COMPUTER SCIENCE **9608/02**

Paper 2 Fundamental Problem-solving and Programming Skills   **For Examination from 2015**

SPECIMEN PRE-RELEASE MATERIAL

No Additional Materials are required.

This material should be given to candidates up to six months before the examination.

READ THESE INSTRUCTIONS FIRST

Candidates should use this material in preparation for the examination. Candidates should attempt the practical programming tasks using their chosen high-level, procedural programming language.

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Candidates' preparation for the examination should include attempting the following practical **program coding** tasks.

TASK 1

Key focus: Using the random number generator built-in function

A hockey club has 347 members and each week all members pay $1 into a prize draw fund. Each week there is one winner and the winning number is to be generated by a computer program.

TASK 1.1

Write program code to generate a number between 1 and 347.

TASK 1.2

The number of members will change as members leave the club and new members join.
Amend the program code so that:

- the user inputs the current number of members (X)
- the random number generator is coded as a function which:
  - has a single parameter X
  - returns the winning number.

TASK 2

Key focus: Using a random number generator function

A student is investigating how many items customers purchase when visiting a supermarket.

She collects data for 100 customers which shows the following:

Number of items purchased	Number of customers
1	6
2	14
3	26
4	28
5	18
6	5
7	3
8 and over	1

Write program code to generate the sequence of number of items purchased for the random arrival of 500 customers, based on the given data.

Code the number of items generated for each customer as a function `NumberOfItems()`.

Do not attempt to summarise these as a distribution table.

TASK 3

Key focus: File handling using a text file
                 String handling built-in functions

TASK 3.1

Using a text editor, create a sample text file containing a set of computing **terms**, each followed by a one line **description**.

The typical file contents will be as shown below with each term and description on alternate lines.

serial file organisation with data items in no particular order sequential file organisation where the data items are in some key field order file collection of data items input file mode which allows data to be written to the file output file mode which allows data to be read from the file append file mode which allows new data items to be added to the end of the file FILEREAD pseudocode term to read a data item from a file FILEWRITE pseudocode term to write a data item to a file EOF pseudocode for a function which returns TRUE/FALSE to indicate whether the end of file has been reached

TASK 3.2

Write code to produce a menu for the user as shown.

```
1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice
```

TASK 3.3

Code option 1 on the menu as a procedure `SearchByTerm` which:

- prompts the user for the search term
- searches the file for the term and reports either:
  - o FOUND ... followed by its description, or
  - o TERM NOT FOUND

Typical output using the sample file would be:

```
1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice  1
Term ..? FILEREAD
FOUND ...pseudocode term to read a data item from a file

1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice  1
Term ..? database
TERM NOT FOUND

1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice  _
```

TASK 3.4

Code option 2 on the menu as a procedure `SearchDescriptionsForKeyword` which:

- prompts the user for the keyword
- searches all the descriptions in the file for the presence of that keyword and reports either:
  - the one or more terms whose description contained the keyword, or
  - NO DESCRIPTIONS FOUND containing this keyword.

Typical output using the sample file would be:

```
1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice  2
Key word ...? indexing
NO DESCRIPTIONS FOUND containing this key word

1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice  2
Key word ...? organisation
FOUND for serial
file organisation with data items in no particular order

FOUND for sequential
file organisation where the data items are in some key field order

1. Search for a term
2. Search for a keyword in the descriptions
3. End
Key in choice
```