COIT12167 2009/T1 Examination memo

The COIT12167 exam will be 3 hours and closed book. You will have 15 minutes perusal time. The exam will be marked out of 60 and constitutes 60% of your final grade. You must pass this exam to be eligible to pass the course. It will contain three (3) parts, described below. You should answer all questions in the examination booklet provided. You should review the objectives stated in the study guide modules and the lecture slides as part of your preparation.

Part A (20 marks) – Practical application
Part A examines Structured Query Language (SQL) and relational algebra. All questions from this section will focus on a selection of tables from the model solution for assignment 2 from the current term.

Structured Query Language (16 marks)
You will be provided with a copy of several tables from the model solution for assignment 2 from the current term, including sample data. You will be asked to write SQL statements to answer a number of information requests. For each request, the expected result (according to the sample data provided) will be shown. In writing your SQL statements:

- You are asked to provide a general solution to each request. If the database contents change, each of your queries should continue to answer the information requested correctly.
- Simple queries are preferred; unnecessarily complex queries may lose marks.
- Your queries should be able to generate the same data and column names as shown in the result table for each request.
- You are not required to sort the results in any order unless requested.
- State any assumptions that you may make to clarify your understanding of the questions.

Relational algebra (4 marks)
You will be asked to demonstrate your comprehension of the relational algebra by converting relational algebra expressions to equivalent SQL queries.

Part B (20 marks) – Conceptual modelling, Database Design & Normalisation
Part B examines entity-relationship modelling, transformation of ER models and normalisation.

ER modelling (10 marks)
You will be provided with a case study describing the operations of a small business. You will be required to develop an ER model to represent that business. You should use the syntax provided in the text book.

Transforming ER models (5 marks)
You will be provided with an ER model using the syntax specified in the text book. You will be required to transform this ER model into a set of relations. You are expected to use the following syntax for your relations:

Customer (CustomerID, FamilyName, GivenName, Phone)
Order (OrderID, OrderDate, CustomerID)
    FOREIGN KEY (CustomerID) REFERENCES Customer

You are not expected to:
- Prove that your relations meet BCNF
- Write out sample data for your tables.

Normalisation (5 marks)
You will be provided with a sample table and asked several questions that test your knowledge of data anomalies, functional dependencies and normalisation.
Part C (20 marks) – Theory questions
You will be asked eight (8) questions that test your theoretical knowledge. The first four questions asked will be worth 2 marks each. The remaining four questions are worth 3 marks each. These questions may come from any part of the course. Questions will be formulated in sympathy with the objectives at the start of each Study Guide module. Some questions are broken down into parts – (a), (b), etc – to clarify what is being asked.

You should keep your answers fairly short. You must provide enough information in your response to fully answer the question, but you are not expected to pad your answer with information that does not directly relate to the question. If you understand the concepts fully, then you should be able to answer many of these questions in just a few lines. Some questions may require a little more.

Practice Exam
A practice exam will be available on the course web site. The purpose of this exam is to provide an indication of the style of question you may meet in the exam, and to help you assess any time constraints you may meet in the exam.

Past exam are not being provided for this course. It is a risky practice to rely on past exams as a guide to candidate exam question topics. The content of this course has changed over time, and will continue to change in the future. The best guides to candidate exam question topics are the learning objectives provided at the start of each Study Guide module.

Please note the following points of difference between the Practice Exam and the exam you will meet in this offering of the course:

- The Practice Exam includes space to write answers; in your exam, you will be asked to write answers in an examination booklet.
- The database used in Section A will be drawn from the database provided as a Sample Solution to Assignment 1; a subset of tables, and columns in those tables, will be used.
- You will not be asked to formulate relational algebra expressions; instead, you will be asked to translate relational algebra expressions into equivalent SQL queries.
- You will meet a case study that is a touch longer than the one shown in Question 3 of the Practice Exam; in your exam, data storage requirements described in the case study will be presented in the style used in Assignment 1.
- The ER model notation used in Question 4 of the Practice Exam is different from that used in the current edition of the textbook; in your exam, the notation used in the Sample Solution to Assignment 1 will be used.
- Section 3 of the Practice exam has 12 questions; Section 3 of your exam has 8 questions, 4 of which are worth 3 marks (thereby probing topics a little more deeply).
- Finally, one stylistic change in Section 3 is that some questions will be based around tables provided in Question 1; other questions will explicitly ask you to support your answer with an example. The aim is to test comprehension of topics over reproduction of definitions.

Helpful hints
- You are not required to answer the questions in order. Use the perusal time to identify which questions you can answer most readily.
- Use the perusal time to determine whether you have any questions / issues that require resolution. If so, ask the exam supervisors to help you. If the exam supervisor cannot answer your question, then they will phone the Course Coordinator to try and get resolution.
- Also use the perusal time to work out how much time – according to marks / break down – that you can spend on each question, and then keep a close eye on the clock during the exam to ensure that you keep within these time limits. Doing this will ensure that you do NOT spend 2 hours on a question worth 3 marks! The exam has 180 minutes and 60 marks – so, you should plan to use 3 minutes per mark.
- Note: In perusal time, you can underline, circle, or highlight key words (and this can be very useful), but you cannot write in your exam booklet until perusal time is over.
• Read each question carefully and make sure you know exactly what is required before you devote any time to answering it. Underlining or highlighting keywords can help.

• **Do not copy the whole question into your exam booklet**, as you may run out of time doing this. Clearly indicate which question you are answering, for eg ”Part A Question 1” and then write your answer.

• **Don’t write draft copies of your answers on your rough paper.** Write your answers directly into the exam booklet. If you need to re-write or re-draw your answer, do so on the next available page and then cross out your old answer with one or two lines.

• Messy or hard to read answers might lose you marks because the exam marker cannot understand what you have done or why, or because they cannot tell which question is being answered. Keep your writing as neat as possible, use meaningful names, and lay your answers out neatly.

• Don’t get bogged down on any particular question. If you are having trouble on any given question, then move on to another question and come back later.

• This exam **does not** contain any multiple choice questions.

• **GOOD LUCK!**