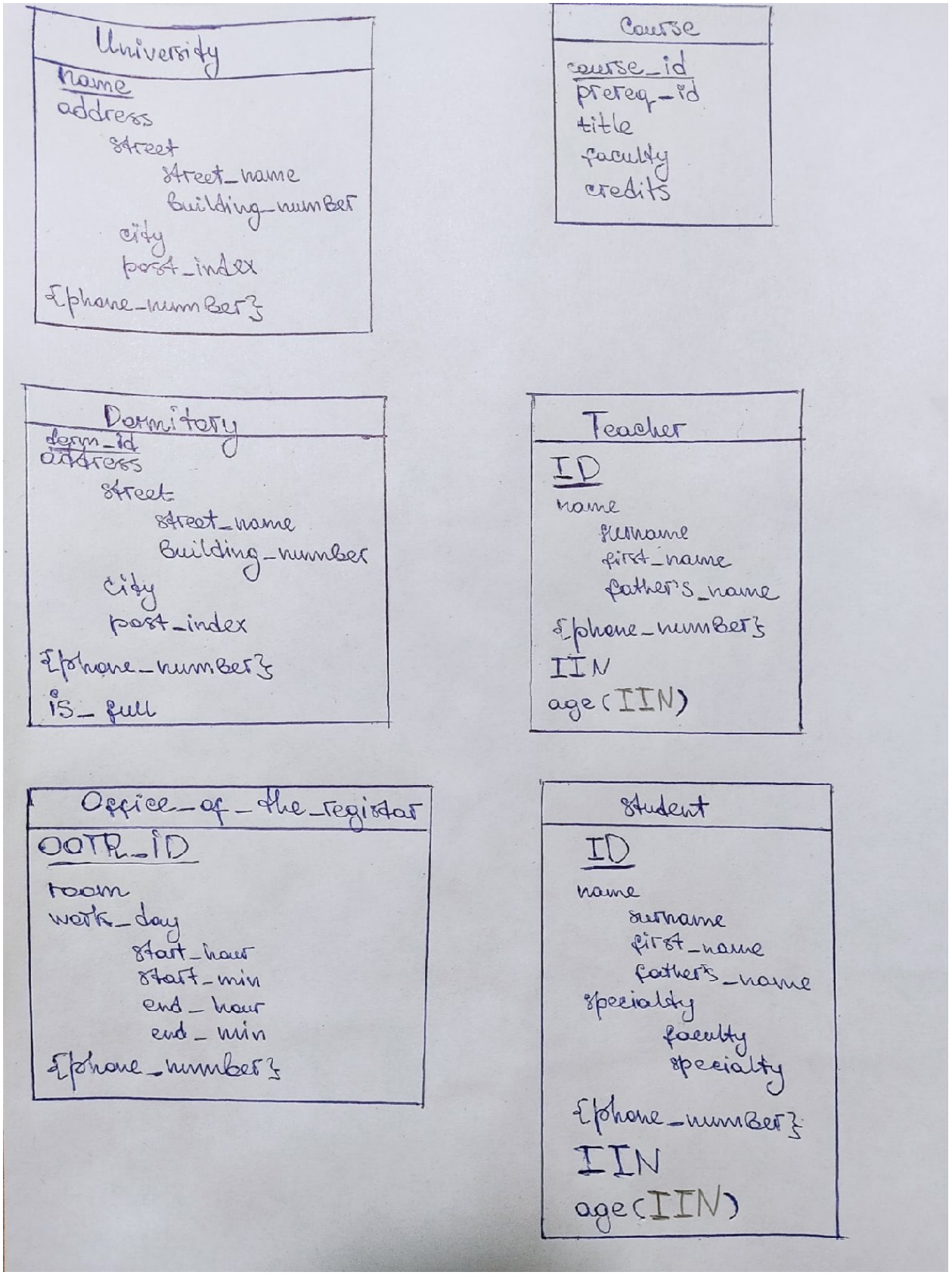
1) At initial phase we fully describe the needs of the future database users
2) At the second phase we choose a data model and do the following
   - Apply the concepts of the chosen model
   - Translate these requirements into the conceptual schema of the database, which will indicate requirements of the enterprise
   - Describe operations that will be performed on data
3) At the final phase we move from an abstract data model to the implementation of the DB. We implement logical design and physical design.

   Logical design is implemented basing on 2 decisions: business decision (what attributes to record in the database) and computer science decision (which kind of DB to use).

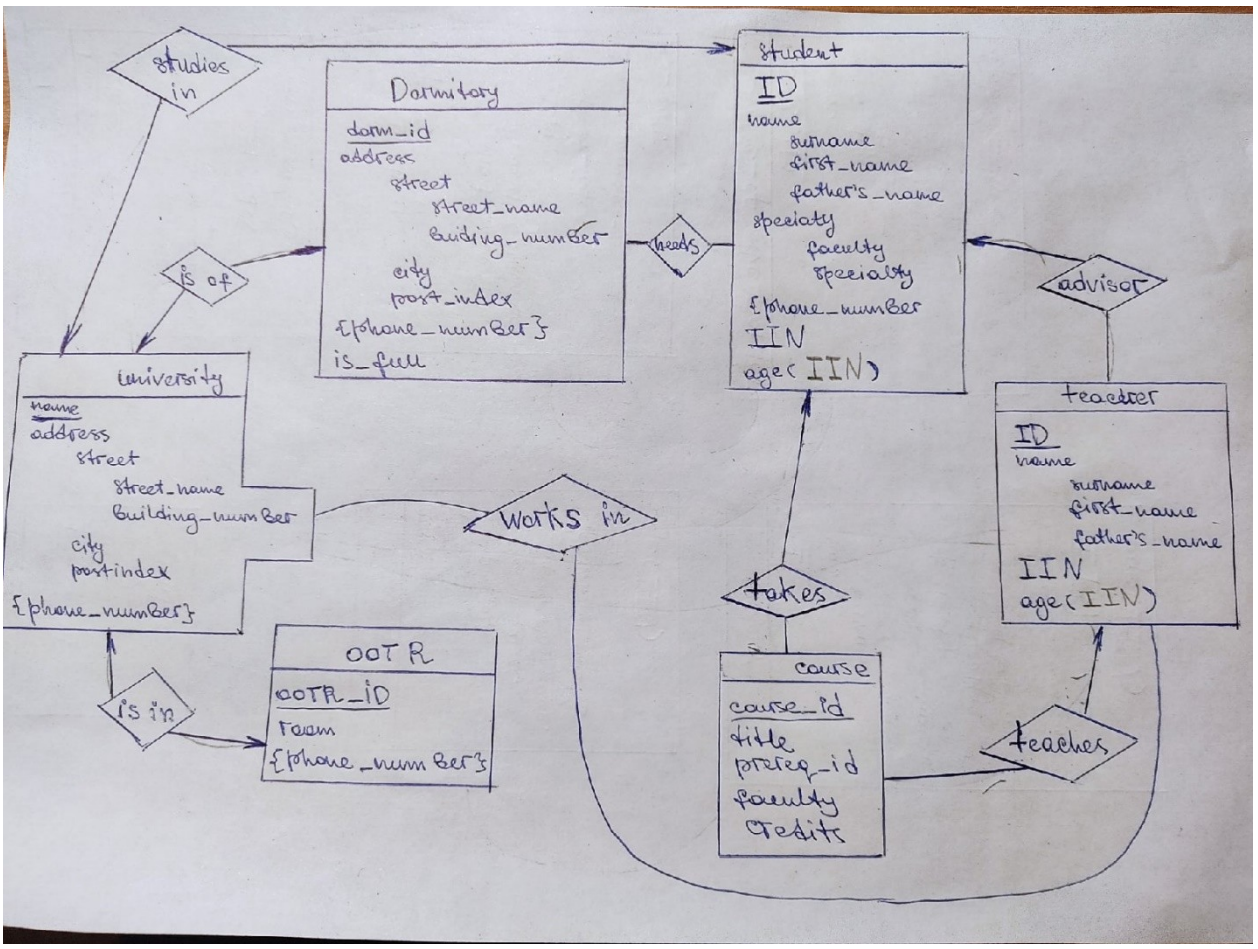
   Physical design – choosing the right physical layout for the DB.

b) Entity relationship (ER) model is one of the most common data models used in database design. It allows to create the main entities and define relations between those entities

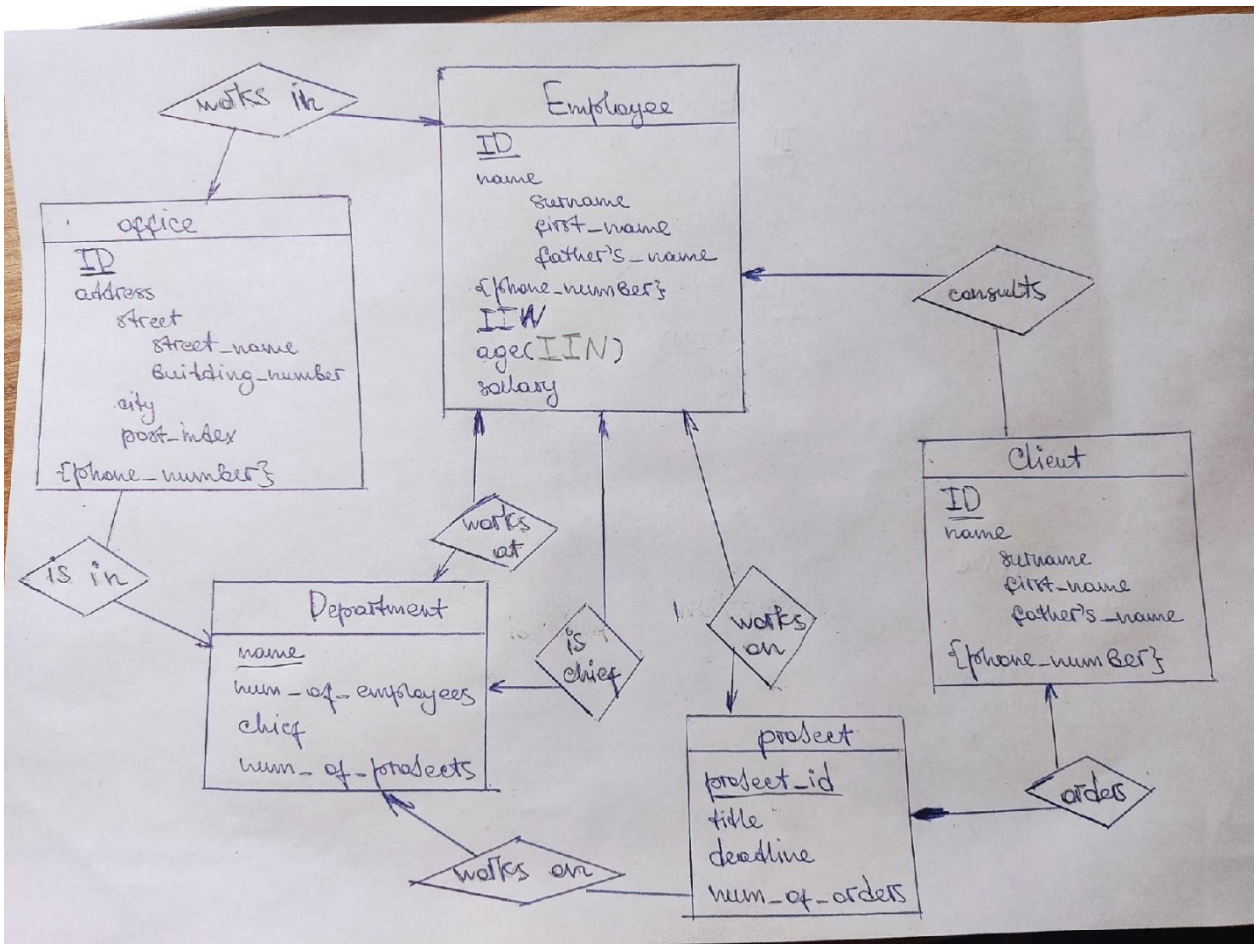
2. A and B




3. Examples are in 3rd and 4th
4. ER model for task 2




5. ER model for IT company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Employee
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building_number
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