

Candidate Name	Centre Number	Candidate Number
		2



**GCE AS/A level**

341/01

**COMPUTING CP1  
SOFTWARE AND SYSTEM DEVELOPMENT**

A.M. FRIDAY, 15 May 2009

1½ hours

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	4	
2	2	
3	6	
4	4	
5	5	
6	6	
7	8	
8	6	
9	7	
10	12	
<b>Total</b>	<b>60</b>	

**INSTRUCTIONS TO CANDIDATES**

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Answers should be written in the spaces provided. Where the space is not sufficient for your answer, continue the answer at the back of the book, taking care to number the continuation correctly.

The intended marks for questions or part questions are given in brackets [ ]. You are advised to divide your time accordingly. The total number of marks available is 60.

You are reminded of the necessity for good written communication and orderly presentation in your answers.

1. Two different types of programming errors are *syntax errors* and *logical errors*.

(a) Describe what is meant by the term *syntax error* and give an example. [2]

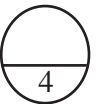
Description: .....

Example: .....

(b) Describe what is meant by the term *logical error* and give an example. [2]

Description: .....

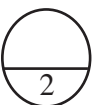
Example: .....



2. Many physically handicapped people use computers. Describe **two** features of a human computer interface (HCI) which would make it suitable for use by a physically handicapped person. [2]

Feature 1 .....

Feature 2 .....



3. Krystyna Batowski works for a large organisation which keeps computer records of all its employees.

There are a number of grades of staff in the organisation and Krystyna is on Grade D. Different employees get different numbers of days of holiday per year and Krystyna gets 28 days. It is possible to be a member of the pension scheme and Krystyna has chosen to be a member.

(a) The above information refers to four different types of data. Write down the different types of data, and give an example taken from the above information about Krystyna in **each** case. [3]

The first one is done for you.

Data type 1	String	Example	Krystyna Batowski
Data type 2	.....	Example	.....
Data type 3	.....	Example	.....
Data type 4	.....	Example	.....

(b) Name a **fifth** data type, and describe an example of information about **each** employee in the above example which could sensibly be stored in this data type. [2]

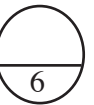
Data type .....

Description .....

(c) Why can **all** the data for one employee **not** be stored in an array? [1]

.....

.....



4. A new computer system has been installed in a school office. Documentation is supplied with the system.

(a) What type of documentation will be helpful to the school office staff? [1]

.....

(b) What type of documentation will be helpful to a future maintenance programmer? [1]

.....

(c) The programs in the new computer system contain two types of self-documentation. Explain **each** of the following:

(i) self-documenting identifiers; [1]

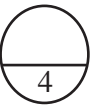
.....

.....

(ii) self-documenting code. [1]

.....

.....



5. (i) A list of values is in no particular order. A computer program compares each value in the list against a value input until either a match is found or the end of the list is reached.

(a) Give the full name for this process. [2]

.....

(b) If the value is not matched, what should happen when the end of the list is reached? [1]

.....

(ii) A *binary search* is an operation often used in computer programs.

(a) When it can be used, what is the benefit of using a binary search over other types of search? [1]

.....

(b) It is known that for a binary search on an array of 1000 data items, the maximum search length is about 10. Assuming this is true, what will be the maximum search length for an array of 4000 items? [1]

.....



6. (i) Languages like HTML are often used to develop web pages. Describe **three** features which make such languages suitable for this purpose. [3]

Feature 1 .....

.....

Feature 2 .....

.....

Feature 3 .....

.....

- (ii) (a) One major type of software is *applications software*. Describe what is meant by the term *applications software*. [1]

.....

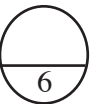
.....

- (b) Give an example of *applications software*. [1]

.....

- (c) Name the other major type of software. [1]

.....



7. A school secretary uses an integrated software package which provides a number of elements.

- (a) One of these elements is a word processor. Name **two** other elements you would expect to see in an integrated package. [2]

Element 1 .....

Element 2 .....

- (b) Two features of the integrated package that the school secretary uses are *mail-merge* and *macros*.

- (i) Describe the *mail-merge* feature **in detail**, giving an example of how the secretary might use *mail-merge*. [3]

.....

.....

.....

.....

.....

- (ii) Describe the *macro* feature **in detail**, giving an example of how the secretary might use *macros*. [3]

.....

.....

.....

.....

.....

8. The Government is very worried about the amount of petrol being used and the amount of pollution caused by the cars in the country. The Government is considering whether to charge yearly tax for all the petrol cars in the country according to the official petrol consumption figures (in miles per gallon) and the carbon dioxide emissions produced (in grammes per km).

The algorithm under consideration is shown below:

```

1  input Emission
2  input Consumption
3  if ((Emission > 170) OR ((Emission > 160) AND (Consumption < 35)))
4    then output "£200" tax
5  else if ((Emission > 150) OR ((Emission > 140) AND (Consumption < 35)))
6    then output "£150 tax"
7  else output "£100 tax"

```

- (a) (i) State what the output will be when the inputs are:

Emission = 135                      Consumption = 30                      [1]

.....

- (ii) State what the output will be when the inputs are:

Emission = 175                      Consumption = 40                      [1]

.....

- (iii) State what the output will be when the inputs are:

Emission = 145                      Consumption = 40                      [1]

.....

- (iv) State what the output will be when the inputs are:

Emission = 155                      Consumption = 40                      [1]

.....

- (b) A change is made in line 5 of the algorithm as shown below:

```

5  else if ((Emission > 150) OR (Consumption < 35))

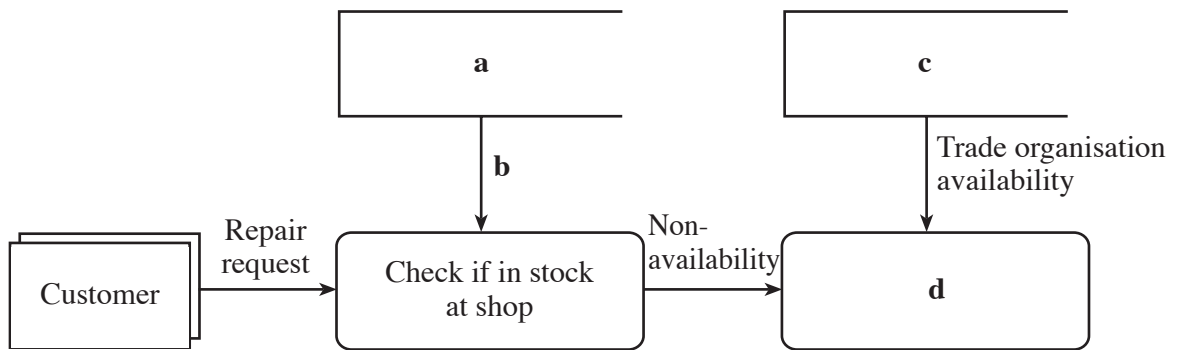
```

- (i) State which of parts (a)(i) to (a)(iv) now gives a different output.                      [1]
- .....

- (ii) Briefly explain why the Government may have made this change.                      [1]
- .....
- .....

9. A specialist shop repairs antique clocks and watches, and keeps quite a large supply of suitable spare parts. Sometimes, however, a part may be required which is not kept in stock by the shop. When this happens, the shop owner contacts a national trade organisation which keeps a larger range of spare parts in stock.

The situation described is shown below:



- (a) Diagrams like this are often used in discussion between software developers and users. Give **one** reason why this is the case. [1]

.....

.....

- (b) What type of object does the following shape represent? [1]



.....

- (c) Write down the shape used in the diagram to represent a *data flow*. [1]

(d) Give a suitable name for the object shown as **a** in the diagram.

[1]

.....

(e) Give a suitable name for the object shown as **b** in the diagram.

[1]

.....

(f) Give a suitable name for the object shown as **c** in the diagram.

[1]

.....

(g) Give a suitable name for the object shown as **d** in the diagram.

[1]

.....

