UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

COMPUTING **9691/03**

Paper 3

May/June 2006

2 hours

Additional Materials: Answer Booklet/Paper

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs, music or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **3** printed pages and **1** blank page.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1 (a) Explain why a program, written in a high level language, needs to be translated ... is run on a computer.

(b) Describe the difference between interpretation and the compilation of a high level lang... program.

(c) Explain how errors in the

(i) reserved words,

(ii) variables

used in high level language instructions are recognised by the translator program. **[4]**

2 A supermarket company invests in a new computerised point of sale (checkout) system for its stores.

(a) Explain why

(i) technical documentation,

(ii) user documentation

would be necessary. **[4]**

(b) It is necessary to carry out three types of maintenance on the software in a computer system.

(i) Corrective

(ii) Adaptive

(iii) Perfective

Explain what each of the terms means and state how each would apply to the supermarket point of sale system. **[6]**

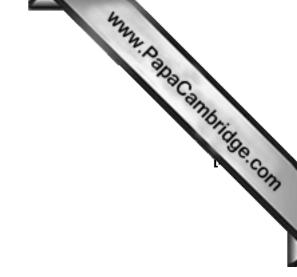3 Simulation is used when a new car is designed.

State **three** aspects of the design which would be simulated and, for each, give a different reason why simulation is used. **[6]**

4 A sales manager for a company is responsible for a large sales team working over a wide geographical area. Members of the sales team communicate with each other by use of email.

Describe **four** features of email that the manager finds useful, giving an example of the use to which each will be put. **[8]**

5 Describe the fetch/decode/execute/reset cycle when the next instruction to be executed is an unconditional jump instruction. **[7]**

6 (a) Describe each of the following programming paradigms

   (i) Object-oriented,

   (ii) Declarative.

   (b) Explain the meaning of the following types of addressing

   (i) Indirect,

   (ii) Indexed.

   Give a reason why each may need to be used.   **[6]**

7 A health centre employs doctors, nurses and receptionists.
   The data that is stored about the patients includes their medical history and personal information
   about them.

   Explain the need for maintaining privacy of the data and describe methods by which the database
   management system (DBMS) can help to achieve this.   **[6]**

8 (a) Explain the difference between a dynamic data structure and a static data structure, giving an
        example of each.   **[3]**

   (b) A list of the names of students in a college is stored in an array of size 1000. The names are
        stored in no logical order, simply in the order that they were input to the array.

        (i) Give **one** advantage and **one** disadvantage of storing this list of names in an array.   **[2]**

        (ii) In whatever form you choose, describe an algorithm for finding the location in the array
              of a specific name 'X', using a serial search.   **[5]**

        (iii) An alternative way of storing the names is to store them in alphabetical order within the
               array. Explain how this will affect the management of the storage and the search for
               specific names.   **[4]**

9 (a) Explain the meaning of the terms;

        (i) virtual memory,   **[2]**

        (ii) paging memory,   **[2]**

        (iii) segmentation of memory.   **[2]**

   (b) (i) State what is meant by the term spooling.   **[2]**

        (ii) Describe the process of sending jobs for printing using a spooler. **[3]**

10 Explain the need for standardisation in modern computer systems and give examples where
    standardisation is important.   **[8]**

                                                                          [Total 90]

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