Assignment Part 1:
Designing a Database for Commonwealth Transport Services

ASSIGNMENT TITLE: Entity Relationship Diagram for CTS Database Design

Student ID: s5120196   **Student Name: Wenjin Li**

Course Code: 7003ICT   **Course Name: Database Design**

Date Submitted: 19 Dec 17   **Lecturer's Name: Sen Wang**

Tutor's Name Sen Wang

Marks obtained: _____. [For marker to fill up.]
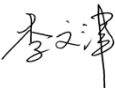
PLAGIARISM

Declaration
Except where appropriately acknowledged, this assignment is my own work, has been expressed in my own words and has not previously been submitted for assessment. I have also retained a copy of this assessment piece for my own records.

Signature:

Date: 19/12/2017

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List of Illustrations

Acknowledgements:

1) Wenchao Hu
2) Satish Kumar Roy Kader
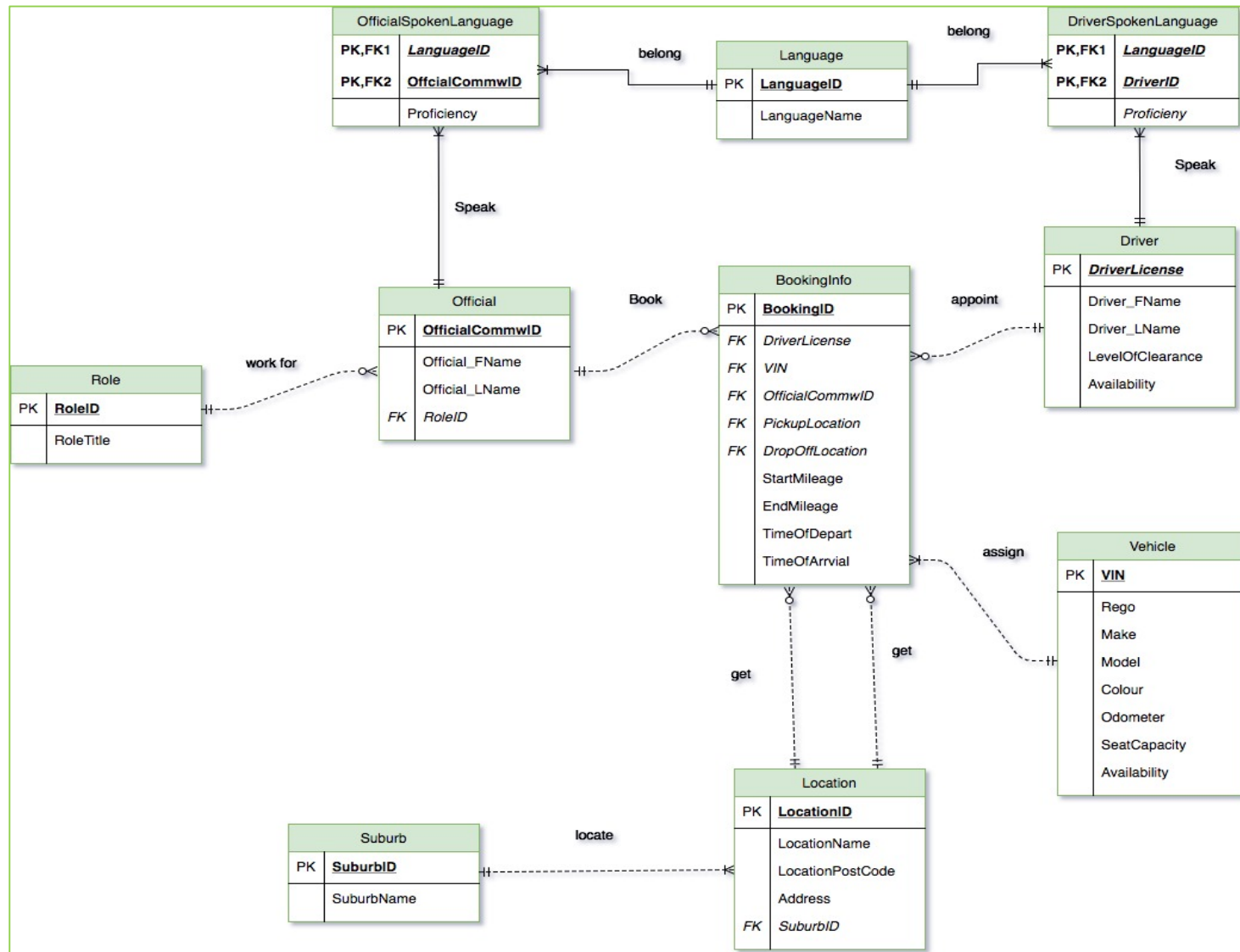3) Frank Obi

Entity Relationship Diagram
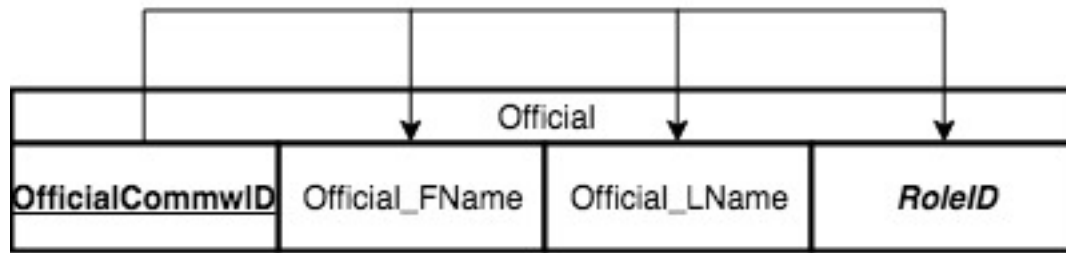

Figure 1 ERD

Assumptions

- An official should have only one role
- A role can have zero official but can be assigned to different official
- The highest language proficiency is the preferred languages for both drivers and officials

Normalisation

Official

The primary key of this entity is **OfficialCommwID** and the foreign key is ***RoleID***, referencing RoleID in Role Entity. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.

Entity 1 'Official' - Functional Dependency

OfficialCommwID	Official_FName	Official_LName	RoleID

Driver

The primary key of this entity is **DriverLicense**. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.

Entity 2 'Driver' - Functional Dependency

DriverLicense	Driver_FName	Driver_LName	LevelOfClearence	Availability

Role

The primary key of this entity is **RoleID**. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.

Entity 3 'Role' - Functional Dependency
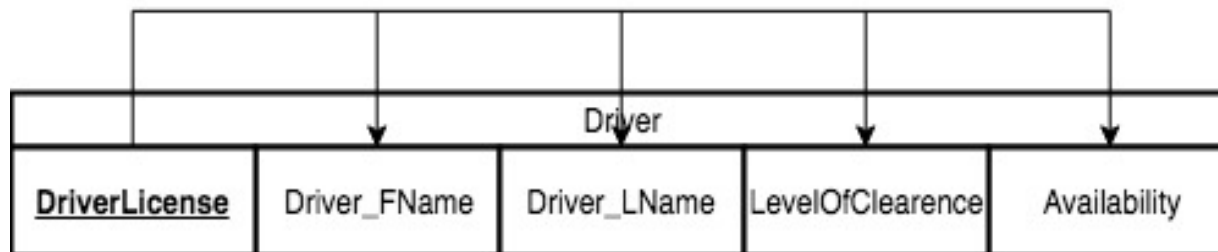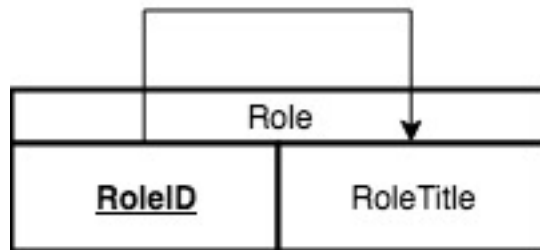
Role	
RoleID	RoleTitle

Language

The primary key of this entity is **LanguageID**. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.

Entity 4 'Language' - Functional Dependency

Language	
LanguageID	LanguageName

Location

The primary key of this entity is **LocationID**. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.
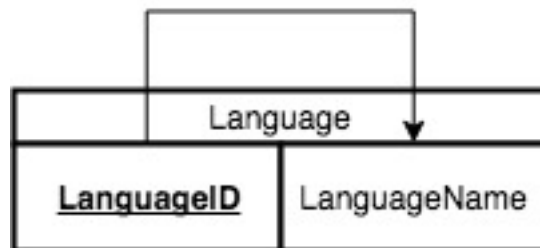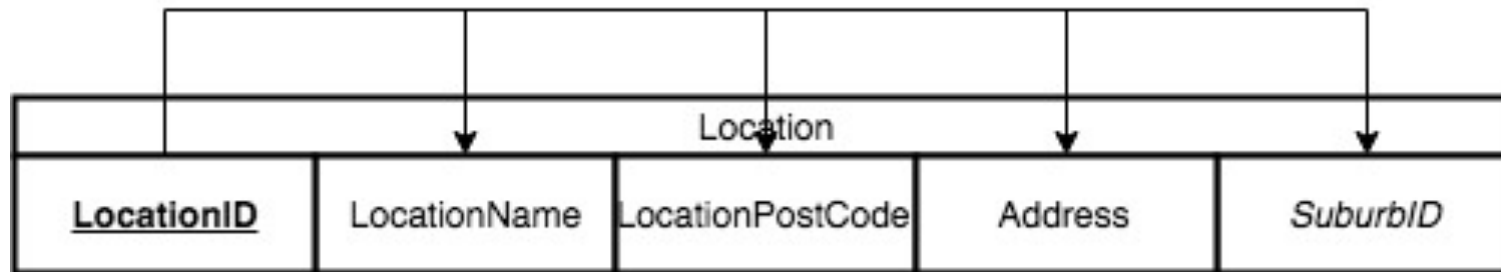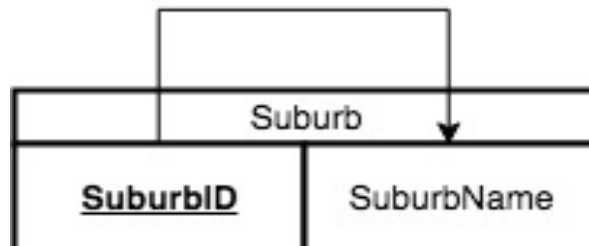
Entity 5 'Location' - Functional Dependency

Location				
LocationID	LocationName	LocationPostCode	Address	*SuburbID*

Suburb

The primary key of this entity is **SuburbID**. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.
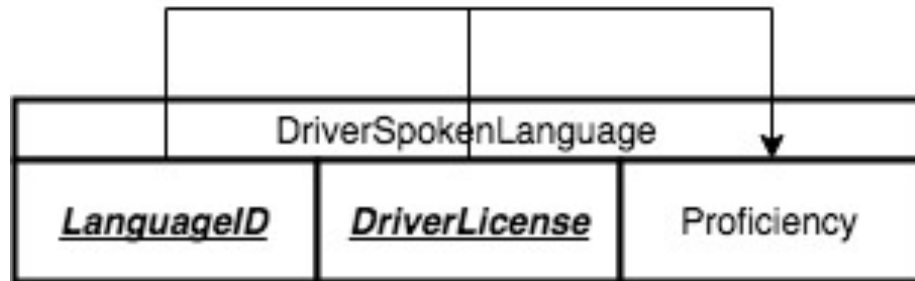
Entity 6 'Suburb - Functional Dependency

Suburb	
SuburbID	SuburbName

DriverSpokenLanguage

The primary key of this entity is **LanguageID and OfficialCommwID** and they are the foreign key of this entity. This entity is to match languages that drivers can speak and language proficiency. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.

Entity 7 'DriverSpokenLanguage' - Functional Dependency

LanguageID	*DriverLicense*	Proficiency

OfficialSpokenLanguage

The primary key of this entity is **LanguageID and OfficialCommwID** and they are the foreign key of this entity. This entity is to match languages that officials can speak and language proficiency. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.
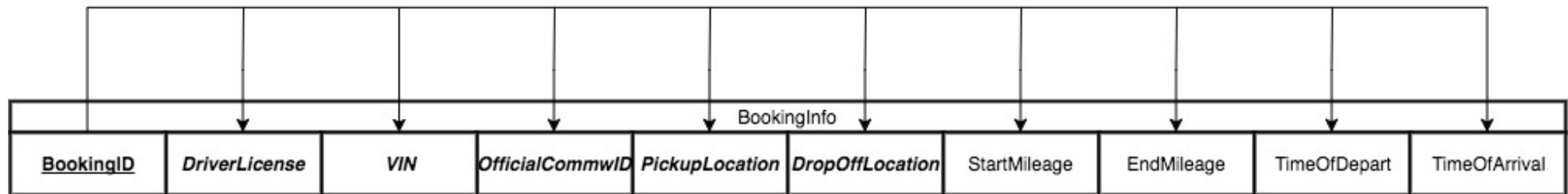
Entity 8 'OfficialSpokenLanguage' - Functional Dependency

LanguageID	*OfficialCommwID*	Proficiency

BookingInfo

The primary key of this entity is **BookingID** and *DriverLicense, VIN, OfficialCommwID, PickupLocation and DropOffLocation* are the foreign keys of this entity. This is already in 3NF because there is no partial dependency and transitive dependency in this entity.
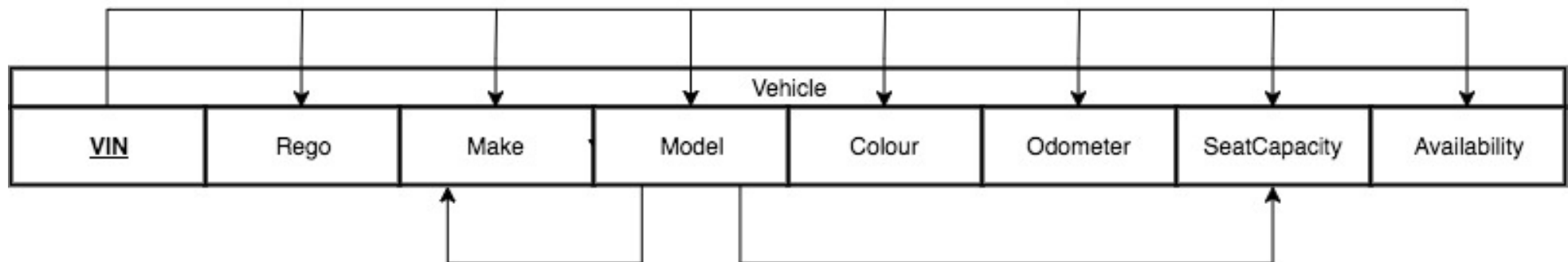
Entity 9 'BookingInfo' - Functional Dependency

Vehicle

The primary key of this entity is **VIN**. The following graph shows the function dependency of this entity but there is a transitive dependency.

Entity 10 'Vehicle' - Functional Dependency

As can be seen below, this is taken from Entity 10. This is because **Model** is the determinant of Make of SeatCapacity and it is set as primary key. Table 2 shows the 3NF for Entity 10 – Vehicle. Now, **Model** has been set to foreign key.
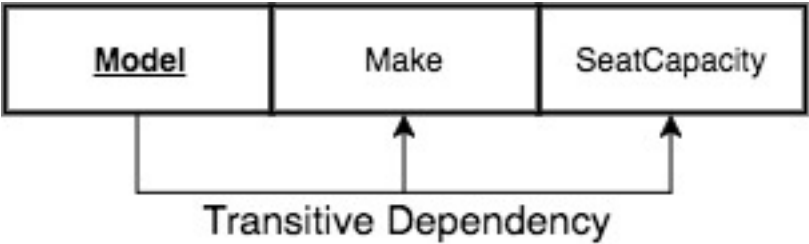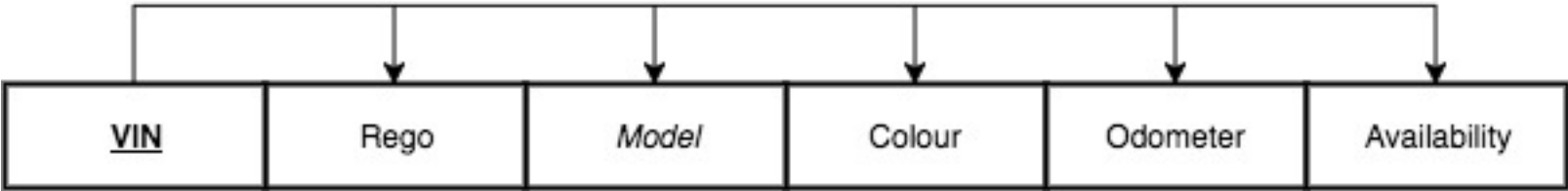
Table 1 Removing Transitive Dependency in Entity 10

Table 2 3NF for Entity 10 - 'Vehicle'

Bibliography