Tyler D’Spain

Isha Soni

CSE 3330-001

27 July 2015

**Project 2 - Parts 1 and 2**

In the EER schema diagram, CAR, CUSTOMER and TYPE are three strong entities since they are independent. RENTAL entity is a weak entity since it is dependent on both CAR and CUSTOMER entities. There are six main types of car so those types can be specialized to disjoint subclasses that will inherit the attributes of TYPE. A new attribute which is also a primary key, TypeName, is added to TYPE to store the type of car in the database. CAR and 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.pdf*). 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.pdf*). A new table, CAR\_TYPE, is added to represent M:N relationship between CAR and TYPE. Its primary key is a combination of Vehicle ID (renamed as VID) of CAR and TypeName (renamed as TName) of TYPE. Similarly, combination of VehicleID, CustID ( IdNo renamed as CustID), and Status make a primary key of RENTAL. In RENTAL, the ReturnDate represents both ReturnDateDaily and ReturnDateWeekly from EER Diagram to avoid null values. All constraints can be seen in the *initial.sql* file along with the CREATE TABLE queries.