

# 5COSC002W – DATABASE SYSTEMS

## COURSEWORK SUBMISSION

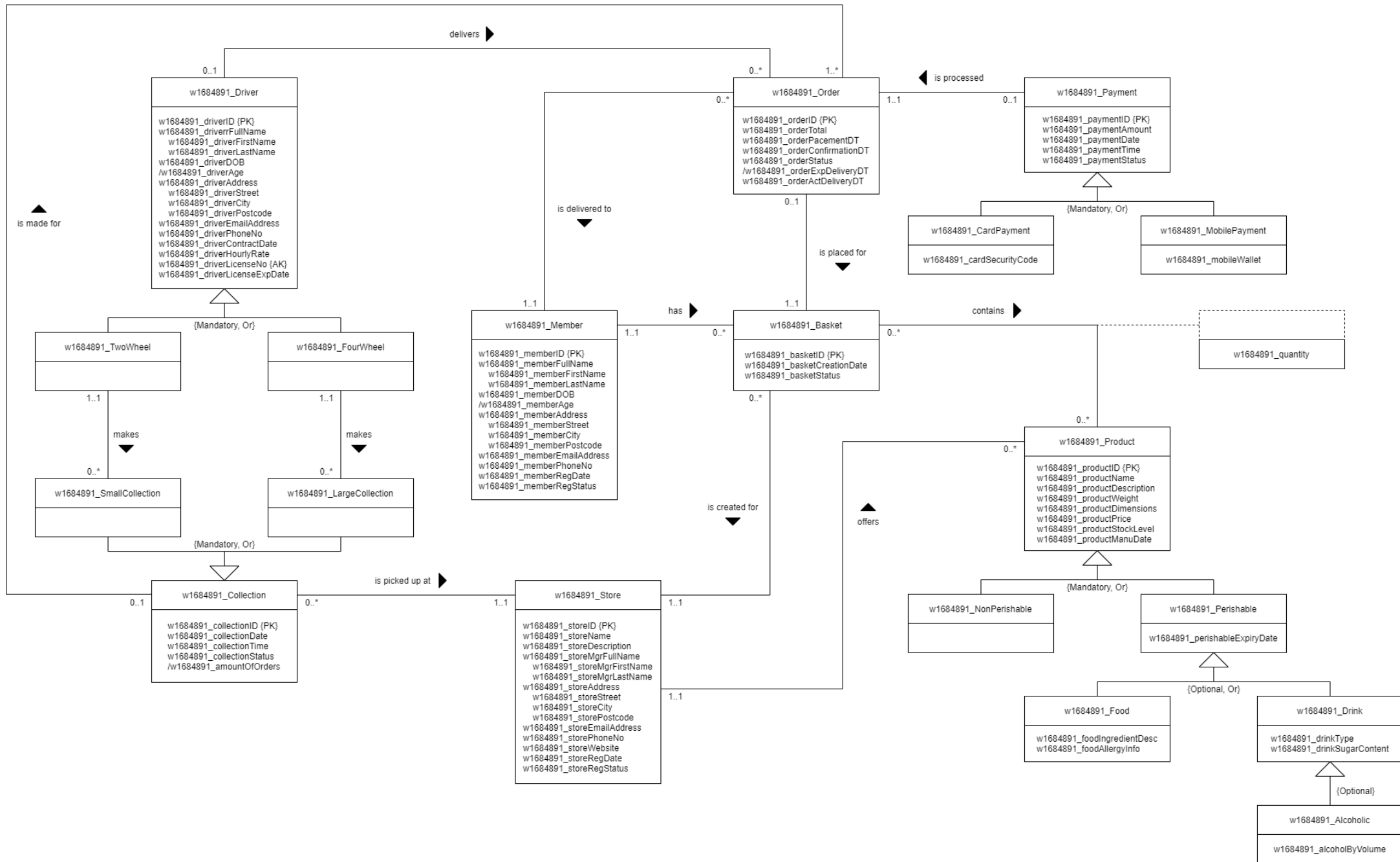
### PART A

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GROUP: 5CS05; 5CS06 – 4:00pm to 6:00pm (Tuesday)

# FOODTOOYOO - Conceptual ERD



## Data Dictionaries

### Entities

Entity Name	Description
w1684891_Member	A 'Member' is a customer that is registered with the FOODTOOYOO business.
w1684891_Store	A 'Store' represents a retailer that is registered with the business and offers products for members to purchase.
w1684891_Product	A 'Product' is an item offered by a retailer that is available to be purchased by members.
w1684891_Basket	A 'Basket' is what a member creates in order to shop with a specific store. It is what will contain the members chosen products for that particular store.
w1684891_Order	An 'Order' is what a customer places once they have confirmed and finalised their basket and would like to check out.
w1684891_Payment	A 'Payment' represents the transaction a member makes to pay for their shopping order.
w1684891_Driver	A 'Driver' is a person contracted by FOODTOOYOO to collect orders and deliver them to members.
w1684891_Collection	A 'Collection' is the process of a driver picking up an order (or multiple) from a store.

General Entity	Specialised Entity	Description
w1684891_Product	w1684891_NonPerishable	A 'Non-Perishable' product is one that has no expiry date and can be stored indefinitely.
w1684891_Product	w1684891_Perishable	A 'Perishable' product is one that does have an expiry date and cannot be stored indefinitely.
w1684891_Perishable	w1684891_Food	A 'Food' item represents a perishable product of solid substance; one for which it is necessary to store the ingredient description and allergy information.
w1684891_Perishable	w1684891_Drink	A 'Drink' item represents a perishable product of liquid substance; one with a specified type and sugar content.

w1684891_Drink	w1684891_Alcoholic	An 'Alcoholic' item represents a drink which contains some percentage of alcohol.
w1684891_Payment	w1684891_CardPayment	A 'Card Payment' is a payment made specifically with a credit/debit card.
w1684891_Payment	w1684891_MobilePayment	A 'Mobile Payment' represents a digital payment made via a mobile wallet.
w1684891_Driver	w1684891_TwoWheel	A 'Two Wheel' driver is one that has a two-wheeled vehicle only capable of making smaller collections.
w1684891_Driver	w1684891_FourWheel	A 'Four Wheel' driver is one that has a four-wheeled vehicle, better suited to making larger collections.
w1684891_Collection	w1684891_SmallCollection	A 'Small Collection' is a collection for an order (or multiple) small enough to be picked up by a two-wheeled driver.
w1684891_Collection	w1684891_LargeCollection	A 'Large Collection' is a collection for an order (or multiple) that requires a four-wheeled driver to collect it.

## Relationships and Multiplicities

Entity	Multiplicity	Relationship	Multiplicity	Entity	Justification
w1684891_Member	1..1	has	0..*	w1684891_Basket	<p>A single member might not necessarily have a basket.</p> <p>A single member could have many baskets.</p> <p>A single basket must belong to a member, as basket that does not belong to a client would be redundant.</p> <p>A single basket cannot belong to more than one registered member, as each member creates their own baskets.</p>
w1684891_Basket	0..*	is created for	1..1	w1684891_Store	<p>A single basket will be created for at least one store. A basket created for no store would have no purpose.</p> <p>A single basket can only be created for one store. The brief specifies that a basket cannot be used between different stores.</p>

					<p>A single store might not have any baskets created with it; it could be a newly registered store.</p> <p>A single store might have many baskets created with it.</p>
w1684891_Basket	0..*	contains	0..*	w1684891_Product	<p>A single basket might be empty, as the member might not have put any items in it yet.</p> <p>A single basket could contain many different products, as a member might want to buy a variety of products from a store.</p> <p>A single product might not be contained in any basket at a given time.</p> <p>A single product could be contained by many baskets, as many members might want to buy it.</p>
w1684891_Store	1..1	offers	0..*	w1684891_Product	<p>A single store might not offer any products yet. It could be only just registered or even recently closed.</p> <p>A single store might be offering many products for sale.</p> <p>A single product has to be offered by at least one store; if a product were not offered by anyone then there would be no way to sell it.</p> <p>A single product can only be offered by a single store, as the brief specifies that the stores sell unique, branded products.</p>
w1684891_Order	0..1	is placed for	1..1	w1684891_Basket	<p>A single order cannot be placed for 0 baskets. If there was no basket, there would be no need to place an order in the first place.</p> <p>A single order can only be placed for one basket; as specified by the managing director.</p> <p>A single basket might not necessarily have an order placed for it yet. It might not be finalised yet, as the member is still in the process of shopping.</p> <p>A single basket can only have one order placed for it; as specified by the managing director.</p>
w1684891_Order	0..*	is delivered to	1..1	w1684891_Member	<p>A single order must be delivered to the one member that placed it.</p> <p>A single order cannot be delivered to more than one member. It can only be</p>

					<p>delivered once, to the one member that placed it.</p> <p>A single member might not necessarily have any orders being delivered to them. They could be a new member.</p> <p>A single member might have many orders delivered to them. It would be unreasonable to limit the amount of orders a member can place.</p>
w1684891_Payment	0..1	is processed for	1..1	w1684891_Order	<p>A single payment that is made must be processed for at least one order. A payment cannot be processed without an order to pay for.</p> <p>A single payment cannot be processed for more than one order. As specified by the managing director, each payment can only be made for a single order.</p> <p>A single order might not necessarily be paid for yet. The payment could still be pending.</p> <p>A single order will only have one payment placed for it. As specified by the managing director, the payment cannot be split and must be made in full for the order.</p>
w1684891_Driver	0..1	delivers	0..*	w1684891_Order	<p>A single driver might not deliver any orders yet. It could be a newly registered driver.</p> <p>A single driver could deliver many different orders. It would be inefficient to limit the amount of orders a driver can deliver.</p> <p>A single order might not yet have a driver assigned to deliver it. The order might not be confirmed yet.</p> <p>A single order will be delivered by a single driver. As the order is taken directly from the store and to the members address, there is no need to include any more drivers in the delivery.</p>
w1684891_TwoWheel	1..1	makes	0..*	w1684891_SmallCollection	<p>A single two-wheeled driver might not make any small collections yet. Could be a new driver.</p> <p>A single two-wheeled driver could make many small collections; they are contracted for that purpose.</p> <p>A single small collection will be made by at least one two-wheeled driver. A collection cannot be made by nobody.</p>

					<p>A single small collection can only be made by one two-wheeled driver. A single collection cannot be made by multiple drivers.</p>
w1684891_FourWheel	1..1	makes	0..*	w1684891_LargeCollection	<p>A single four-wheeled driver might not make any collections yet. Similarly to above, could be a new driver.</p> <p>A single four-wheeled driver might make many collections as they are contracted to do just that.</p> <p>A single large collection must be made by at least one four-wheel driver. A collection cannot be picked up by no one.</p> <p>A single large collection will be made by only one four-wheeled driver. A collection cannot be made by multiple drivers.</p>
w1684891_Collection	0..1	is made for	1..*	w1684891_Order	<p>A single collection is made for at least one order. If there were no orders to pick up, there would be no need for a collection.</p> <p>A single collection can handle many orders, as specified in the FOODTOOYOO brief.</p> <p>A single order might not necessarily have a collection made for it yet. It could still be a pending order.</p> <p>A single order will only have one collection made for it. It can only be picked up from the store once.</p>
w1684891_Collection	0..*	Is picked up at	1..1	w1684891_Store	<p>A single collection will be picked up at at least one store. You cannot make a collection from nowhere.</p> <p>A single collection will not be picked up at more than one store; that would require multiple different collections.</p> <p>A single store might have no collections picked up at it. It could be a brand-new store, or one that has not managed to sell anything yet.</p> <p>A single store might have many collections made at it for the many orders that customers will place while buying from it.</p>

## Attributes & Primary Keys

Entity Name	Attributes for this Entity	Justification
w1684891_Member	w1684891_memberID {PK}	An identification number assigned to each registered member that will help to uniquely identify them. This would be the primary key for this entity.
w1684891_Member	w1684891_memberFullName	A composite attribute made from the members first name and last name. It may be important to store their names separately, as well as together, for different levels of formality in different types of correspondences.
w1684891_Member	w1684891_memberFirstName	One of the attributes that makes up the full name. This will store just a member's first name.
w1684891_Member	w1684891_memberLastName	Another attribute that makes up a member's full name. This will store the member's last name.
w1684891_Member	w1684891_memberDOB	This attribute will hold the members date of birth. Necessary to store as some of the products that can be purchased may require an age check.
w1684891_Member	/w1684891_memberAge	An attribute derived from the memberDOB which is a more convenient way to store the member age for above mentioned checks.
w1684891_Member	w1684891_memberAddress	A composite attribute containing the members full home address. It may be important to keep the full address for ease of deliveries, and to have it split for efficiently assigning drivers to make these deliveries.
w1684891_Member	w1684891_memberStreet	One of the attributes that make up the full address. This attribute stores the street name that the user lives on.
w1684891_Member	w1684891_memberCity	Another attribute that makes up the full address. This attribute stores the use's home city.
w1684891_Member	w1684891_memberPostcode	Another attribute that makes up the full address. This one stores the member's home postcode.
w1684891_Member	w1684891_memberEmailAddress	This attribute stores the email address that a member has registered with.
w1684891_Member	w1684891_memberPhoneNo	This attribute stores a member's preferred phone number, in case there is need for direct contact.
w1684891_Member	w1684891_memberRegDate	This attribute stores a member's date of registration with the FOODTOOYOO business.



w1684891_Member	w1684891_memberRegStatus	This attribute will store a member's registration status, like whether their account has been created, their email address confirmed, or whether they have deactivated their account.
w1684891_Store	w1684891_storeID {PK}	This attribute is an identification number generated for each registered retail store, used to uniquely identify them within the FOODTOOYOO system. This attribute is the primary key for the store entity.
w1684891_Store	w1684891_storeName	This attribute contains the name of the retailing store.
w1684891_Store	w1684891_storeDescription	This attribute contains the description text for a store and could be used to identify what the store specialises in, or what sort of products it might offer.
w1684891_Store	w1684891_storeMgrFullName	This is a composite attribute that contains the store manager's full name. Similarly to member, it may be a good idea to store the name in full, or separately, for different levels of correspondence formality.
w1684891_Store	w1684891_storeMgrFirstName	Attribute containing the store manager's first name. One of the attributes that makes up the store manager's full name.
w1684891_Store	w1684891_storeMgrLastName	Attribute containing the store manager's last name. One of the attributes that makes up the store manager's full name.
w1684891_Store	w1684891_storeAddress	Similar to a member's full address. This is an attribute that is composite and stores a store's full address together.
w1684891_Store	w1684891_storeStreet	This attribute contains the street name that the store is located on. It is one of the attributes that makes up the full address.
w1684891_Store	w1684891_storeCity	This attribute contains the city that the store is located in. It is one of the attributes that makes up the full address.
w1684891_Store	w1684891_storePostcode	This attribute contains the store's post code. It is one of the attributes that makes up the full address.
w1684891_Store	w1684891_storeEmailAddress	The email address that the store is registered with.
w1684891_Store	w1684891_storePhoneNo	This is the main phone number that the registered store operates under.
w1684891_Store	w1684891_storeWebsite	This attribute contains a link to the store's website address.
w1684891_Store	w1684891_storeRegDate	This attribute stores the date at which the retailer has registered with the FOODTOOYOO business.
w1684891_Store	w1684891_storeRegStatus	This attribute contains the registration status of the retailing store. For example, if the store

		is only just signed up, if it is certified and confirmed or if it has been deactivated.
w1684891_Product	w1684891_productID {PK}	This attribute is the primary key for this entity. It is a unique identification number for each product.
w1684891_Product	w1684891_productName	This attribute stores the name of this branded product.
w1684891_Product	w1684891_productDesc	This attribute stores the description of the product provided by the retailer.
w1684891_Product	w1684891_productWeight	This attribute stores the products weight. It is additional information about the product that might be crucial in determining the order size.
w1684891_Product	w1684891_productDimensions	This attribute stores the products physical dimensions. Another piece of additional information that may be crucial in determining the order size.
w1684891_Product	w1684891_productPrice	This attribute stores the sale price of a product.
w1684891_Product	w1684891_productStockLevel	This attribute stores the level of available stock for a particular product.
w1684891_Product	w1684891_productManuDate	This attribute stores the date of manufacture of a product.
w1684891_Perishable	w1684891_perishableExpiryDate	This attribute stores the expiry date of products which are perishable.
w1684891_Food	w1684891_foodIngredientDesc	This attribute stores the description of ingredients that a specific food consists of.
w1684891_Food	w1684891_foodAllergyInfo	This attribute stores information about the any allergens that this food might contain.
w1684891_Drink	w1684891_drinkType	This attribute stores the type of the drink product, as required by the brief.
w1684891_Drink	w1684891_drinkSugarContent	This attribute stores the sugar contents of a specific drink product.
w1684891_Alcoholic	w1684891_alcoholByVolume	This attribute stores the alcohol by volume contained in an alcoholic drink.
w1684891_Basket	w1684891_basketID {PK}	This attribute is the primary key for this entity. It stores a unique identification number for every basket.
w1684891_Basket	w1684891_basketCreationDate	This attribute stores a basket's creation date.
w1684891_Basket	w1684891_basketStatus	This attribute stores the status of a basket. For example, whether the user is still in the process of shopping with this basket, or whether it is confirmed and ready for an order to be placed for it.
	w1684891_quantity	This attribute does not belong to an entity, but instead a relationship between the Basket and the Product entities. This will be the quantity of a specific product within a specific basket once this many-to-many relationship is resolved.

w1684891_Order	w1684891_orderID {PK}	This is the primary key for this entity. It stores a unique identification number for each order.
w1684891_Order	w1684891_orderTotal	This attribute stores the total price of the order that the member has to pay.
w1684891_Order	w1684891_orderPlacementDT	This attribute stores the date and time that the order was placed.
w1684891_Order	w1684891_orderConfirmationDT	This attribute stores the date and time of when the order is confirmed.
w1684891_Order	w1684891_orderStatus	This attribute stores the status of the order, such as pending, confirmed, in transit, delivered.
w1684891_Order	/w1684891_orderExpDeliveryDT	This is a derived attribute of the expected delivery date and time that is calculated by an algorithm from the date and time when the order is confirmed.
w1684891_Order	w1684891_orderActDeliveryDT	This attribute is of the actual date and time that the order is delivered to the member that placed it.
w1684891_Payment	w1684891_paymentID {PK}	This is the primary key for the payment entity. It is a unique identification number for each payment made.
w1684891_Payment	w1684891_paymentAmount	This is the total amount that this payment is made for.
w1684891_Payment	w1684891_paymentDate	This is the date at which the payment is processed.
w1684891_Payment	w1684891_paymentTime	This attribute stores the time at which the payment is processed.
w1684891_Payment	w1684891_paymentStatus	This attribute stores that status of the payment, such a pending, processed, or cancelled.
w1684891_CardPayment	w1684891_cardSecurityCode	This attribute stores the security of the credit/debit card that this payment is made with.
w1684891_MobilePayment	w1684891_mobileWallet	This attribute stores the information of the mobile wallet that was used to make this payment.
w1684891_Driver	w1684891_driverID {PK}	This is the primary key for this entity. This attribute stores the unique identification number created for each driver registered with FOODTOOYOO.
w1684891_Driver	w1684891_driverFullName	This is a composite attribute that stores the full name of the driver.
w1684891_Driver	w1684891_driverFirstName	This is one of the attributes that makes up the driver's full name. It stores the driver's first name.
w1684891_Driver	w1684891_driverLastName	This attribute stores the driver's last name and is the other attribute that makes up the driver's full name.

w1684891_Driver	w1684891_driverDOB	This attribute is the drivers date of birth. It is important to store this to ensure that the driver is of legal driving age.
w1684891_Driver	/w1684891_driverAge	This attribute is derived from the driverDOB and stores the driver's age for the convenience of checking whether they fit the legal driving age.
w1684891_Driver	w1684891_driverAddress	This is a composite attribute that stores the driver's full home address. It might be necessary to store this for the efficiency of driver assignment.
w1684891_Driver	w1684891_driverStreet	This attribute stores the driver's home street and is used as one of the attributes to make up the full address.
w1684891_Driver	w1684891_driverCity	This attribute is the driver's home city and is also an attribute used to comprise the full address.
w1684891_Driver	w1684891_driverPostcode	This attribute stores the driver's postcode and is also an attribute which makes up the full address.
w1684891_Driver	w1684891_driverEmailAddress	This attribute stores the email address that the driver has registered with.
w1684891_Driver	w1684891_driverPhoneNo	This attribute stores the driver's preferred phone number for any essential contact.
w1684891_Driver	w1684891_driverContractDate	This attribute stores the drivers contract date to track when the driver has started working with the business.
w1684891_Driver	w1684891_driverHourlyRate	This attribute stores the driver's agreed-upon hourly rate.
w1684891_Driver	w1684891_driverLicenseNo {AK}	This attribute stores the driver's license number. It could also be used as an alternate key to uniquely identify the driver.
w1684891_Driver	w1684891_driverLicenseExpDate	This attribute stores the expiry date of the driver's license, to ensure that the driver can legally drive.
w1684891_Colleciton	w1684891_collectionID {PK}	This is the primary key for the collection entity. It is a unique identification number assigned to every collection that is made.
w1684891_Colleciton	w1684891_collectionDate	This attribute stores the date of when a collection is made. This is useful to track the status of orders.
w1684891_Colleciton	w1684891_collectionTime	This attribute stores the time of when a collection is made.
w1684891_Colleciton	w1684891_collectionStatus	This is the status of a collection; could be prepared or collected.
w1684891_Colleciton	/w1684891_amountOfOrders	This is an attribute derived from the orders linked to the collection. It specifies the amount of orders included in this collection.