

BIRKBECK COLLEGE  
(University of London)

**MSc EXAMINATION**

**SCHOOL OF BUSINESS, ECONOMICS AND INFORMATICS**

**INFORMATION SYSTEMS**

**COIY059H7**

**15 credits**

**TUESDAY 3<sup>rd</sup>. JUNE 2014**

**2.30 pm – 4.30 pm**

**INSTRUCTIONS**

Candidates must answer **THREE** questions in Total.

**TWO** questions must be selected from Section A.

**ONE** question must be selected from Section B.

No credit will be given for additional questions answered.

There are five questions on this paper.

All questions are worth 33 marks.

Marks for sub-questions are shown on the right below the sub-question.

One mark is reserved for a well presented paper.

The paper is worth 100 marks in total.

No calculating or communicating equipment may be used.

Time allowed: Two hours.

Candidates must **NOT** bring any supplementary material into the examination.

## **Section A**

### **Question 1**

In a University, several housing representatives deal with landlords who own at least one rental unit (flat or apartment) for renting to students. The housing representatives maintain a single list of rental units which students may rent. The list includes details of each rental unit till it is let. Students do not deal with the landlord but only deal with the housing representative.

Using UML notation draw a Class Model showing the classes involved for a system that would support this situation that incorporates the associations described above.

Show only concrete classes and the multiplicity for each association and the type of aggregation for any aggregated relationships as well as the label for at least one direction of the association. Do not show direction indicators where your label works both ways.

[33 marks]

## Question 2

BrightBites operates several dental practices and has retained a computing development company to convert its current envelope and manual system to computer based working. In each practice *patients* tell *receptionists* of their need for a consultation with a *dentist*. A dentist works with an *assistant* who may be a hygienist or student dentist. A constraint on the new system is that no direct interaction with the computers will be carried out by dentists or patients except that appointment reminders may be sent directly to patients.

A patient arriving at the practice requests a consultation with a dentist. Initial consultations usually result in courses of treatment determined by the dentist in consultation with the patient and recorded by the dental assistants and the receptionist, formerly on envelopes and paper diaries but envisaged to be by computer.

Each practice consists of a number of chairs and the chairs are staffed by a dentist and a dental assistant. At the beginning of each quarter one of the practice receptionists will schedule available dentists to the practice chairs. This schedule is retrieved by the dental assistant who appraises the dentist of where they will be operating. By and large, long serving dentists use the same chair but new dentists are more peripatetic and move from practice to practice.

The receptionists maintain the chair/dentist/patient diary by recording appointments, generating reminders to patients, taking and recording payments for a course of treatment (which may be by claims on insurers or the National Health system as well as direct payment; usually a combination of all three), recording attendances, and ordering stocks of consumables and bespoke items. The need for bespoke items (e.g. crowns, braces, false teeth) arises during some consultations when they are agreed between the patient and the dentist, and recorded by the dental assistant.

Draw a high level use case model of a proposed integrated system to support a branch of BriteBites showing the use cases that are associated with the actors in this scenario. Your answer should include at least one <<include>> association and at least one <<extend>> association. Amongst other model elements use the actor names shown in ***bold italics*** in this scenario.

[33 Marks]

## Question 3

In developing and maintaining organisational information infrastructures Systems Architects need to specify non-functional requirements. Under five headings identify and define with examples the types of requirements that Systems Architects should specify for large global systems.

[33 Marks]

## **Section B**

### **Question 4**

- a) Your friend Alice Munro wants to build up a client mailing list for her new online book store. She asks you to outline some of the Data Protection rules that are relevant to her. What can you tell her?

[13 marks]

- b) The National Programme for IT comprised a series of IS projects designed to provide modern IS for the NHS in the UK. The programme was terminated in 2011, and was widely regarded as an example of a failed IS programme. Write a short essay (1-2 pages) describing why this programme is of interest to IS professionals. You should refer to the importance of IS systems in society, reasons for failure and implications on IS professionalism.

[20 marks]

[Total 33 Marks]

### **Question 5**

You work for a software company in California that is developing bespoke software for Teledyne Corporation, a robotics firm. The contract for this work is in two phases: the first, a time and materials (T&M) contract, to agree project scope and a work plan; and the second phase, a fixed price contract for the actual development work.

- a) Explain the difference between a T&M and Fixed Price contract and why it is of benefit to you AND Teledyne to contract in this way.

[17 marks]

- b) During the project you develop unique software that limits the robots' ability to self-replicate. Can you claim to own and patent your software? What is the difference on software patenting between the USA and Europe?

[16 marks]

[Total 33 Marks]