Chapter 4- Entity Relationship Diagram Solution

Chapter 4 -ERD

Submit before Due date

QUESTION 1

The Hudson Engineering Group (HEG) has contacted you to create a conceptual model whose application will meet the expected database requirements for the company's training program. The HEG administrator gives you the following description of the training group's operating environment. (*Hint:* Some of the following sentences identify the volume of data rather than cardinalities. Can you tell which ones?)

The HEG has 12 instructors and can handle up to 30 trainees per class. HEG offers 5 Advanced Technology courses, each of which may generate several classes. If a class has fewer than 10 trainees, it will be cancelled. Therefore, it is possible for a course not to generate any classes. Each class is taught by one instructor. Each instructor may teach up to 2 classes or may be assigned to do research only. Each trainee may take up to 2 classes per year.
Given that information, do the following:

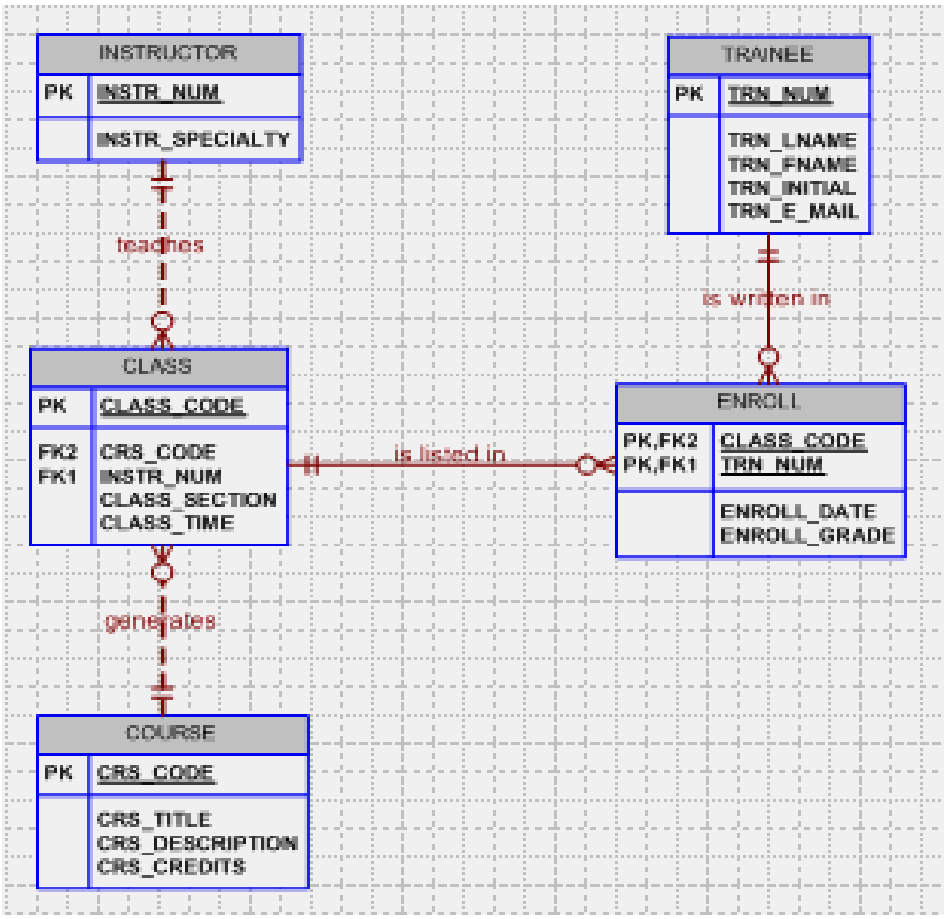
a. Define all of the entities and relationships. (Use Table)

b. ENTITY	RELATIONSHIP	CONNECTIVITY	ENTITY
Course	generate	1:M	Class
Class	Consist	M:M	Trainee
Instructor	teach	1:M	Class

Oleh kerana, Class dan Trainee M:M so breakdown guna bridge entity ENROLL

ENTITY	RELATIONSHIP	CONNECTIVITY	ENTITY
INSTRUCTOR	teaches	1:M	CLASS
COURSE	generates	1:M	CLASS
CLASS	is listed in	1:M	ENROLL
TRAINEE	is written in	1:M	ENROLL

Draw ERD to show all entity, attribute (Use your own attribute), Primary key, foreign key, cardinality and connectivity

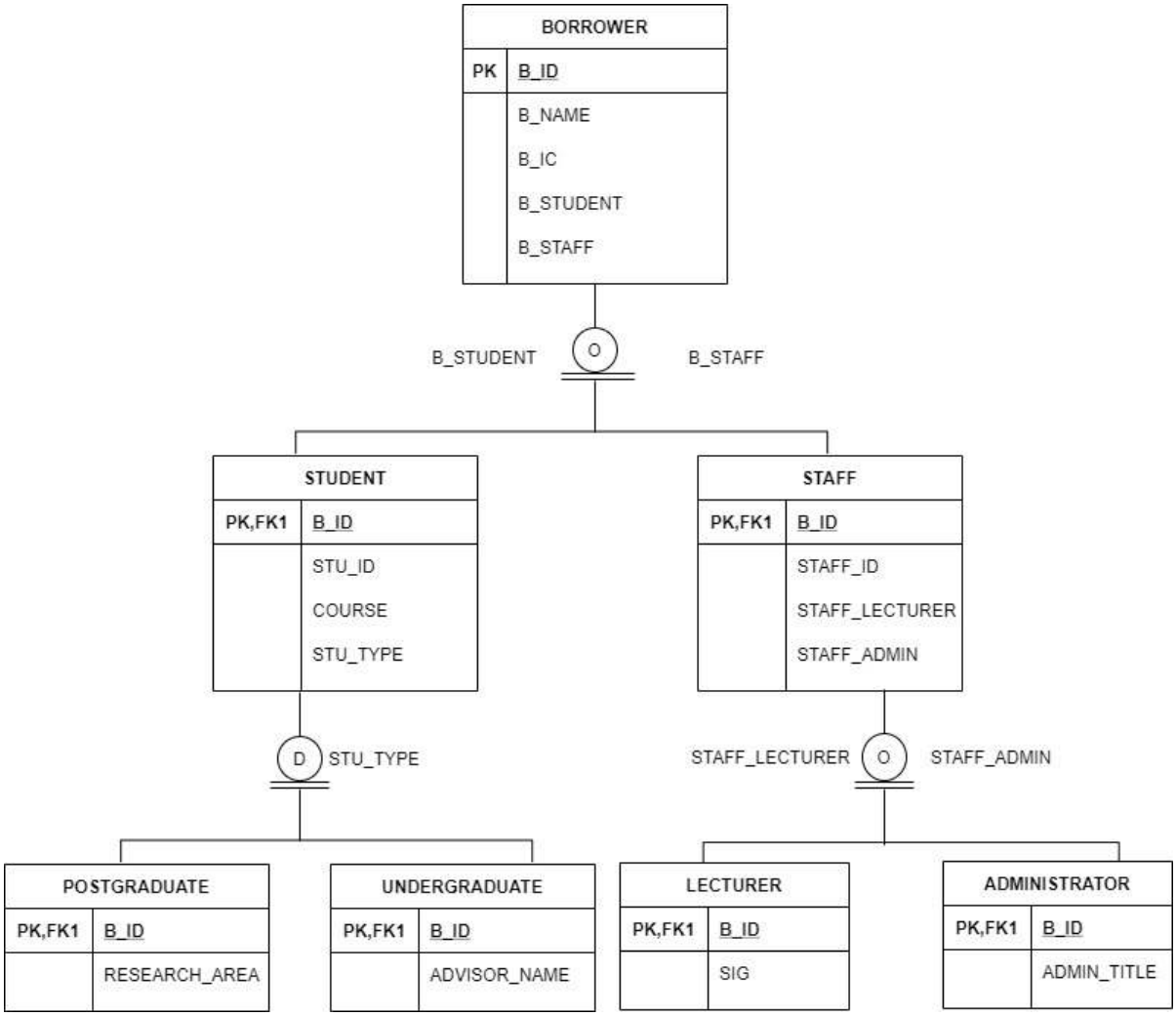


QUESTION 2:

Given are the business rules for UiTM library system

- The book borrower may be classified either as a student or a staff.
- A staff who is doing a part-time program is also classified as a student.
- A staff may be a lecturer or an administrator or both.
- A student is either a postgraduate or undergraduate student

Draw an Extended Entity Relationship Diagram (EERD) that shows a generalization hierarchy of supertype and subtype entities. Your answer must fulfill the rules of EERD (Primary key, foreign key, disjointness and overlapping constraint, completeness constraint) (*Use your own attribute)*



QUESTION 3

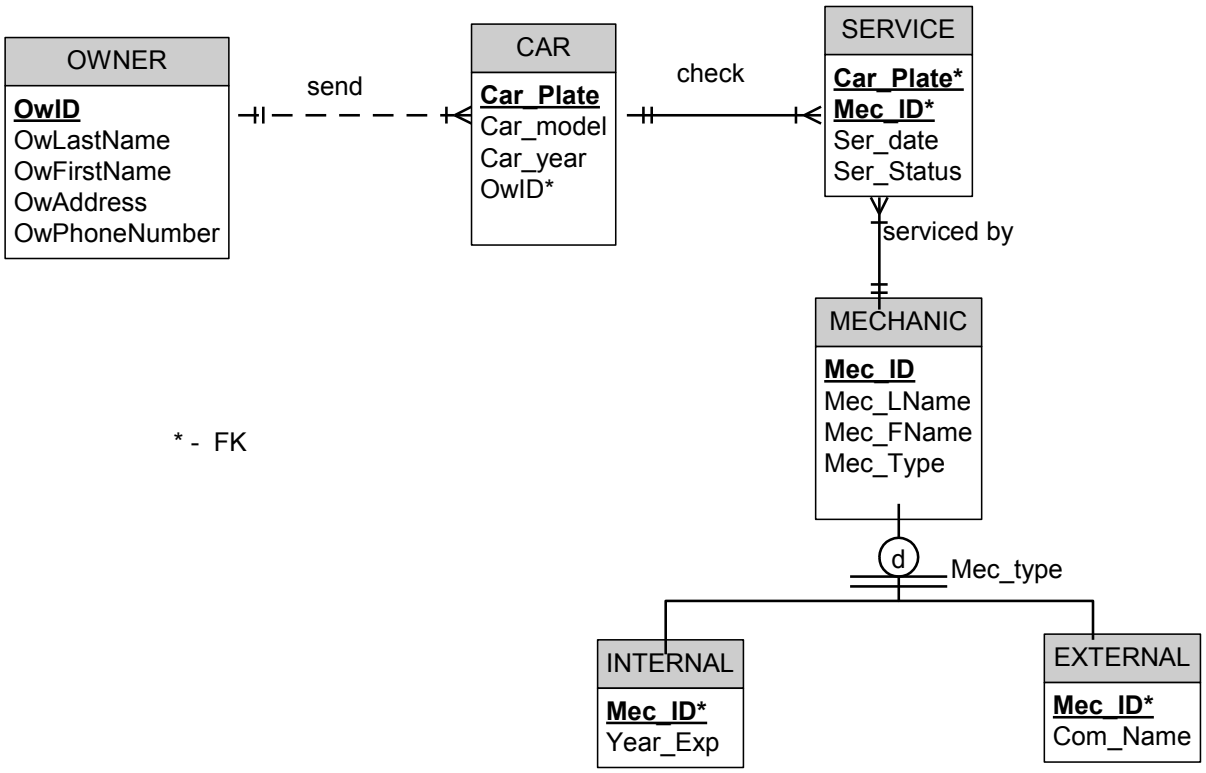
Bumiputra Motor Works (BMW) Service Center wants to develop a database to keep all information about cars being sent for services by their owner.

An owner can send many cars and each car is send by one owner. Information of the owner is their identification number, name, address and telephone number.

The cars have to be registered in the database and the information stored is the plate number, model and year made. These cars have to be checked by a mechanic for their conditions. A car can be serviced by a mechanic several times and a mechanic can service many cars at one time. The information about service is service date and service status.

The information about the mechanic is also recorded such as the mechanic identification number and name. The mechanic can be categorized as internal who works for BMW or external where the cars are sent to an outside mechanic for maintenance. Information about internal mechanic is their years of experience and for external mechanic is the company name.

a) Based on the above requirements, create a complete Entity Relationship Diagram (ERD) using Crow's Foot model that shows all entities, attributes, relationship, and connectivity.



b) Give **TWO (2)** examples of report that be produced from this database.

1. List of car Information according by mechanic ID
2. List of service var done in year 2021
3. The total of Car derviced in year 2020. Etc.....

(any report can be acceptance,
full mark given to report based on 2 or more table or use function)