Flinders University
2023 S2 COMP1711
Database Modelling and Information Management

# Assignment 1

Due date: 10 September 2023
This assessment is an individual assessment. The assignment is worth 30% of the total assessment. It will be marked out of 30.

**General Specification**

You are required to construct an information model and draw an Entity-Relationship Diagram (DRD) for the following business scenario of a Ute rental firm "Tradie mates". In the case-study description, the following notation is used to indicate the type of data items:

(N x) a digit string (integer) of length x
(S x) a character string of length x
($ x) x dollar digits and 2 cent digits
(C) a combination of
    family name (S 20)
    personal name (S 20)
    title (S 4)
(A) a combination of
    street address (S 45)
    postcode (S 4)
(D) time and date or either

**Tradie mates: Ute rental firm**

The Ute hire firm "Tradie mates", requires a database system to manage their fleet of hire Utes. Each Ute in the fleet has a unique fleet membership number (N 3) and is recorded is the vehicle's registration number (S 7), colour (S 20), and make (S 8).

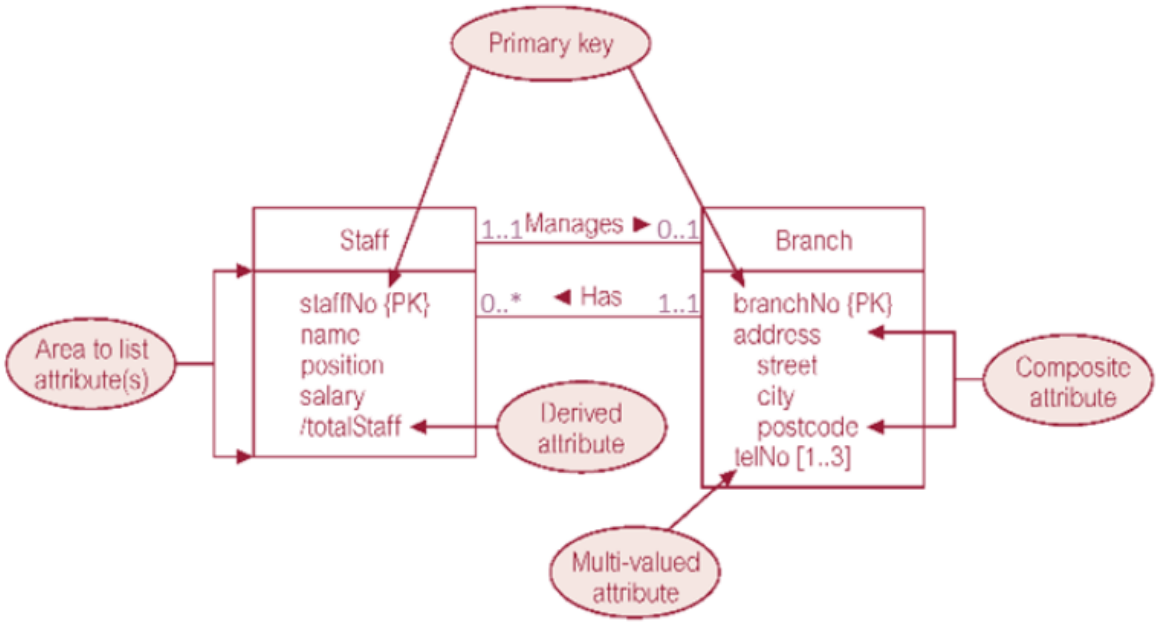
The firm records the individual details of any client the first time that the person or the company1 has business with the company. A client's name (C), address (A) and one contact phone number (S 14) are recorded along with a generated unique client identifier. This identifier is used for all subsequent references to that client. A (person) client's driver's license number (S 12) is recorded the first time that they hire a vehicle or are a nominated driver.

When a ute is hired, the contract is created, and the hire time and date (D) are recorded. The hirer (client) involved is recorded along with the type (S 2) and number (S 20) of the credit card to be used to pay for that hire. A vehicle's starting kilometrage (N 5) is recorded when it is hired. At any one time, only one vehicle is on hire to a customer. When the ute is returned, the ute's kilometrage (N 5) (distance travelled) is recorded. The payment date (D) and payment amount ($) are recorded.

A booking of a vehicle may also be created for future hiring, in which case, the nominated pick-up depot, the starting time and date for the booking (D), and the intended number of hire days (N2) are recorded. An optional preferred colour (S 12) may be recorded. A client may make any number of bookings.

**The assignment requirements:**
The assignment requirements are to perform the following tasks:

1) Construct the information model. It is recommended that you use copies of the data dictionary work-sheets available as part of this specification on FLO.
   a. List all entities on the Entity Data Dictionary worksheet. Record the name, a description and any aliases. The Occurrence column describes how the entity exists in the organisation. List any dependent entities and indicated in the occurrence which entity it depends on.
   b. List all relationships on the Relationship Data Dictionary worksheet. Record the name, a description and any aliases. The Occurrence column describes how the relationship exists in the organisation
   c. List all relationships and entities on the Relationship-Entity Data Dictionary worksheet. For each participating entity, give the multiplicity (both the participation and cardinality). If the relationship is greater than binary then list other entities on subsequent rows
   d. For each identified entity and relationship list its name and its attributes on the Attributes Data Dictionary worksheet. For all attributes, give a description, an indication of the data type, length and domain, whether it can be NULL (i.e. optional), and if it can be multi-valued. If it can be multi-valued then list the range of values
2) Use your answer to (a) draw up an Entity-Relationship Diagram (ERD). The diagram can be hand drawn. It should be at least A4 size. The important criteria are consistency with part (a), clarity and readability.
   Entities in the ERD should fully represent the information contained in the data dictionary. That is, include all the attributes and any other necessary information. It should also conform to the Unified Modelling Language specification discussed in lectures and the textbook. Using a different modelling language will result in a grade of Fail with a mark of 1, which allows for resubmission with a maximum mark of 50%. Using software that does not use UML is not an excuse. An example of entities is shown in the figure.



**Submission:**
You are required to submit the work-sheets and the associated ER diagram electronically on FLO as a single or set of PDF files. You may also optionally submit a document (a PDF) explaining any assumptions you have made about the specifications. This may have to do with particular multiplicities you assign to relationships and entities, different types of attributes, entities, relationships versus entities. Essentially any piece of information you thought was ambiguous and you think requires additional explanation beyond tasks (1) and (2).

**Assessment:**
This assessment is an individual assessment. The assignment is worth 30% of the total assessment. It will be marked out of 30. A guide to the breakdown of the marks over the parts is:
(1) 10 marks (2.5 marks per answer for (a), (b), (c), (d) )
(2) 20 marks (Marks allocated for entity, relationship, and attribute layout, multiplicities and general diagrammatic representation)

**Academic Integrity, plagiarism and academic misconduct:**

Plagiarism, which includes copying from internet resources or from other students, is not acceptable. While using external sources for reference and inspiration is allowed, all work submitted must be original and produced by yourself. Any external sources used must be appropriately cited and referenced in the submission. Any evidence of copying or using identical answers from other students or external sources will result in a grade of zero for the entire assignment.

For more information about the University policy of Academic Integrity, you can read further at the link:

https://students.flinders.edu.au/my-course/academic-integrity