Entity Relationship Diagram

Bus Reservation System

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Semester Project ERD

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Problem Statement

Bus Reservation System with GPS and Maintenance Logs

A bus company runs intercity routes. Passengers book seats online. Buses are equipped with GPS and expected arrival times are updated in real time. Maintenance logs include mileage, engine checks, and incidents. Drivers are assigned routes in shifts. Passengers rate cleanliness, driver behaviour, and punctuality.

Steps

Steps used to develop Entity Relationship Diagram for statement problem are given.

- ➢ Identify Entities
- ➢ Identify Attributes
- ➢ Identify Relationships
- ➢ Developing Diagram

Step 1

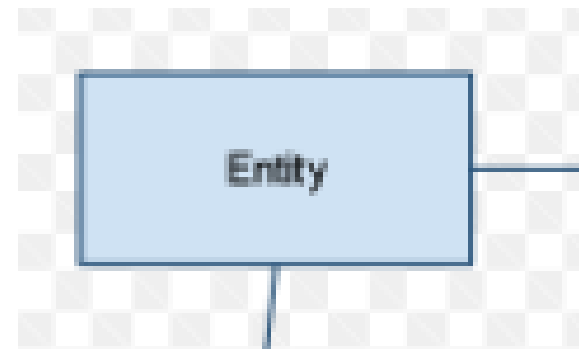In above mentioned statement, we found the following entities.

- ➢ BUS COMPANY
- ➢ INTERCITY ROUTES
- ➢ BUSSES
- ➢ REAL TIMIE UPDATES
- ➢ MAINTENANCE LOGS
- ➢ DRIVERS
- ➢ PASSENGERS
- ➢ SEATS
- ➢ RATING

Definition:

An **entity** is a distinct, identifiable object, concept, or thing (e.g., a person, place, or item) with defined attributes. It exists independently and can be uniquely identified within a system or context.

Representation:

An entity is represented by using a rectangle shape. Name of entity is written inside the rectangle and is written in capital letters.

Step 2

In the above given statement, we found the following attributes.

- ➢ RATING
  - Cleanliness
  - Punctual
  - Driver Behaviour
- ➢ REAL TIME UPDATES
  - GPS (Global Positioning System)
  - Arrival Time
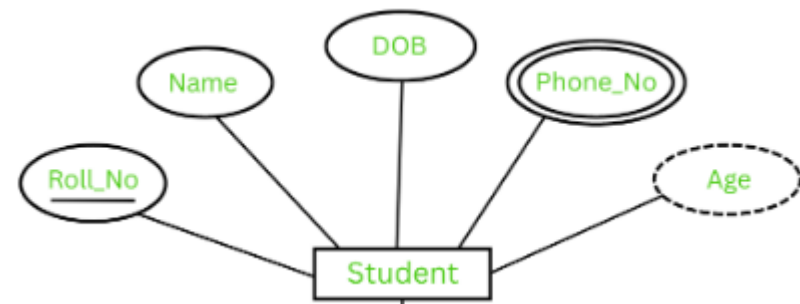- ➢ MAINTENANCE LOGS
  - Engine check
  - Mileage
  - Incidents

Definition:

An **attribute** is a characteristic or property that describes an entity (e.g., name, age, colour). It holds specific data values that define the entity's state or features.

Representation:

An attribute is represented by using oval shape, name of attribute is written inside the shape. Its important to note that the primary key attribute is underlined.

Multi-Valued attribute is represented by double lined oval shape, and it is also important to note that the derived attribute is represented by dotted lined oval shape.

Step 3

In the above given problem statement, we found the following relationships.

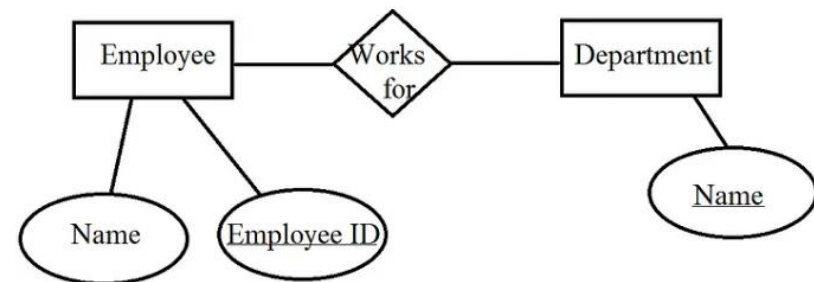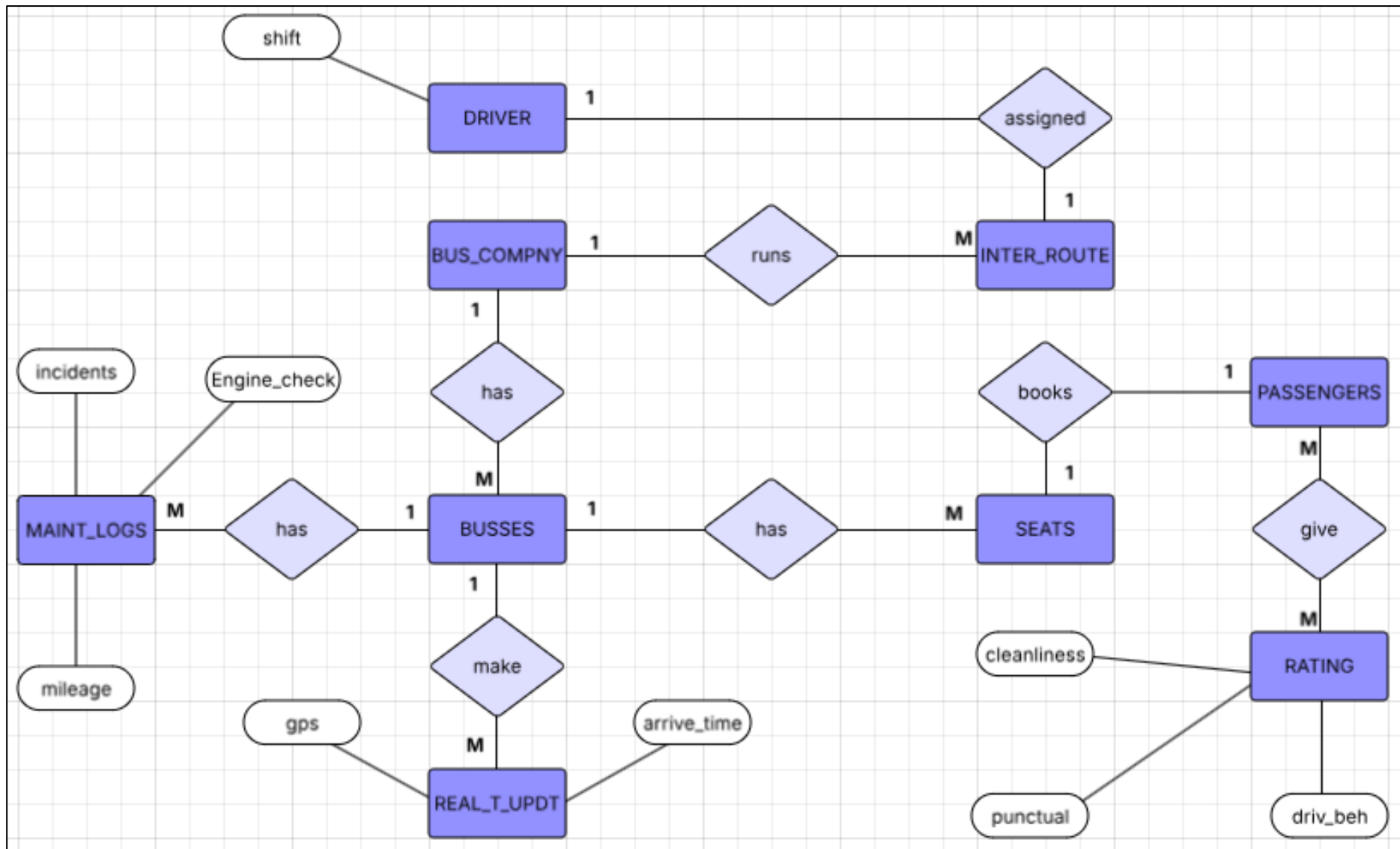| No	Entity 1	Relationship	Entity 2
1	BUS_COMPANY	Runs	INTERCITY_ROUTE
2	DRIVER	Assigned	INTERCITY_ROUTE
3	BUS_COMPANY	Has	BUSSES
4	BUSSES	Has	MAINTENANCE_LOGS
5	BUSSES	Has	SEATS
6	BUSSES	Receive	REAL_TIME_UPDATES
7	PASSENGERS	Book	SEATS
8	PASSENGERS	Give	RATING

Definition:

A **relationship** describes how two or more entities interact or are connected in a system. It defines the association, such as "owns," "belongs to," or "works for," between them.

Representation:

Relationship is represented by using diamond shape. A weak relation ship is represented by double-lined rectangle. In the given diagram. Weak relationship is used to relate a weak entity with a strong entity.

Entity Relationship Diagram