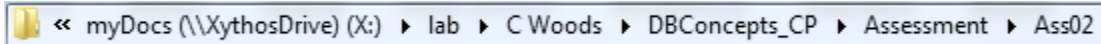


## DB Concepts – Assignment 2

This assignment has three components. All components are to be included in a **single** MS Word document. This document template (DB\_Ass02\_Template.docx) can be located at:



« myDocs (\\XyθοςDrive) (X:) ▶ lab ▶ C Woods ▶ DBConcepts\_CP ▶ Assessment ▶ Ass02

Copy this document and rename as follows:

GD\_DB\_Ass02\_Surname\_Initial.docx

For example:

MM\_DB\_Ass02\_Smith\_J.docx or SD\_DB\_Ass02\_Smith\_J.docx

## Submission

Assignment is to be submitted not later than **5pm Friday 28<sup>th</sup> November**.

All submissions to be made **via email attachment** as MS Word document (**PDF files not accepted**).

## 1. Data Modelling [50 Marks]

The Department of the Environment maintains records of all vehicles and their registered owner to facilitate motor tax administration.

On the last Friday of each month, the system issues renewal notices to the registered owners of cars whose motor tax expires on the last day of the next calendar month. All tax discs expire on the last day of a designated month.

Refer to the sample motor tax renewal form for confirmation of the data required to issue this form.

Registered owners have the option of renewing their motor tax for 3 months, 6 months or 12 months. The current rate for each option is maintained and is updated when required (e.g. if changed in the annual government budget).

Payment of motor tax can be made on-line using credit card but only if a renewal pin has been issued with the renewal notice. Alternatively, payment of motor tax can be made at the local motor tax office and can be paid in cash or by credit/debit card. When a payment is made, details of the payment are saved and the next renewal date for the vehicle is updated accordingly.

**The data model must support the following requirements:**

- There can be only one registered owner per vehicle at any given time
- Renewal notices may be issued via written notice or by email
- The system must be able to identify all overdue/late renewals.
- The system must be able to produce a listing of current and previous owners of a vehicle
- The system must be able to produce a statement of all payments of motor tax ever made for a vehicle by the current registered owner.
- The system must be able to determine which payments were made on-line and which were made at the local motor tax office.

Produce a data model that captures these data requirements. You may use either an ER diagram (Crow Foot notation) or a Class diagram (UML).

If you think there is ambiguity in the requirements, make your assumptions and state them clearly.

## 2. Relational Schema [25 Marks]

Transform the data model into a relational schema.

Use bracket notation to represent the relations.

Ensure that all relations in the schema are in 3NF.

## 3. Database Schema [25 Marks]

Write a database schema to represent the normalised relations.

Ensure that appropriate data types and sizes are defined.

Specify Primary Key and any Foreign Key constraints required.

A template for the database schema can be found in the *Assignments* folder on the X:\ drive.