Task 1: Designing an ER Model

Assumptions:

* The “OnDemand” entity is created as agents may be required to travel to different locations other than the store they are based in.
* The “Order” and “Customer” entities were created as it can be assumed that products are being sold to customers.
* A “Website” entity was creating assuming that the company’s website allows customers to select the location of the store and the availability of any given product, with their selling prices and available quantities.
* As stated in the business requirements, some products are not available and replacement products are then recommended. Therefore, a “Replacement” entity is created to allow similar products to be recommended to customers.

Task 2A: Initial Design

Assumptions:

* Not all staff supervises projects
* All projects will have at least one staff working on
* As some vehicles of the company are not categorised by any type, it is assumed that these uncategorised vehicles are stored in a pool of other uncategorised vehicles. Therefore, an “UncategorisedVehicleType” entity was created.

Task 2B: Client Adjustments

Given the initial design of the ER model:

1. It is possible to include customer information in the model. A separate entity for the customers can be created which will be linked to the “Vehicle” entity.
2. To support this requirement, a “FavouriteStaff” entity is created which stores the unique identifier of the customer and a multi-valued attribute of staff members identified by their StaffNo. This entity allows for any given customer to list up to multiple of their favourite staff members.
3. With a “Customer” entity added, a relationship can be created between “Staff” and “Customer”. As each staff member is allowed to blacklist only up to one customer, a relationship attribute is created. A many-to-one relationship is created between “Staff” and “Customer” as it is assumed that more than one staff can blacklist any particular customer.
4. This can also be achieved by removing the “Active” entity in the model. This allows for the history of all contracts associated with each project to be maintained regardless of activity of the contract.