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**Project 2 - Parts 1 and 2**

In the EER schema diagram, CAR and CUSTOMER are two strong entities since they are independent. RENTAL entity is a weak entity since it is dependent on both CAR and CUSTOMER entities. Similarly, a new entity CAR\_TYPE is added as weak entity since a type of car cannot exist without a car. There are six main types of car so those types can be specialized to disjoint subclasses that will inherit the attributes of CAR\_TYPE. A new attribute which is also a partial key, TypeName, is added to CAR\_TYPE to store the type of car in the database. CAR and CAR\_TYPE are made into separate entities to avoid redundancy and null values as well as to have better and clear understanding about the design by splitting the types into subclasses. Moreover, Status is added as a new attribute and partial key to RENTAL to know if the rental is active or scheduled. All rentals are divided into two types – daily and weekly, hence they are added as disjoint subclasses that have their own attribute NoOfDays and NoOfWeeks, respectively. Since ReturnDate can be calculated from StartDate and NoOfDays (or NoOfWeeks), it is a derived attribute. Another attribute, named Availability, is added as new attribute to CAR for the database to keep track of which cars are available for rental during which periods (*see EER Diagram.png*). Some of the assumptions made while designing this EER diagram are:

* A customer can rent multiple cars at same time
* ReturnDate is only a date – time is not taken into account

The second part of project, mapping EER to relational schema, follows the general algorithm of mapping (*see EER Schema to Relational Schema.png*). A new attribute, Type, is added to CAR table to show the relationship between CAR and CAR\_TYPE. The combination of VehicleID and TypeName is a primary key for CAR\_TYPE. Similarly, combination of VehicleID, CustID ( IdNo renamed as CustID), and Status make a primary key of RENTAL. All constraints can be seen in the *initial.sql* file along with the CREATE TABLE queries.