

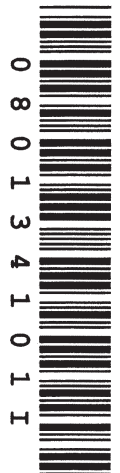
Candidate Name	Centre Number	Candidate Number
		2



**General Certificate Education
Advanced Subsidiary/Advanced**

341/01

**COMPUTING CP1
SOFTWARE AND SYSTEM
DEVELOPMENT**



P.M. MONDAY, 14 January 2008
(1½ hours)

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.

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

1. Data about students in a school are held in a computer system.

(i) Describe student data which would best be stored in **each** of the following data types:

string data type; [1]

.....

integer data type; [1]

.....

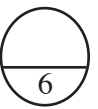
boolean data type; [1]

.....

real data type. [1]

.....

(ii) Draw a diagram to show data about the students which might sensibly be stored in a two-dimensional array. [2]



2. (a) (i) A line of computer code contains a calculation error, generating incorrect values when the program is run. What type of error is this? [1]

.....

(ii) (I) What type of error occurs when a computer program unexpectedly stops (crashes) while running? [1]

.....

(II) Give **one** example of this type of error. [1]

.....

.....

(iii) (I) A computer program includes a line in which a command word is misspelled. What type of error is this? [1]

.....

(II) Give another example of this type of error. [1]

.....

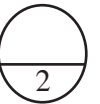
.....

(b) Explain why careful *version control* is important when developing computer programs. [1]

.....

.....

.....



3. Some programming languages have certain features which are useful when developing web pages.
Describe **two** features which make such languages suitable for this purpose. [2]

Feature 1

Feature 2

4. A computer system is being developed to replace an existing computer system for a bank.

(i) Describe **two** activities which should take place during the *requirements analysis* for this development. [2]

Activity 1

Activity 2

(ii) Describe two different types of documentation that will be produced for the new system and indicate who is most likely to read **each** type. [2]

Type 1

Intended for

Type 2

Intended for

(iii) Describe **two** different approaches which could be adopted to the changeover from the old system to the new system. [2]

Approach 1

Approach 2

- (iv) Computer programs within the new system need to be maintained. Name **two** types of program maintenance and give an example of a situation where it might be appropriate in **each** case. [4]

Type 1

Situation

.....

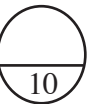
.....

Type 2

Situation

.....

.....



5. A binary search is used to search for the number 26 in the following array:

11	14	24	26	36	41	41	43	48
----	----	----	----	----	----	----	----	----

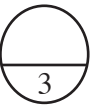
- (i) Why is this array suitable for a binary search? [1]
.....
- (ii) Name a type of search which is suitable when a binary search is not possible. [1]
.....
- (iii) Write down **one possible order** in which the numbers in the above array will be accessed to complete the search for 26 in a binary search. [2]
.....
- (iv) What should happen if a binary search is made for the number 45 in this array? [1]
.....
.....

6. (a) Describe the difference between *applications software* and *systems software*. [2]

.....
.....
.....
.....

(b) What is meant by the *scope* of a variable in a computer program? [1]

.....
.....
.....



7. A small firm sends letters to its customers. It does this by combining name and address data from one part of an integrated package into a standard letter produced in another part of the same package.

(i) What name is given to the operation when data is combined in this way? [1]

.....

(ii) Which **two** parts of the integrated package would be useful for this? [2]

.....
.....

(iii) The firm often uses *macros* while producing these letters. Explain what is meant by the term *macro*. [1]

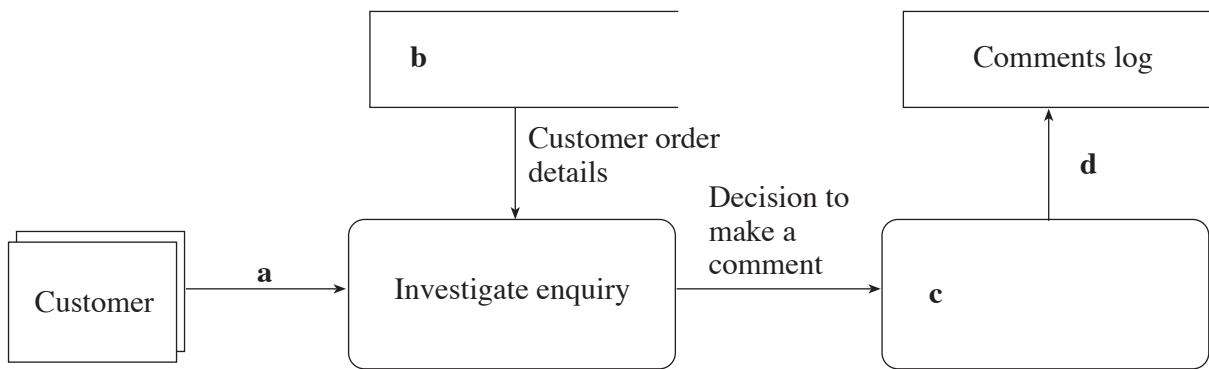
.....
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8. An Internet-based book-seller allows its customers to send an email, via its web-site, to make an enquiry about a book order already made, such as the expected delivery date. Staff at the company then email the customer with a response.

At the same time as making the enquiry, the customer has an opportunity to make a comment about the quality of the service the company provides. Any comments made are stored by the system.

The diagram below illustrates the situation described.



- (i) Diagrams like these are often used in discussion with users. Give **one** reason why this is the case. [1]

.....

.....

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



.....

- (iii) Draw the shape used in the diagram to represent a *process*. [1]

(iv) Give a suitable name for the object shown as **a** in the diagram. [1]

.....

(v) Give a suitable name for the object shown as **b** in the diagram. [1]

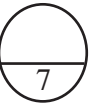
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(vi) Give a suitable name for the object shown as **c** in the diagram. [1]

.....

(vii) Give a suitable name for the object shown as **d** in the diagram. [1]

.....



9. A credit card company issues two types of credit card, a *Gold Card* and a *Standard Card*. When a member of the public applies to the company for a credit card, the company makes a security check, then decides to do one of the following:
- offer a *Gold Card*;
 - offer a *Standard Card*;
 - reject the application.

This decision depends on the applicant’s income and whether or not they are a home-owner. The algorithm used is shown below:

```

Statement
1   input Income
2   input HomeOwner
3   if ((Income > 25,000) AND (HomeOwner = TRUE))
4       then output “Gold Card”
5       else if (((Income > 15,000) AND (HomeOwner = TRUE)) OR (Income > 20,000))
6           then output “Standard Card”
7           else output “Reject”
    
```

- (a) (i) State what the output will be for a home-owner with an income of £13,000. [1]
-
- (ii) State what the output will be for a home-owner with an income of £30,000. [1]
-
- (iii) State what the output will be for a person with an income of £22,000 who does not own a home. [1]
-
- (iv) State what the output will be for a home-owner with an income of £22,000. [1]
-
- (b) The algorithm above is correct. However, it is accidentally entered **incorrectly**, so that the word “**OR**” in statement 5 is changed to “**AND**” as shown below:

```

5   else if (((Income > 15,000) AND (HomeOwner = TRUE)) AND (Income > 20,000))
    
```

One of the parts (a) (i) to (iv) now gives a different output. State which part gives a different output and write down what the output will now be. [2]

.....

.....

- (c) The company decides to make a change to the (**correct**) algorithm so that statement 3 becomes:

3 if (((Income > 25,000) **AND** (HomeOwner = TRUE)) **OR** (Income > 50,000))

Why might the company have decided to make this change?

[1]

.....

.....

