a) 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

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

Physical Design

b) The entity-relationship (E-R) data model was developed to facilitate database design by allowing specification of an enterprise schema that represents the overall logical structure of a database Entity Relationship Model (ER Modeling) is a graphical approach to database design. It is a high-level data model that defines data elements and their relationship

2)

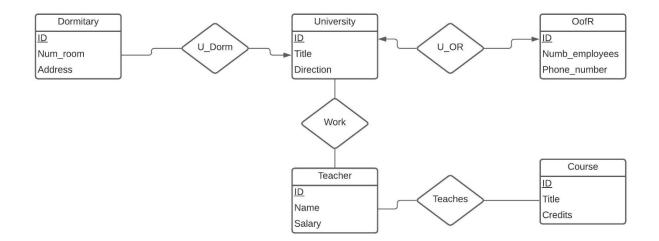
a)

```
E Student

ID

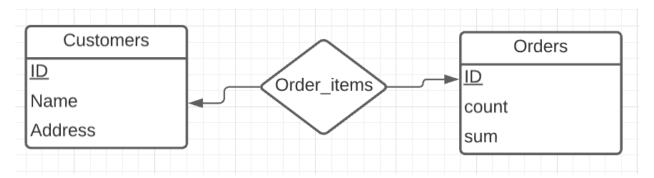
name
first_name
last_name
address
city
street
zip
{skills}
date_of_birth
age()
Dorm
```

b)

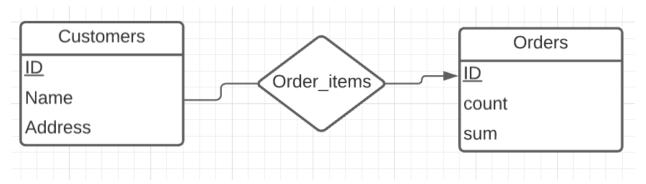


3)

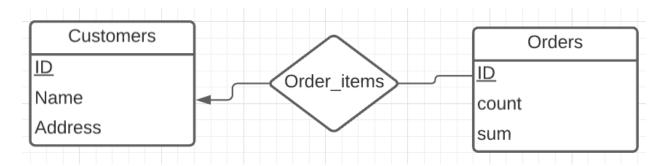
One-to-one



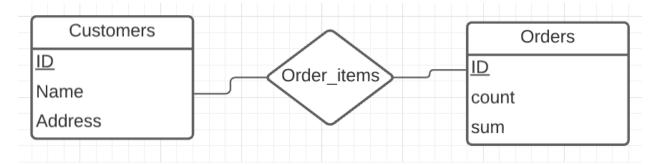
Many-to-one



One-to-many



Many-to-many



4.

