Victoria University of Bangladesh
Program: BSc. In CSIT
Department:- CSE
Semester:- Sp Summer 2022

Course title:- Database Management System
Course code:- CSI 221

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Batch:- 20

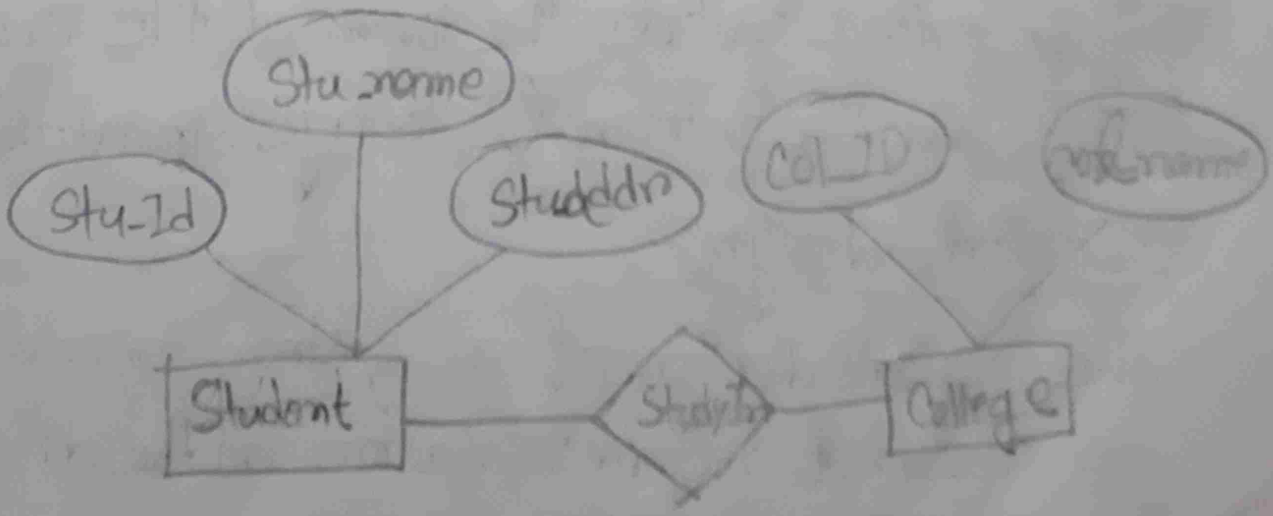
Term:- Final

Ans to the Q no-1(a)

ER diagrams:- An entity relationship diagram (ERD), also known as an entity relationship model, is a graphical representation that depicts relationships among people, objects, places, concepts or events within ~~an int~~ a system.

ER diagrams are related to data structure diagrams, which focus on the relationships of elements within entities instead of relationships between entities themselves.

Ex:-



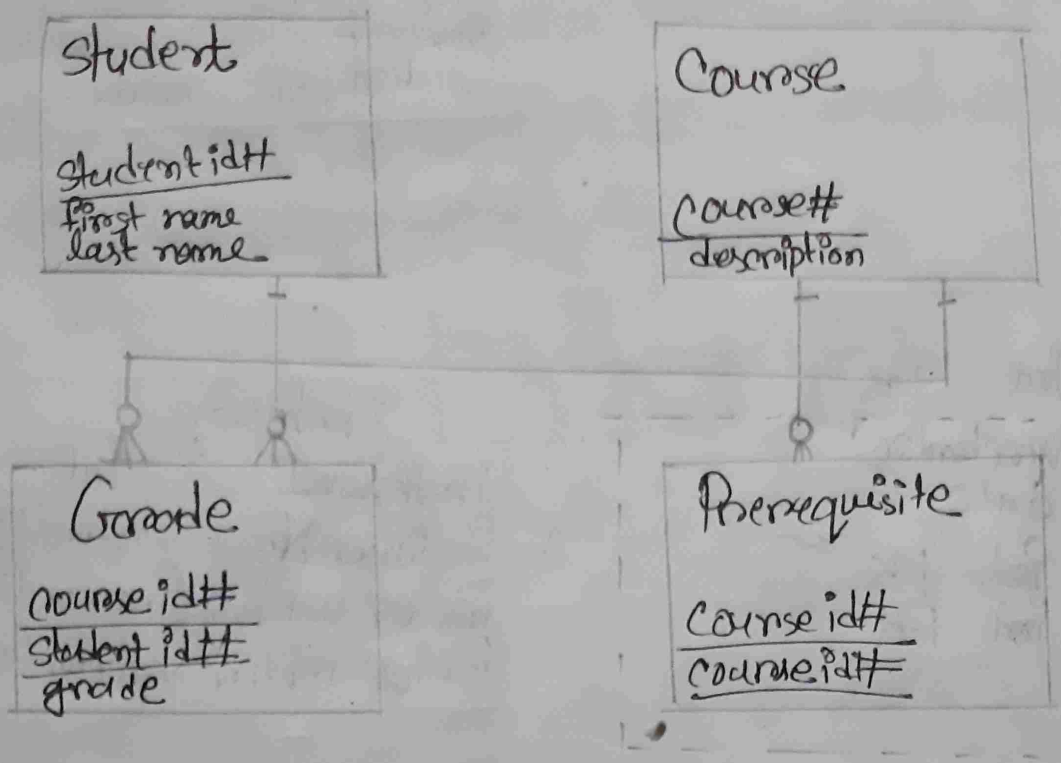
Ans to the Q no - 1(b)

The process of moving from an abstract data model to the implementation of the database proceeds in two final design phases. In the logical-design phase, the designer maps the high-level conceptual schema onto the implementation data model of the database system that will be used. The designer uses the resulting system-specific database schema in subsequent physical-design phase, in which the physical features of the database are specified. This feature include the forms of file organization and the internal storage structures.

① Logical-design:-

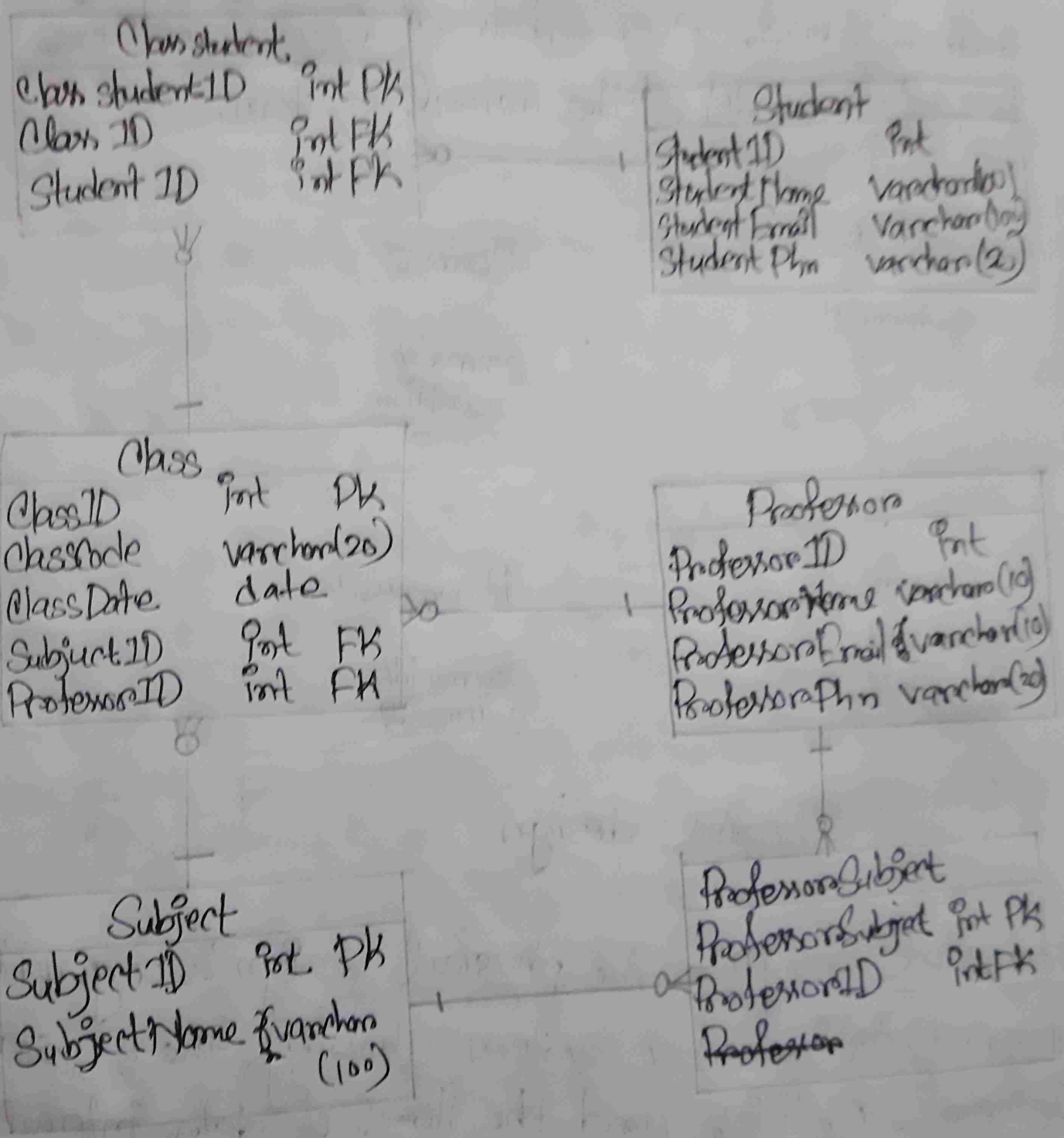
The logical design of a system pertains to an abstract representation of the data flows inputs and outputs of the system.

This is often conducted via modeling, using an ~~over abstract~~ over-abstract (and sometimes graphical) model of the actual system.



Logical design

(4) Physical design:- The physical design is a graphical representation of a system showing the system's internal entities and the flows of data into and out of this entities

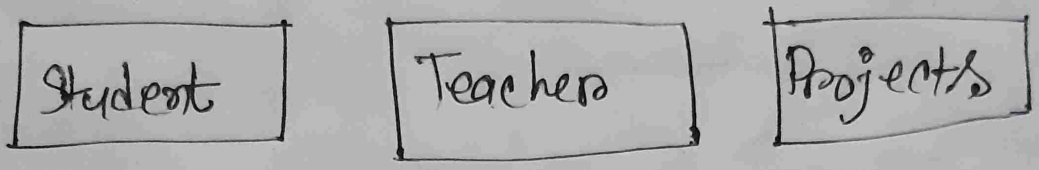


Physical design

Ans to the Q no-2(a)

List of Entity Relationship model concepts:-

Entity:- Entities are represented by means of rectangles. Rectangles are named with the entity set they represent.



Attributes:- Attributes are the properties of entities. Attributes are represented by means of ellipses. Every ellipse represent one attribute and is directly connected to its entity.

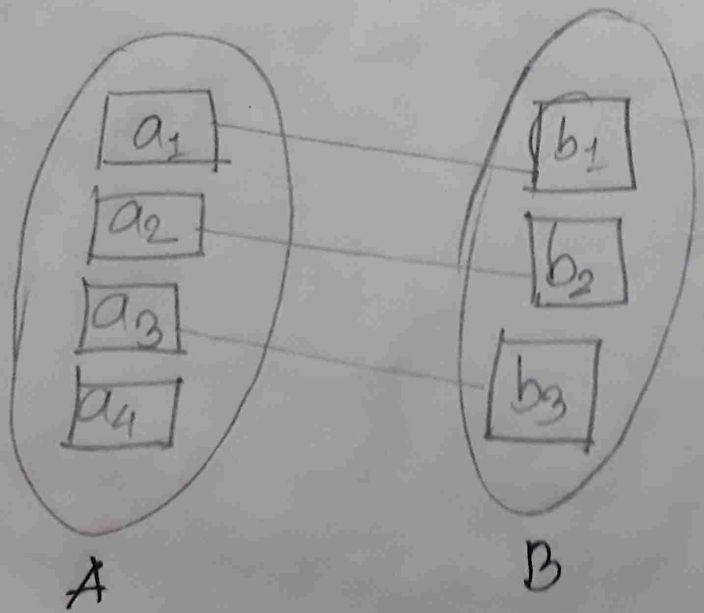
Relationship:- Relationship are represented by diamond-shaped box. Name of the relationship is written inside the diamond-box. All the entities participating in a relationship, are connected to it by a line.

Ans to the Q no - 2(b)

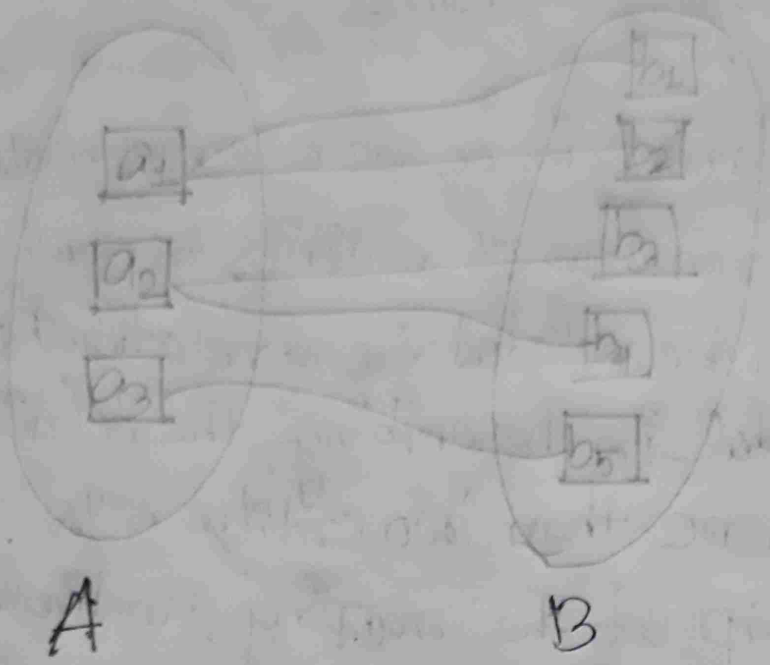
Mapping Cardinality Constraints:-

A mapping constraint is a data constraints that expresses the number of entities to which another entity can be related via a relationship set. It is most used in describing the relationship sets that involve more than two entity sets. For binary relationship set the mapping cardinality must be one of the following types:

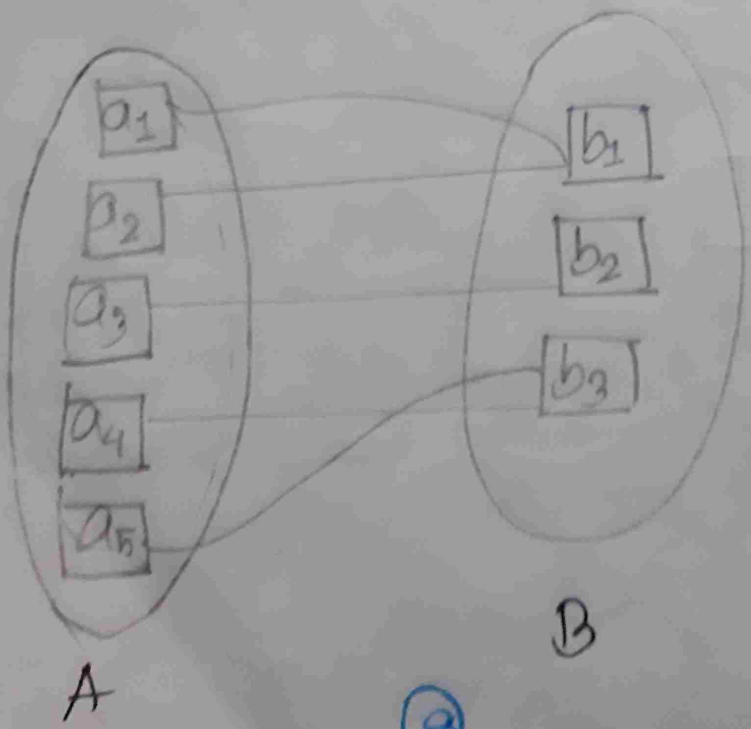
① One to one:-



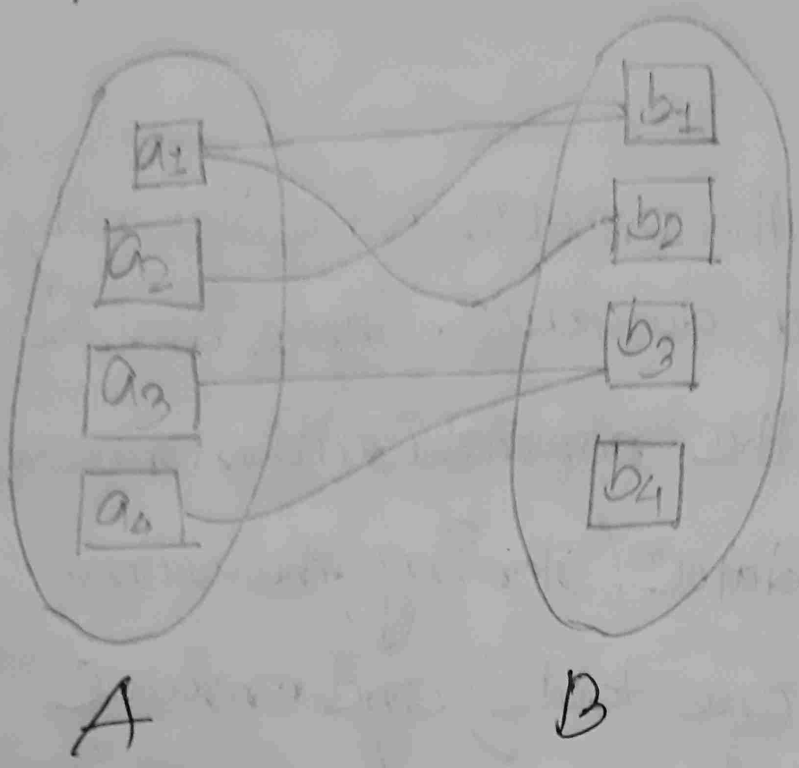
(v) One to many:-



(vi) Many to one:-



(v) Many to many:-



Note:- Some elements in A and B may not be mapped to any elements in the othe set.

Ans to the Q no-3(a)

Normalization:-

Normalization is the process of efficiently organizing data in a database. There are two main objectives of the normalization process: "eliminate redundant data" (storing the same data in more than one table) and ensure data dependencies make sense (only storing data in a table). Both of these are valuable goals as they reduce the amount of space a database consumes and ensure that data is logically stored.

Goals of normalization:-

① Arranging data into logical groups such that each group describes a small part.

of the whole.

(iv) Minimalizing the amount of duplicated data stored in a database.

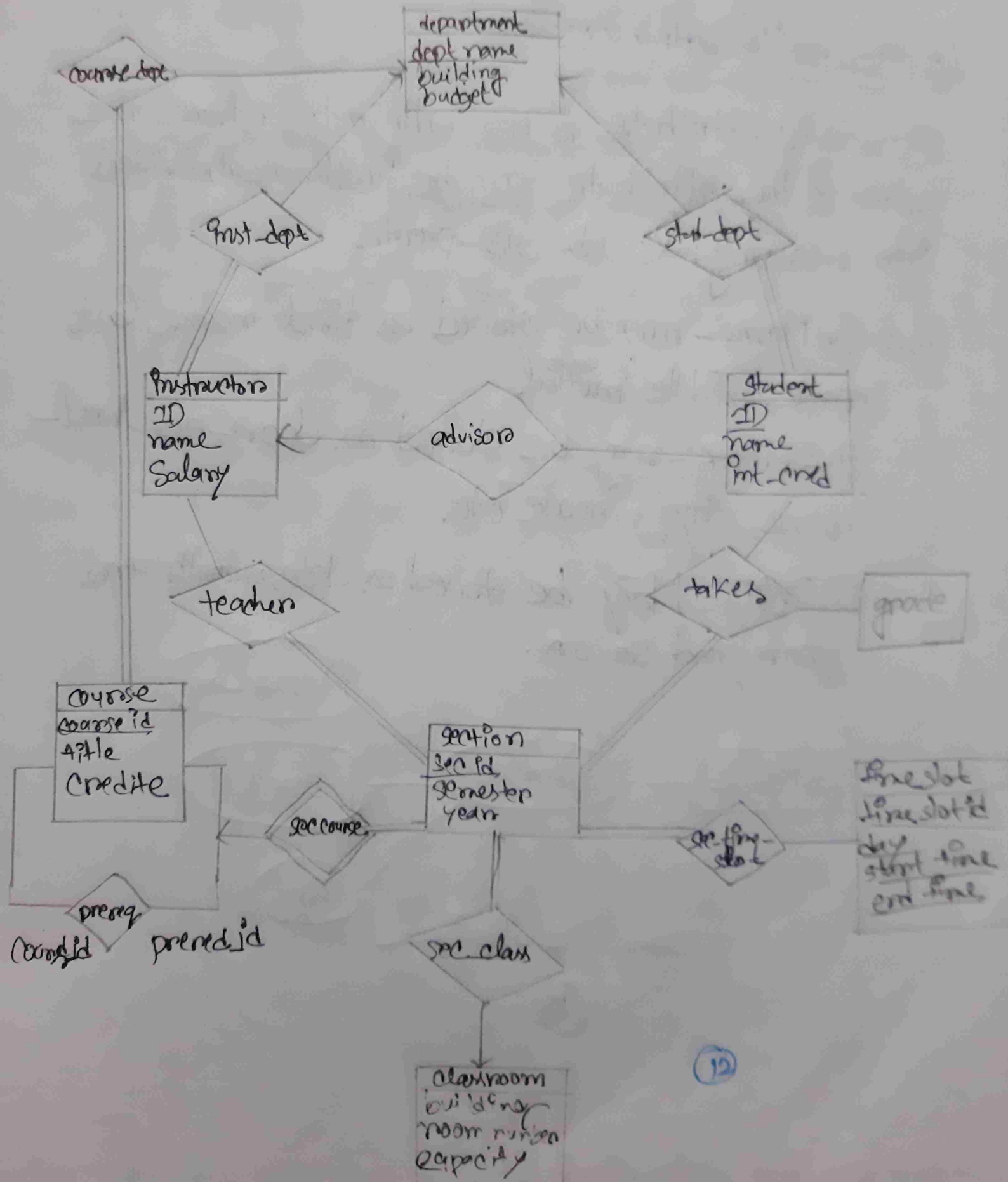
(v) Building a database in which you can access and manipulate the data quickly and efficiently without compromising the integrity of the data storage.

(vi) Organising the data such that when you modify it, you make the changes in only one place.

(ii)

Ans to the Q no - 3(b)

En diagram for a University database -



Ans to the Q no - 4(a)

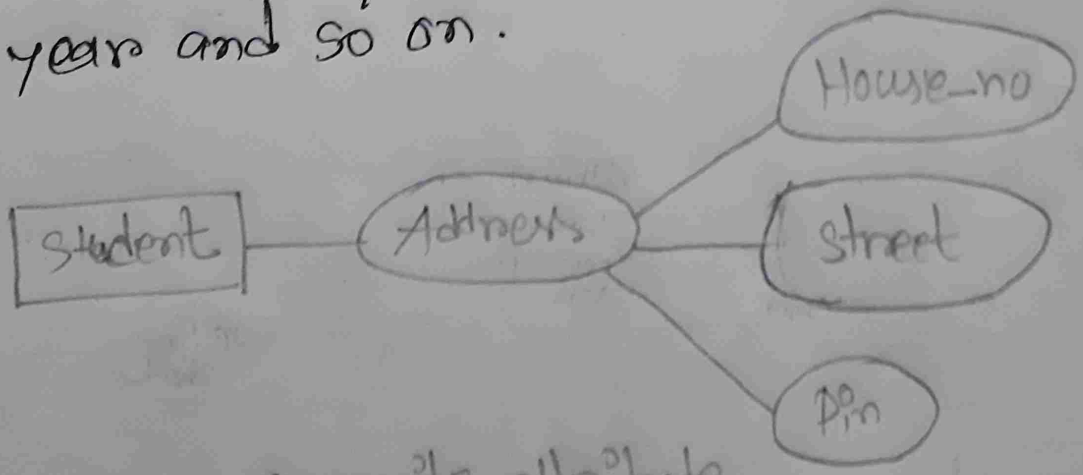
[1] Composite attributes:-

Composite attributes is an attribute where the values of the attribute can be further subdivided into meaningful sub-parts

Ex:- (1) Name:- may be stored as first name, last name, middle initial

(2) Address:- may be stored as door_no, street-name, city, pincode etc.

(3) DOB:- May be stored as date, month and year and so on.



composite attribute

Ans to the Q no - 4(b)

Schema diagram for University database -