THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

School of Electrical Engineering and Computing

INFO6002: Database Management 2
Trimester 2, 2019 - Callaghan

Assignment 1 – Requirements Analysis & Conceptual Design

Due: *10:00 am, Wednesday 12th June, 2019*

WORTH 15% of final course mark.
This is an INDIVIDUAL Assignment.

Submission requirements

You will need to:
- upload the assignment to Turnitin **and**
- submit a hard copy of the assignment with **a signed assessment cover sheet** to the lecturer at the start of the lab session.

Assignment Background

You are asked to develop a conceptual database design using Enhanced Entity Relationship model for a database for *Tasty'n'Yummy Pizzas*.

Tasty'n'Yummy Pizzas is a pizza outlet at Charlestown. After years of managing the records manually, *Tasty'n'Yummy Pizzas* has decided to computerise its records. You are tasked to design the conceptual database design for *Tasty'n'Yummy Pizzas*'s database based on the business requirements provided in this document.

Your lecturer will act as your client and you can query her for any further information and clarifications.

Business Requirements

Order Processing
Tasty'n'Yummy Pizzas takes orders via phone and an app as well as through walk-in customers. *Tasty'n'Yummy Pizzas* provide both delivery and pickup services. When a customer orders via the phone or the app, the customer's phone number is entered to the system along with the id of the person taking the order. If the customer has previously ordered by phone, the name and address appears on the screen. The customer is then asked for his name and address and then takes the order. If the customer has not ordered before or if the name and address given does not correspond with that in the computer, a new customer record is created and the order is taken. After the order has been taken, a verification process occurs whereby the assistant

dials the number given and confirms the order with the customer. If it is not confirmed, the customer is recorded as a hoax and order is kept on hold (if and until the customer calls back in which case the verification process takes place before hoax is removed and order goes through). The time the call was answered as well as time the call was terminated is recorded for each phone order. For a walk-in customer, the customer's name is recorded to identify the order.

Each order contains date of order, one or more items, quantity of each item, price of each item, subtotal, discount amount (if any), discount code (if any), tax, total amount due, payment method, status, type (phone/walk-in) and description. If the payment is via card, a payment approval number is recorded. If the order is a delivery order, the driver who delivered the order is recorded.

There are different types of discount programs offered by *Tasty'n'Yummy Pizzas*. All discount programs are recorded in the database. A discount program has a discount code, description, start date of discount program, end date of discount program, requirements for discount, discount percentage (e.g. 5%) and a description.

Menu Items, Ingredients and Suppliers
Each item in the menu has an item code (unique), name, size and a current selling price. An item in the menu is made up of a number of ingredients. The ingredients and quantities used for the item are recorded in the database.

Each ingredient has a code (unique), name, type, description, stock level at stocktake, date last stocktake was taken, suggested current stock level, reorder level and a list of suppliers who supply the ingredients. A supplier can supply many ingredients.

A stocktake is taken each week, where the actual levels of ingredients in store are recorded. This is then compared with suggested levels (based on orders for the week). This report is used by the store manager to order ingredients for the following week. Information about supplier orders needs to be maintained in the database.

Employees
Employees at the store can be divided into two types: those who work in the shop are paid hourly and those who carry out deliveries are paid by the number of deliveries. For each employee, there is an employee number, firstname, lastname, postal address, contact number, tax file number, bank details (bank code, bank name, account number), a payment rate, status, and a description. Drivers also have a driver's license number. Hours are not regular and a record is kept for each time an employee works – a shift (start date, start time, end date, end time). The orders a driver delivers during a shift is kept on record.

Payment rates for shop workers and drivers are maintained in the database. Employee payments are made for each shift to the employee's bank account. Employee payment records needs to be maintained in the database.

Reference: Requirements modified from case study at
http://programmingou2k9.blogspot.com.au/2011/08/case-study-scenario-1-er-model.html

Assignment Requirements

Based on the business requirements, develop a conceptual database design using EER model. Your lecturer will act as the client and you can speak to her to clarify any questions regarding the requirements.

You are required to submit the following:
1. **Requirements Document**: The requirements document must capture all requirements that lead to your conceptual database design. Your **requirements document** will include:
   - Data Requirements – outlining the major data items
   - Transaction requirements – outlining the data manipulation and queries
   - Business Rules

   Hint: Sample requirements documents are available in Appendices A and B of your main text (Databases Systems – A Practical Approach to Design, Implementation, and Management – 6th Edition by Connolly and Begg 2015).

   You may **interview** your client (i.e. lecturer) for clarification and include your interview questions and responses.

2. **Documented EER Model:** The documented EER model includes both the EER model and the data dictionary. The EER Model must be shown in **UML notation**. The Data dictionary describes the entities, relationships and attributes of EER Model. Sample format for documenting the data dictionary is provided below:

Sample format for documenting entities:

Entity Name	Description
Item	Resources made available to staff and students

Sample format for documenting relationships:

Entity name	Multiplicity	Relationship	Multiplicity	Entity name	Description
Item	1..*	CategorisedTo	1..*	ItemType	An item is categorised to many different item types

Sample format for documenting attributes:

Entity Name	Attribute	Description
Student	studentId	A unique id given to every student in the university

Method of submission: Both softcopy submission and hardcopy submission are required:

- It must be submitted as a word or PDF document via *Blackboard / Assessment / ASSIGNMENT 1 / Assignment 1 Submission* (will be checked by Turnitin).

- Print the submission that goes through Turnitin, hand in the hardcopy to the lecturer at the beginning of the lab class. The hard copy must have on the front a signed INDIVIDUAL Assessment Cover Sheet.

The assessment RUBRIC is given below:

	Excellent	Good	Satisfactory	Poor	Fail
	(5)	(4)	(3)	(1-2)	(0)
Requirements Document & Data Dictionary (5)	All requirements documented in clear and complete manner. The document includes data requirements, transaction requirements and business rules. All constructs in the EER model are defined and documented in a clear, unambiguous manner.	All requirements are outlined clearly. Minor mistakes or omissions in requirements document and data dictionary.	Many requirements outlined. Some requirements missing/incorrect. Data dictionary has most documentation but with missing/errors.	A few requirements outlined with major sections missing. No data dictionary or major sections missing.	No requirements document or data dictionary.
EER Model (10)	(9-10)	(7-8)	(4-6)	(2-3)	(0-1)
	EER model is complete without any errors or minor corrections	EER model has most constructs correctly represented.	EER model has some constructs correct with major errors.	Most constructs have errors. Poor EER design with major flaws in modelling requirements. EER model not in UML notation.	None or few EER constructs shown.