



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

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COMPUTING

9691/01

Paper 1

May/June 2009

2 hours 30 minutes

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 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 **4** printed pages.



* 6 6 2 0 3 9 1 9 6 7 *

1 (a) Describe the purpose of the following in a computer system:

- (i) an input device,
- (ii) an output device,
- (iii) a storage device.

[3]

(b) A printer is a hard copy output device.

State **three** different types of printer.

For each of your choices give an example of an application where it would be used, justifying your choice. [9]

2 A stock file in a company has records of all the different items held in stock. The records each hold a number of fields:

- the name of the item in stock
- description of the item
- cost
- whether or not in stock
- number in stock

(a) (i) State a suitable data type for each field. [2]

(ii) If there are 1000 items in stock, **estimate** the size of the stock file. (Show how you worked out your answer.) [4]

(b) Give **one** advantage and **one** disadvantage of storing files in the form of fixed length records. Relate each of your answers to the example of the stock file. [4]

3 Explain **three** ways in which the use of computer systems has changed peoples' work expectations. [6]

```

4  1  X = 1
    2  REPEAT
    3      A = X * X
    4      OUTPUT X, A
    5      X = X + 1
    6  UNTIL X = 3
    7  END

```

(a) Copy and complete the following table to dry run the algorithm.

LINE	X	A	OUTPUT	CONDITION
1	1			
3	1	1		

[4]

(b) The algorithm outputs consecutive numbers, starting with 1, and their squares. The intention was to print out the first 10 numbers with their squares.

(i) State how the algorithm needs to be changed in order to print 10 numbers, as intended. [1]

(ii) Explain how the algorithm can be changed to allow the user to specify how many numbers are to be output. [2]

(c) Rewrite the algorithm so that it will output the numbers 5, 10, 15, 20, 25, with their squares. [3]

5 One purpose of most operating systems is to provide a human computer interface (HCI).

(a) Describe the following HCIs and give an example of an application which would use each:

(i) menu based, [3]

(ii) natural language. [3]

(b) State **three** other purposes of an operating system. [3]

6 (a) State what is meant by the following types of data transfer:

(i) serial, [1]

(ii) parallel, [1]

(iii) simplex, [1]

(iv) half duplex. [1]

(b) In a certain computer system parity checking is used to check that data has been transferred correctly. The type of parity checking used is even parity.

Using the byte 01101001 as an example:

(i) explain what is meant by an even parity check, [2]

(ii) give an example of an error which would **not** be detected. [1]

- 7 Describe how a knowledge based (expert) system can be used to aid geologists in conducting geological surveys.

The remaining questions all refer to the following information.

A company specialises in creating websites for customers.

- 8 (a) As part of the process of designing a site, the company will use diagrams in order to make understanding easier.

Describe **two** types of diagram that may be used by the company. [4]

- (b) It will be important to produce user documentation for new systems.

By referring to the **two** different types of user of the new system, describe the documentation which will be produced. [4]

- 9 One output format on a site will be a web page containing text and images.

Describe **two** other output formats which might be used on the sites which the company designs. [4]

- 10 When designing the website, the designer must take account of a number of issues.

Discuss how colour, layout and content will affect the designer's decisions. [6]

- 11 A finished website will be made available across the internet or on a local area network or both.

Explain the relationship between the bit rates available on the network and the types of output format used on the website. [4]

- 12 The company stores details of customers and their accounts in a database.

- (a) (i) Distinguish between custom-written software and off-the-shelf software. [2]

- (ii) Explain why the company chose to use off-the-shelf software for their database. [2]

The data input to the database must be verified and validated.

One piece of data which will be input to the database is the amount of money when a customer makes a payment.

- (b) (i) State what is meant by verification of data. [1]

- (ii) Describe how the customer payment will be verified when it is input to the database. [2]

- (c) (i) State what is meant by validation of data. [1]

- (ii) Describe how the customer payment will be validated when it is input to the database. [2]