

0478

COMPUTER SCIENCE

TOPIC QUESTION PAPER-2 SET-1

SMART EXAM RESOURCES

Unit 7 Algorithm Design and Problem Solving

1. **Four** validation checks and **five** descriptions are shown.

Draw a line from each validation check to the most appropriate description.

Validation check

length check

Description

checks that the data input is
between two values

checks that the data input is
an integer

checks that the data input has
three digits

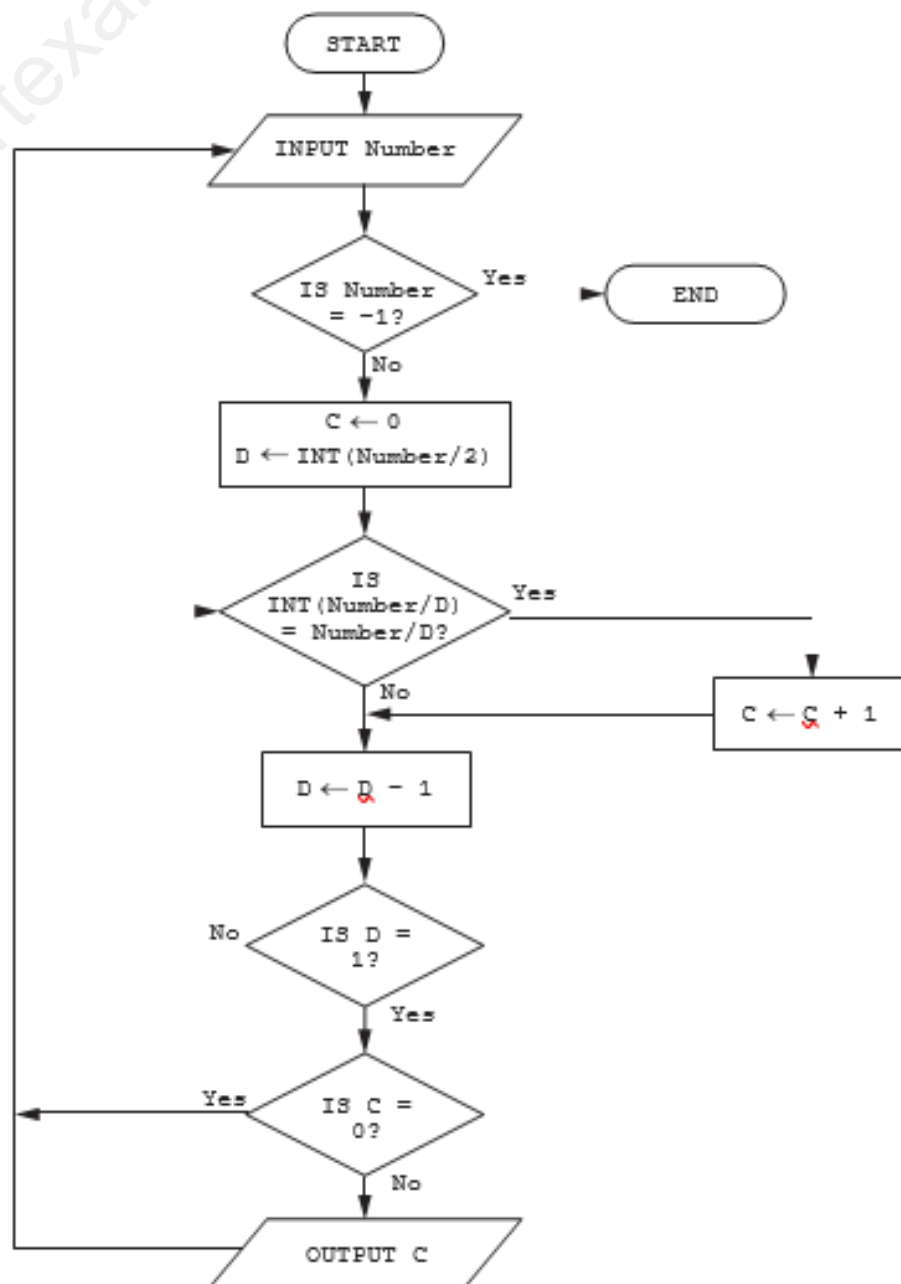
checks that the data has
been input

checks that the data input has
the correct digits

[4]

2. This flowchart inputs a whole number. The function INT returns the integer value of a number. For example, INT (7.5) is 7

An input of -1 ends the routine.



- (a) Complete the trace table for the given algorithm using this input data:
7, 6, 5, 4, -1, 12, 34

Number	C	D	OUTPUT

[6]

- (b) Describe the purpose of this algorithm.

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.....

[2]

- (c) (i) Describe the problem that occurs if a whole number smaller than 4 and **not** equal to -1 is input.

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[2]

(ii) Explain how to change the flowchart to prevent this problem occurring.

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..... [2]

3. Give **one** piece of normal test data and **one** piece of erroneous test data that could be used to validate the input of an email address.

State the reason for your choice in each case.

Normal test data.....

.....

Reason.....

.....

.....

.....

Erroneous test data

.....

Reason.....

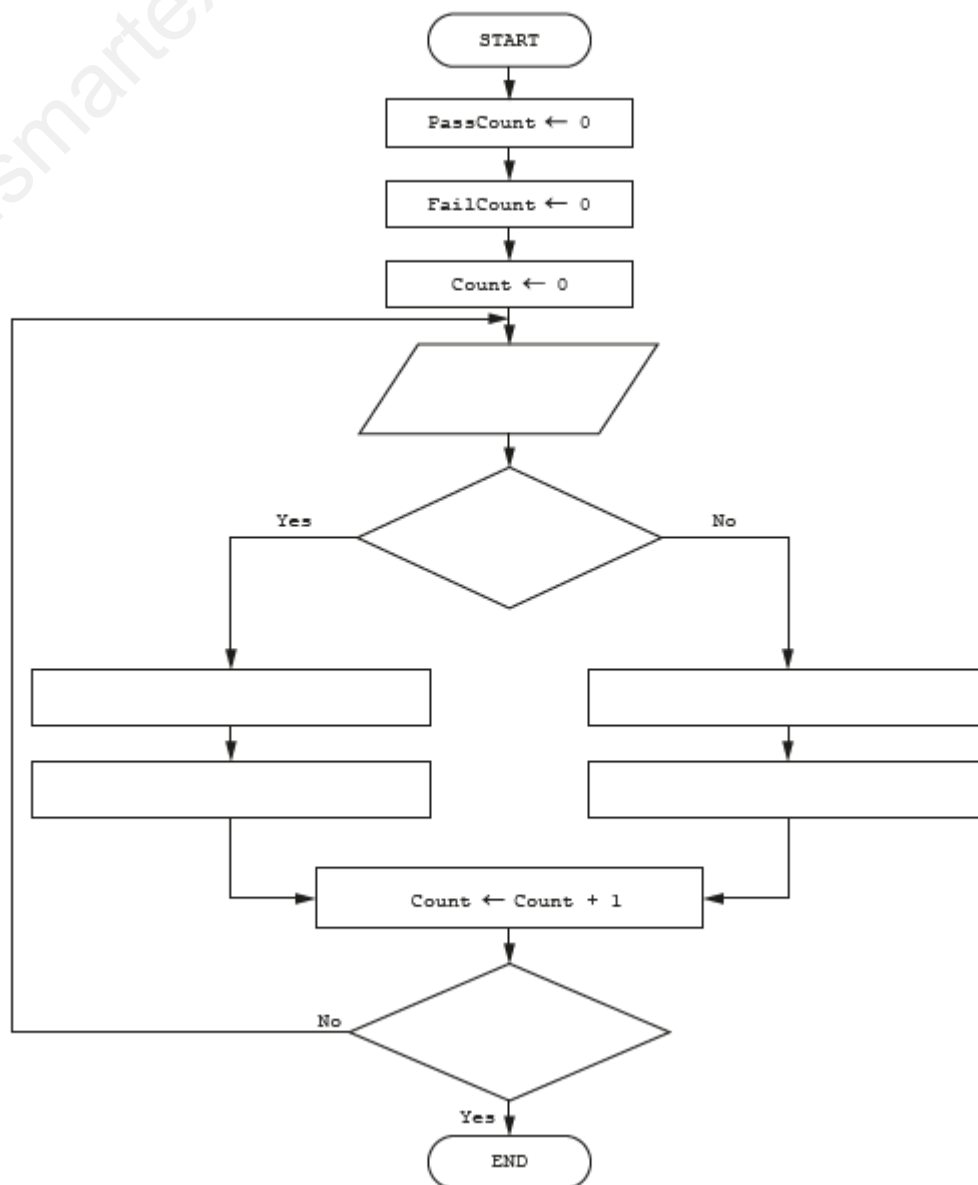
.....

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.....[4]

4. The flowchart shows an algorithm that should allow 60 test results to be entered into the variable Score. Each test result is checked to see if it is 50 or more. If it is, the test result is assigned to the Passarray. Otherwise, it is assigned to the Failarray.

(a) Complete this flowchart:



[6]

Unit 7 Algorithm Design and Problem Solving

- (b) Write a pseudocode routine that will check that each test result entered into the algorithm is between 0 and 100 inclusive.

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..... [4]

5. An algorithm allows a user to input their password and checks that there are at least eight characters in the password. Then, the user is asked to re-input the password to check that both inputs are the same. The user is allowed three attempts at inputting a password of the correct length and a matching pair of passwords. The pre-defined function LEN(X) returns the number of characters in the string, X

```

01  Attempt ← 0
02  REPEAT
03    PassCheck ← TRUE
04    OUTPUT "Please enter your password "
05    INPUT Password
06    IF LEN(Password) < 8
07      THEN
08        PassCheck ← TRUE
09      ELSE
10        OUTPUT "Please re-enter your password "
11        INPUT Password2
12        IF Password <> Password2
13          THEN
14            PassCheck ← FALSE
15          ENDF
16        ENDF
17        Attempt ← Attempt + 1
18  UNTIL PassCheck OR Attempt <> 3
19  IF PassCheck
20    THEN
21      OUTPUT "Password success"
22    ELSE
23      OUTPUT "Password fail"
24  ENDF

```

- (a) Identify the **three** errors in the pseudocode and suggest a correction to remove each error.

Error 1

Correction

Error 2

Correction

Error 3

Correction[3]

- (b) The algorithm includes **two** types of check on the data input. Identify and describe each type of check.

Type of check 1

Description

.....

Type of check 2

Description

.....[4]

- (c) Give **two** sets of test data for this algorithm and a reason for choosing each set.

Each set of test data and its reason must be different.

Set 1

Reason

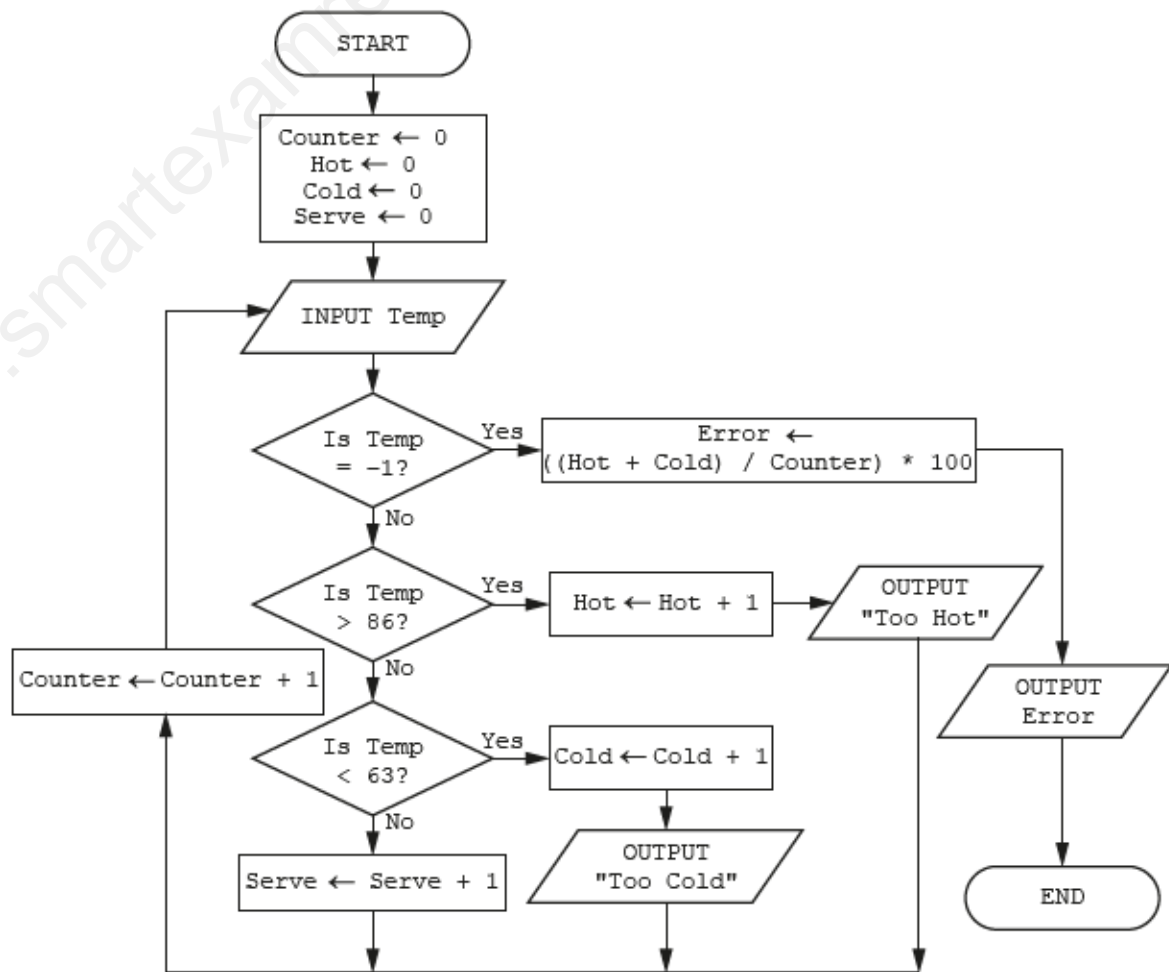
.....

Set 2

Reason

.....[4]

6. This algorithm checks the temperature of hot food being served to customers



- (a) Complete the trace table for the algorithm using this input data:
75, 78, 84, 87, 91, 80, 75, 70, 65, 62, -1, 20

Counter	Hot	Cold	Serve	Temp	Error	OUTPUT

[7]

- (b) State how the final output from the algorithm could be improved.

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[1]

- (c) Identify the process in the algorithm that is **not** required.

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[1]