Faculty of Engineering & Built Environment
School of Electrical Engineering and Computing

COMP1140: Database and Information Management

Assignment 1:

SEEC Resource Access Database Design Project- Requirement Analysis and Conceptual Design

Due: *12 pm, Friday, August 24, 2018*
WORTH 15% of final assessment mark

1. Background

The School of Electrical Engineering and Computing (SEEC) at the University of Newcastle lends resources to staff and students for assignment and project purposes. The resources include cameras, speakers, software, phones, CDs etc.

Managing such services has become cumbersome and the support services of the School of SEEC have requested you to develop a database for their application. The project has been named as "SEEC Resource Access".

2. Mission and objectives

The aim of the *SEEC Resource Access* project is to ensure the development of an efficient, convenient system for resource sharing in the School.

Main objectives of the project include:

- Organising resources to provide efficient access to them
- Supporting research and academic activities by providing access to the required resources
- Monitoring equipment demand and use to facilitate best practical delivery of resources at SEEC

3. Main Features

In meeting its objectives, the following main features for the proposed resource access system have been identified.

- **Catalogue Service:** Develop a web-based searchable catalogue of all resources. Facilities will be needed to search the catalogue on various criteria including keyword, name, type etc.

- **Loan Service:** The loan service provides facilities to issue and to return resources. Resources can be classified as either movable (which can be taken away) or immovable. Resources are loaned to students or staff members of the School, who are also known as borrowers. The different types of borrowers are

provided with varying degrees of privileges. The privileges of students will be affected by the courses they are working on.

- **Acquisitions:** The School consistently updates its resources. Suggestions for acquiring access to newer and updated materials are elicited from staff and students of SEEC. Priority is provided for acquisitions pertaining to teaching and research needs of the university.

- **Reservation Service:** The members should be able to reserve resources (if available) ensuring that they gain access to resources for specific periods of time. Requests for reservations are authorised on a first-come-first-serve basis.

4. Assignment

The proposed database system is developed in various modules, including requirements analysis, conceptual database design, logical database design, and physical database design. In this assignment 1, you are required to complete the first two stages of the database design, i.e., to develop user requirements specification and the conceptual database model for the database based on the business requirements provided in this document. There are two parts to be completed in assignment 1 as described below.

Part 1: Requirements

In this assignment, you are required to develop a user requirements specification truly fulfilling the data requirements (identify what types of data needs to be stored in the database), transaction requirements (identify the important and frequent database operations – data manipulation and queries), and business rules for the database mentioned above.

Assignment submission format for the Requirements part: The requirements document **MUST** have the following sections:

- Data Requirements – outlining the major data items
- Transaction requirements – outlining the data manipulation and queries
- Business Rules

Hint: Sample user requirement documents are discussed in weeks 2 and 3, and are available in appendices A and B of your main text

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

Part 2: EER Model with Data Dictionary

Draw an EER model for the requirements identified in Part 1. The EER Model must be shown in UML notation which is discussed in class and illustrated in our text.

The EER Model should be accompanied with a data dictionary which includes entity type table, relationship type table and attribute table.

Assignment submission format for the EER Model with Data Dictionary part: The requirements document **MUST** have the following sections:

- EER Model
- Documentation – Data dictionary details (description of entities, relationships and attributes)

Sample format for documenting the data dictionary is provided below.

Data Dictionary Format: Use the format described in your main text in documenting the data dictionary. The following provides samples for reference.

ENTITY TYPES

Entity Name	Description	Aliases	Occurrence
Collection	A collection is a physical collection of items in the library located at a particular physical location		Physical area of the library is divided into a set of collections
…			

RELATIONSHIP TYPES

Entity name	Multiplicity	Relationship	Multiplicity	Entity name
PhysicalCopy	0..*	LocatedIn	1..1	Collection
…				

ATTRIBUTES

Entity Name	Attributes	Description	Data Type & Length	Nulls	Multi-valued	Derived	Default
Student	studentId	A unique id given to every student	char	N	N	N	

Hint: Sample EER models and documentation is provided in Chapter 16 of your text.

The lecturer will discuss the details of the requirements in class as well as act as the client of the system. You need to implement all the details mentioned in lecture as well as described in this document. You are encouraged to ask questions to the lecturer to clarify requirements.

5. Submission

This is an **INDIVIDUAL** assignment.

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

- zip all required files into one zip file. The file name MUST be identified by 4 sections: A1, your first name, your surname, and your student number, e.g., A1SimonLee1234567.zip. It must be submitted to Blackboard -> Assessment -> AssignmentsSubmission-> Assignment1

- Print the document, submit the hardcopy by the due time ***to SEEC school office in ICT building***. The hard copy **must** have on the front a **signed** copy of the cover sheet (Assessment Item Cover Sheet – Individual) which is available from: http://www.newcastle.edu.au/__data/assets/pdf_file/0008/75383/AssessmentItemCoverSheet.pdf

  Note: **please make sure to fill in your Tutorial Group (i.e., time), Tutor Name,** as well as other items. Otherwise your submission marking may be delayed.

Note: Ten percent of the possible maximum mark for the assessment item will be deducted for each day or part day that the item is late. Weekends count as one day in determining the penalty. Assessment items submitted more than five days after the due date will be awarded zero marks.

Please note:

Zero mark will be given if you donot submit both hardcopy and softcopy.

If your hardcopy submission and softcopy submission are not at the same time, the time of the later submission will be counted as your assignment submission time.