Relational Schema

For my relationship schema I identified Primary keys by underlining them, while foreign keys are identified using "(FK)." Attributes which have "(FK)" and are also underlined, are used in the formation of a compound key for a particular attribute.

Base

The is is a strong entity which holds attributes such as individual base numbers and locations of HW motor's various bases. Its primary key is "baseNumber."

Base(
baseNumber: INT(5),
baseLocation : VARCHAR(30)
)

Driver

This is a strong entity and a combination of both "Driver" and "Driving_license" tables from my ER diagram. Its attributes are focused on the details of the customer renting the car. These details range from the renter's mobile number to the expiration date on the individual's driver's licence. "DriverName" is depicted as a composite attribute and as the primary key (PK) for the "Driver" entity in my ER diagram. For my relationship schema this composite attribute has been decomposed into two new attributes "firstName" and "lastName". For optimisation reasons I also changed my primary key to "licenseID."

Driver (
licenseID: VARCHAR(35),
firstName: VARCHAR (35),
lastName: VARCHAR (35),
homeAddress: VARCHAR (100),
mobileNo.: VARCHAR (20),
dateOfBirth: DATE,
email: VARCHAR (50),
countryIssued: VARCHAR(35),
transmission: CHAR(1), [A/M]
issueDate: DATE,
expieryDate: DATE
)

AdditionalDrivers

This is a weak entity which is depicted as a multi valued attribute, of the "Driver" entity, in the final version of my ER diagram. It uses a compound primary key, which is a combination of the foreign keys "MainLicenceID" and "AdditionalLicenceID. In this entity: "mainLicenceID" and "AdditionalLicenceID" are foreign keys which both reference the "licenseID" attribute in the "Driver" entity.

AdditionalDrivers (
mainLicenceID(FK): VARCHAR(35),
additionalLicenceID(FK): VARCHAR(35)
)

BookingMediumDriver

This is a weak entity which has been created as a result of the many to many relationship between the "Driver" and "BookingMedium" entities. It only contains its compound primary key, which is a combination of the foreign keys "mediumName" and "driverLicenceID," this is why this entity is not represented in my ER diagram. In this entity:

- "mediumName" is a foreign key which references the "mediumName" attribute in the "BookingMedium" entity.
- "driverLicenceID" is a foreign key which references the "licenseID" attribute in the "Driver" entity.

BookingMediumDriver(
mediumName(FK): VARCHAR(20),
driverLicenceID(FK): VARCHAR(35))

Booking

This is a weak entity, with a composite primary key, which is a combination of the "bookingMediumName" and "driver" foreign keys, as well as this entity's "bookingId" attribute. This entity holds attributes with information relevant to booking a vehicle, such as whether or not a customer opted to take any Insurance extras. In this entity:

- "driver" is a foreign key which references the "licenseID" attribute in the "Driver" entity.
- "bookingMediumName" is a foreign key which references the "mediumName" attribute in the "BookingMedium" entity.
- "vehicleBooked" is a foreign key which references the "numberPlate" attribute in the "Vehicle" entity.

Booking(
bookingId: VARCHAR (20),
driver(FK): VARCHAR(35),
bookingMediumName(FK): VARCHAR(20),
startDate: DATE,
endDate: DATE,

hasInsuranceExtras: BOOLEAN,
vehicleBooked(FK): VARCHAR(7),
)

Vehicle:
This is a weak entity, whose primary key is the “numberPlate” attribute. This entity holds attributes with information regarding servicing times for vehicles. It also has attributes which aid in searching for a vehicle base on a variety of categories. Some of these categories include number of seats and transmission type. In this entity:

- “rentedFrom” is a foreign key that references the “baseNumber” attribute in the “Base” entity.
- “returnedTo” is a foreign key that references the “baseNumber” attribute in the “Base” entity.
- “homeBase” is a foreign key that references the “baseNumber” attribute in the “Base” entity.

Vehicle(
numberPlate: VARCHAR(7),
company: VARCHAR(35),
model: VARHAR(35),
numOfSeats: INT(2),
engineType: VARCHAR(20),
engineSize: VARCHAR(10),
transmission: ENUM [A/M]
minAgeToRent: INT(2),
standardHirePrice: INT(10),
serviceStartDate: DATE,
serviceEndDate: DATE,
rentedFrom(FK): INT(5),
returnedTo(FK): INT(5),
homeBase(FK): INT(5),
carOrVan: ENUM [car/van]
)

VehicleType
This is a weak entity, which is originally a multi valued attribute, referred to as “type” in the “Vehicle” entity of my ER diagram. It uses a composite primary key, which is a combination of the foreign key “numberPlate” and its own attribute “type.” In this entity: “numberPlate” is a foreign key which references the “numberPlate” attribute in the “Vehicle” entity.

VehicleType(
numberPlate(FK): VARCHAR(7),
type: VARCHAR(20)
)

Website
This is a subtype of entity “BookingMedium” (super type) and the result of generalisation and specialisation (mandatory, or). This relationship is depicted in my original ER diagram for the “BookingMedium” entity. The primary key for this subtype is “mediumName.”

Website(
mediumName: VARCHAR(20),
url: VARCHAR(20)
)

MobileApp
This is a subtype of entity “BookingMedium” (super type) and the result of generalisation and specialisation (mandatory, or). This relationship is depicted in my original ER diagram for the “BookingMedium” entity. The primary key for this subtype is “mediumName.”

MobileApp(
mediumName: VARCHAR(20),
platformAppStore: VARCHAR(10)
)