

Sample Answers to DB Quiz 1

(a)

(i) For a table to be in third normal form, the table should be

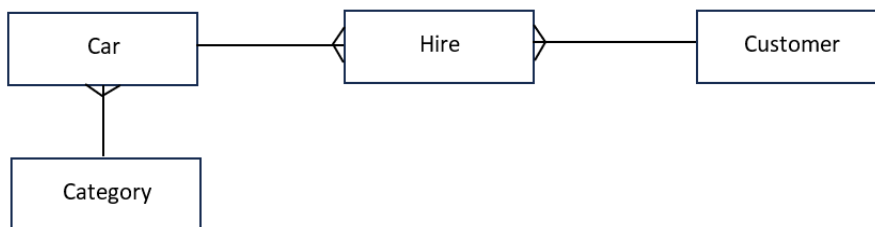
- in second normal form
- it should not have transitive dependencies –
 - all fields must only be determined by the primary/composite key, not by other non-key attributes.
 - The table Car is not in third normal form **because DayRate is dependent on Category**, which is a non-key attribute in the table.

(ii) There will be a case of data redundancy as cars of the same Category will require the same DayRate to be entered into the table more than once which can in turn lead to data inconsistency if an insert, update or delete error is made.

OR (Any 1)

- An update anomaly may occur if the company wants to update the DayRate of a category of car. During the update a run-time error may occur and not all the affected records are updated, leading to data inconsistency.
- An insert anomaly may occur if a new record is created in the Car table with the same category of another record already in the table but with a different DayRate, leading to data inconsistency.
- A delete anomaly may occur if there is only 1 car with a particular category, and that record is deleted, this results in a loss of information (DayRate) for that category.

(b) * denotes foreign key, underline denotes PK



Car (RegistrationNumber, Make, Model, CategoryName*)

Category (CategoryName, DayRate)

Customer (DriverLicenceNumber, Name, Address, TelephoneNumber)

Hire (RegistrationNumber*, DriverLicenceNumber*, DateHired, DateExpectedBack, DateReturned) *A car cannot be hired by more than one person at the same time.*