Advanced Data Management (CMM524)
Laboratory #1: Data Modelling

1. Aims

- To experience data modelling in a domain.

2. Outcomes

In completing this exercise, you should be able to:
- Model the data requirements of a given domain as an Entity Relationship (ER) model.
- Map an ER model into the Relational Data Model as tables.

3. Data Modelling

Storing structured data in a database management systems requires modelling the data requirement as a database schema. This process involves the design of a conceptual model using ER model, then mapping the ER model into relational tables.

3.1. The "Online Shop" Domain

"An online shop sells products to customers.

Each product is identified by its unique product code/ID which is a number entered by the online shop. A product has a textual description and a current selling price.

Each customer has an internal, unique ID which is allocated by the system. The system also needs to store the name, postal address, and email address of a customer.

A customer can buy multiple products in an order. As the selling price of a product may change, an order must keep the price of a product at the time of purchase."

- Design an ER model to capture data in the domain.
  - You only need to model the 3 concepts of product, customer and buying described above.
  - What entities do you end up with?
  - What relationships do you have?
- Map your ER model design into relational tables.
  - How many tables do you have?
  - What is the key in each table?

3.2. The "Hospital" Domain

The followings describe the requirements of a database storing patient records in a hospital:

"In a hospital, a patient is admitted to a ward on the admission date. There will be a discharge date when the patient leaves.

A patient will be give a bed on admission.

Throughout his/her lifetime, a patient may be admitted several times (and potentially to different wards).

Each patient has a patient number which uniquely identifies his/her records in the hospital.

Each ward has a unique ward number, and a name.

While the patient is in hospital, he/she may be prescribed with drugs on a certain date and time. Note that multiple different drugs can be prescribed at the same time.

Each drug has a unique drug ID, and a name.

Each prescription has a dosage."

- Design an ER model to capture data in the domain.
- Map your ER model design into relational tables.