1814ICT & 2814ICT – DATA MANAGEMENT
7003ICT – DATABASE DESIGN
School of Information & Communication Technology

Assignment Part 1:
Designing a Database for a*Fashion

Aims

To gain experience in designing a database using Entity Relationship Diagram (ERD), Normalisation, and Relational Database modelling techniques.

Learning Objectives

In the process of this assessment task you will:

- plan, schedule and execute project tasks with a view to improving your personal and group productivity;
- gain awareness of the typical challenges related to the design of practical databases;
- learn that database design is an iterative process; and
- use the ERD, Normalisation techniques, and Relational models to develop elegant logical models for a database.

Guideline:	Only one member submits an electronic copy of your assignment as a **.pdf** file on submission point.
Late submission:	Any submission after the due date will receive a deduction of **5% per calendar day**. Standard university policy will apply for all late submissions. See the course website/profile for detail.
Marks:	Group submission: a total 100 marks and it is worth 15% out of the total assessment.
Authorship:	This assignment is a **Group assignment**, and it shall be completed by **the students in each group** only. The final submission must be identifiably the work of the individual group members. Breaches of this requirement will result in an assignment not being accepted for assessment and may result in the offending student or students being required to present before the Disciplinary Committee.

Introduction

a*Fashion is a family-owned business established in 1970 at Sunnybank, Brisbane. Now it is a popular fashion brand for young adults across Australia. The proprietors of a*Fashion have approached you and asked if you could design a database to help them manage their business. The management has commissioned you (in your capacity as a Database Management System consultant) to analyse, design and develop an appropriate conceptual data model and relational database schema, based on the following information gathered about the current business activities. We have highlighted the tables you should create in yellow. For the attributes of the tables, you can use your assumption and the provided information.

Note that if your group has student(s) from **7003ICT**, your group must answer/follow the requirements for 7003ICT students.

Business Rules (for all students):

- a*Fashion operates stores in many locations across Australia. Each store has a unique identification number. In addition, a*Fashion wants to record name, phone, and email for each store.
- Each store has several staffs. For each staff, a*Fashion records their ID, first name, last name, phone, date of birth, start date of work, store ID they work in, appointment level, and hourly rate ($). The hourly rate depends on the level of appointment. The appointment will contain appointment level ID, level description and hourly rate. Each staff will have one level of appointment.
- There are also several staff who supervise other staff within the store, but a staff can be supervised by only one supervisor. Therefore, there should also should be Supervisor ID in staff.
- Each store will maintain multiple inventories, and each inventory is for a specfic product.
- a*Fashion keeps track of the quantity of each product that is on order, as well as the number currently available in each store in inventory. Therefore, inventory should have Product ID (FK), Store ID (FK) and Quantity on Hand and Quantity of products being ordered for a specific product. ProductID and StoreID could be composite PK of this table.
- Each store sells different types of products like t-shirts, shirts, skirts, pants, bags, etc. For each product, it stores product number (ID), description, size, price, and discount, if available. A product must be of one product type. Product type must include ID and description.
- Customer may place orders in store or online through customer orders. Customer details are always taken / updated at each order. A customer is referenced by a customer number, customer first & last names, email, and phone number, if available.
- A store receives multiple or none customer orders.
- A customer can place 0-to-many customer orders, each customer order will generate 0-to-many order lines (An order line is a line on the order containing information relative to a specific item being ordered). a*Fashion also records the quantities, the date a product arrives and the date when it is picked up by the customer in order line. Therefore, order line should have ID of customer who places order (FK), ID of the product being ordered (FK), ID of customer order (FK), date arrived, date picked up, and quantity.

- Multiple order lines contain one product, and a product can be belonged to none or multiple order lines.
- A customer order is placed only using one order mode and each order mode has a description and ID.

Additional business rules for **7003ict** students:

- Each store generates pay slips for all staff in the store on a fortnightly basis. For each pay slip, the store records a pay ID, pay date, number of hours, gross and net payments, and the super, staff ID (FK) and store ID (FK). Payslips are received by a staff.

Note that a*Fashion understands that they may not have provided you with sufficient information. If you need to make assumptions about their business, please ensure that you record them.

Assessable Tasks

From the a*Fashion business requirements specified above, prepare a document according to the followings:

	Description	**For**
1	Use the supplied template for your Assignment submission.	All students
2	An appropriate *title page* that includes the percentage contributions and the signatures of all students in the group and an acknowledgement of all students and staff you have spoken to about the assignment. Use the supplied template for this.	All students
3	*A table of contents* and page numbers.	All students
4	An ERD using Crow's Foot notation. The diagram should include: a. all entities, attributes, and relationships (including names); b. primary keys (underlined) and foreign keys (italic) identified; c. connectivity and participation (optional/mandatory) symbols; and d. assumptions you have made, e.g., how you arrived at the connectivity and/or participation for those not mentioned or clear in the business description, etc.	
5	Discussion on if any of the entities in your logical ERD are prone to insertion, deletion, and update anomalies. Provide reasons why there are / are not prone to anomalies.	Group with **7003ict** students

6	Normalisation of the relations which identifies: a. covert each table to a relation schema; b. dependency diagram or functional dependencies for each relation; c. the *level* of *normalisation* achieved for each relation, the *reasons* for any relation that is **NOT** maintained in 3NF.	All students
7	Relational database schema that translates your ERD and include: a. *relation* (table) names, b. *attribute* (column) names and *data types* (as required by XAMPP or UwAmp), c. *length* of each field & its *description* (e.g., if it is a primary key, a foreign key referring to another table or format, etc.)	All students
8	A bibliography, containing all resources used to complete the assignment. If no resources have been used, please indicate this appropriately.	All students

Assessment Criteria and Marking Overview

Group Submission – Group with only 1814ict & 2814ict students	**Marks**
Presentation How clear and well-presented your submission is. Students should use the supplied template.	**10**
ERD Adherence to the standard of the course, assumptions made, inclusion of correct primary and foreign keys, appropriate entities, relationships, and attributes.	**60**
Normalisation Appropriate interpretation of each normal form, arguments for leaving the schema in the normal form you consider optimal.	**15**
Conversion of ERD to relational database schema Schema is a correct translation of the ERD submitted with appropriate tables, columns, primary keys, and foreign keys, foreign key references, field type & format, etc.	**15**
Sub-total	**100**

Group Submission – Group with 7003ict students	**Marks**
Presentation How clear and well-presented your submission is. Students should use the supplied template.	**10**
ERD Adherence to the standard of the course, assumptions made, inclusion of correct primary and foreign keys, appropriate entities, relationships, and attributes.	**50**

	Anomalies Scrutinise each entity in your logical ERD for any insertion, deletion, and update anomalies. Provide reasons why an entity has (does not have) anomalies.	**10**
	Normalisation Appropriate interpretation of each normal form, arguments for leaving the schema in the normal form you consider optimal.	**15**
	Conversion of ERD to relational database schema Schema is a correct translation of the ERD submitted with appropriate tables, columns, primary keys, and foreign keys, foreign key references, field type & format, etc.	**15**
	Sub-total	**100**