THE UNIVERSITY
of LIVERPOOL

MAY 2003 EXAMINATIONS

Bachelor of Science : Year 2
Bachelor of Science : Year 3

SOFTWARE DEVELOPMENT IN PRACTICE

TIME ALLOWED : Two Hours

INSTRUCTIONS TO CANDIDATES

This examination paper is divided into **FIVE** sections.
Answer **ALL** the questions from Sections A, B, C and D.
Answer any **ONE** question from Section E.

If you attempt to answer more than the required number of questions (in any section), the marks awarded for the excess questions will be discarded (starting with your lowest mark).

Section A

This Section is for 15 marks. Answer all the questions in this section.

1. Distinguish between Internet and World Wide Web. (1 mark)

2. What is the basic unit for information exchange on the WWW? (1 mark)

3. Explain the meaning of the term *hypertext*. (2 marks)

4. Distinguish between *web browsers* and *web servers*. (2 marks)

5. The syntax of a URL is as follows.
   scheme://host.domain:port/path
   State what *scheme* and *port* indicate. (2 marks)

6. Give two examples of what a scheme could be in the previous question. (2 marks)

7. Distinguish between an absolute URL and a relative URL with the help of an example. (3 marks)

8. What are the basic list structures supported by HTML? (2 marks)

Section B

This Section is for 15 marks. Answer all the questions in this section.

1. What is the difference between a Java application and an Applet? (2 marks)

2. What is the advantage of providing a Graphical User Interface (GUI) to a program? (2 marks)

3. Distinguish between single threading and multithreading. (2 marks)

4. Briefly explain round-robin scheduling. (3 marks)

5. Briefly explain how Java uses monitors to perform synchronization. (3 marks)

6. Distinguish between preemptive scheduling and non preemptive scheduling. (3 marks)

Section C

This Section is for 15 marks. Answer all the questions in this section.

1. Name a professional organization which provides its members with guidance on acceptable behavior within the IT industry. (1 mark)

2. Distinguish between owning a copyright and owning a patent. (2 marks)

3. Which of the following are restricted acts under the Copyright law. State exceptions if any.

   (a) Taking a program written in C and rewriting it in Java.

   (b) Decompiling a program.

   (c) Adapting a program to correct an error. (3 marks)

4. What are the duties of a Data Protection Registrar? (2 marks)

5. What advantages do software developers gain by becoming members of the British Computer Society (BCS)? (2 marks)

6. List any two criteria that must be satisfied if an invention is to be patentable. (2 marks)

7. List the conditions that must be satisfied for a work to be protected by Copyright. (3 marks)

Section D

This Section is for 15 marks. Answer all the questions in this section.

1. What are the advantages of the Object-Action Interface (OAI) model for designing interactive systems? (3 marks)

2. State any three golden rules for interface design. (3 marks)

3. Briefly characterise the following categories of users. (3 marks)

   (a) Novice users.

   (b) Knowledgeable, infrequent users.

   (c) Expert users.

4. With reference to the previous question, give two properties of a user interface that would be required particularly by users in each category. (6 marks)

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Section E

This Section is for 20 marks. Answer any one question.

1. (a) i. In HTML, what is the use of the <A> tag with the
      - HREF attribute.
      - NAME attribute. (2 marks)
   ii. What does TCP/IP stand for? (1 mark)
   iii. How does a server distinguish between a *script* and an HTML document? (2 marks)

   (b) i. What is a Java *thread*? (2 marks)
   ii. Briefly explain the difference between the *text-field* and *label* components of Java. (3 marks)

   (c) i. Discuss three main areas of the British Computer Society (BCS) code of conduct. (3 marks)
   ii. What is the function of the Data Protection Tribunal? (2 marks)

   (d) Discuss any two guidelines for error management that ensure smooth interaction between humans and machines. (5 marks)

2. (a) i. What is a server script? (3 marks)
   ii. Distinguish between a *hypertext link* and an *anchor*. (2 marks)

   (b) i. What is meant by *multithreading*? (3 marks)
   ii. What is a Java *monitor*? (2 marks)

   (c) i. List the three new offences created by the Computer Misuse Act of 1990. (3 marks)
   ii. Give two examples of intellectual property. (2 marks)

   (d) Give a brief outline of the Object-Action Interface (OAI) model for designing interactive systems. (5 marks)