

THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATION Diploma

SYSTEMS ANALYSIS

26th April 2005, 10.00 a.m.-12.00 p.m.

QUESTION 1 is mandatory and receives 50% of the total marks available for this paper.
Candidates may select TWO of the remaining FOUR questions.

Time: TWO hours

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

1. Global Translations

Global Translations is a company that undertakes translations to and from the major languages of the world. All sorts of documents including letters, reports, operating instructions and technical manuals are handled, for a variety of corporate clients. Global Translations requires a new computer information system to help it manage its business more efficiently. The Manager has provided the following description of how the company currently operates:

‘When a request for a translation is received, we first check whether the request has come from an existing client and if not, we allocate the client a unique number and add their name, address and telephone number to our records. Then we log the translation request and allocate it a unique code. Next we make a note of the original language and the language or languages into which it is to be translated (often there is a requirement to translate from the original into several different destination languages), the number of pages, the type of document (for example, a letter, a report, a set of instructions) and whether it requires any special vocabulary (for example, medical or computing terms).

‘The translation is then allocated to a translator capable of carrying out the work. We keep records of all the translators who work for us. Many of these are part-time staff who work from home. As well as their name, address, telephone number(s) and email address, the translators’ records list the languages they know and which kinds of specialised vocabulary they are familiar with. Some translators can translate to and from several different languages and for some languages we have more than one translator. Some (but not all) translators are familiar with one or more specialised vocabularies.

‘We make a note of to which translator the translation has been allocated, then give or send it to them. The translator tells us the estimated time the work will take, which we record. At this point we contact the client with an estimate of the cost and time. We charge a different rate for different languages.

‘When the translator returns a completed translation to the office they tell us how many hours they have spent on it. We make a note of the date the completed translation was received by us and how many hours it actually took. We then prepare an invoice based on the actual hours spent and the language rate and send it with the completed translation to the client’.

- a) Draw a Top Level Current Logical Data Flow Diagram for the above scenario. **(15 marks)**
- b) Produce an Entity Relationship Diagram (Logical Data Structure) and a set of normalised tables for the above scenario. You **DO NOT** need to show evidence of the normalisation process. You should include the entity type, ‘Translation’. **(20 marks)**
- c) Alternatively the system may be developed using object-oriented modelling, in which case a Class Diagram would be drawn.
- i) Show what the class ‘Translation’ would look like using UML notation. **(5 marks)**
- ii) Add an association between ‘Translation’ and one other class. **(2 marks)**
- iii) Explain the difference between the representation of ‘Translation’ as a class and as an entity (as in your solution to 1b), and the difference between a ‘relationship’ on an Entity Relationship Diagram and an ‘association’ on a Class Diagram. **(8 marks)**

Turn over]

2. a) Explain with examples the difference between 'Functional' and 'Non-functional' requirements. **(10 marks)**
- b) Describe **THREE** of the following approaches to identifying user interface requirements.
- i) Structured Approach
 - ii) Scenario Based Approach
 - iii) Ethnographic Approach
 - iv) Storyboarding
 - v) Prototyping
- (3 x 5 marks)**
3. Describe and justify the contents of:
- a) A Project Initiation Document (PID) **(10 marks)**
- b) A Requirements Specification **(15 marks)**
4. Structured systems analysis and design approaches often develop three related views or models of systems.
- a) What are these views and how do they relate to each other? **(9 marks)**
- b) Explain how the three models developed to represent these views may be checked against each other for completeness and accuracy. **(16 marks)**
5. Identify suitable fact-finding methods that you would use in the systems analysis phase of the Global Translation project. Justify your choice by reference to the advantages and disadvantages of each method identified and its appropriateness for supporting this particular development. **(25 marks)**