

0478

COMPUTER SCIENCE

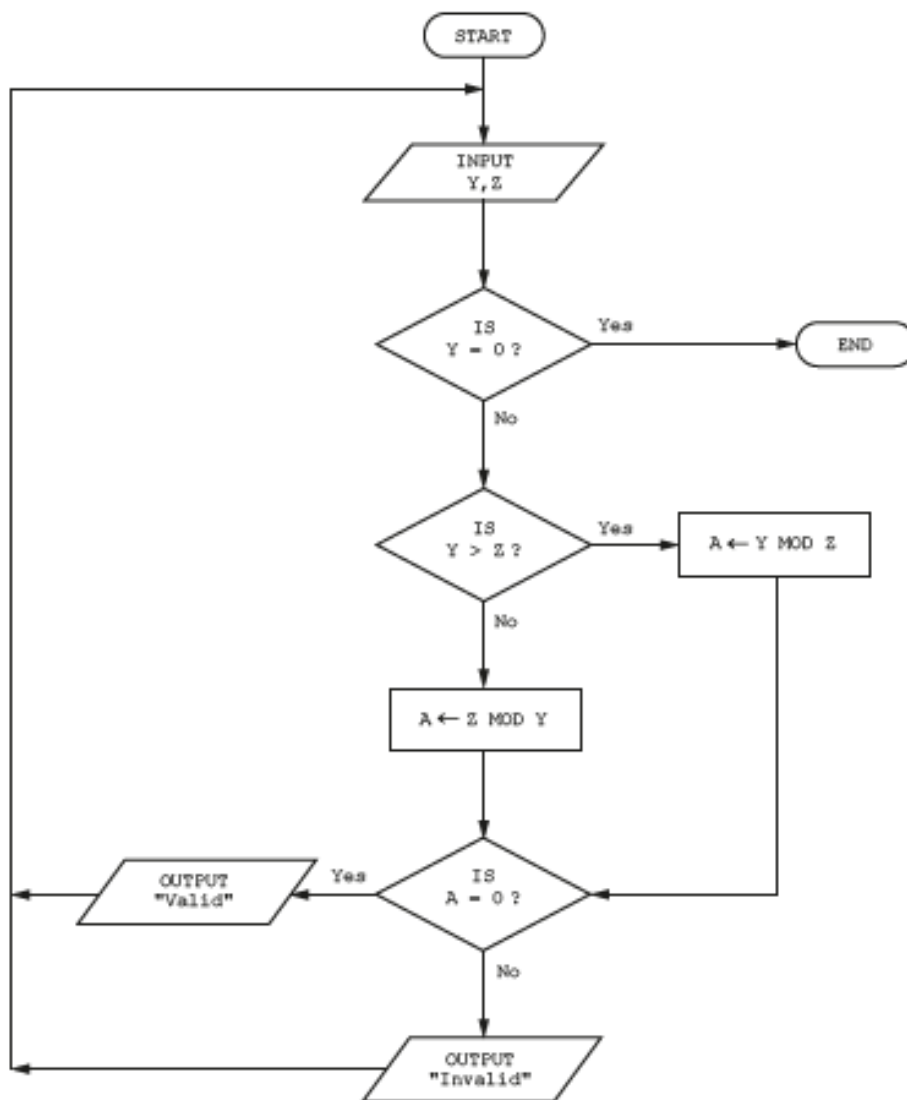
TOPIC QUESTION PAPER-2 SET- 7

SMART EXAM RESOURCES

Unit 7 Algorithm Design and Problem Solving

1. This flowchart represents an algorithm that allows the input of two numbers and performs a calculation.

The predefined function MOD finds the remainder from integer division for example $X \leftarrow 8 \text{ MOD } 5$ gives X a value of 3.



(a) Complete a trace table for this set of input data:

11, 4, 6, 2, 3, 9, 3, 2, 2, 6, 0, 0, 1, 1

Y	Z	A	OUTPUT

[4]

(b) Explain the purpose of this algorithm.

.....

.....

.....

..... [2]

2. (a) An algorithm has been written in pseudocode to input 50 numbers and total only the positive numbers.

```

Count ← 1
Total ← Count
REPEAT
    INPUT Number
    IF Number <> 0
    THEN
        Total ← Total + Count
    ENDIF
    Count ← Count + 1
UNTIL Count < 50
PRINT Total

```

Find the **four** errors in the pseudocode and suggest a correction for each error.

Error 1

Correction

.....

Error 2

Correction

.....

Error 3

Correction

.....

Error 4

Correction

.....[4]

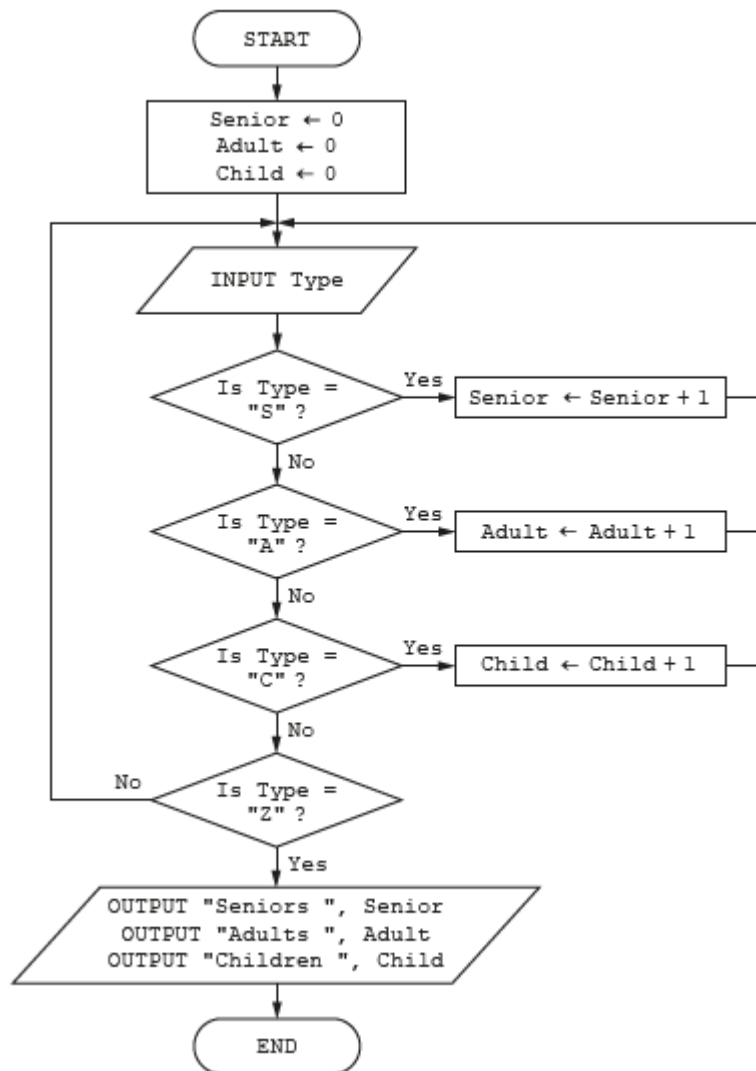
- (b) Show how you would change the corrected algorithm to only total numbers greater than 0 and less than 20.

.....

.....

..... [2]

3. This flowchart inputs the type of passenger for a survey: S for Senior, A for Adult, C for Child. All other values are ignored, apart from Z which ends the process.



Complete the trace table for the passenger input data:

S, S, S, A, C, C, C, A, A, A, A, W, S, S, D, C, Z, D, S

[illegible]

[5]

4. A programmer restricts input values to less than 90 and greater than 60.

(a) State whether this is called validation or verification.

.....

Name the check that needs to be used.

.....[2]

(b) State **three** different types of test data the programmer would need to use. Give an example of each type and the reason that the programmer chose that test data.

Type 1

Example

Reason

.....

Type 2

Example

Reason

.....

Type 3

Example

Reason

.....[9]

5. This section of program code may be used as a validation check.

```

1  PRINT "Input a value between 0 and 100 inclusive"
2  INPUT Value
3  WHILE Value < 0 OR Value > 100
4      PRINT "Invalid value, try again"
5      INPUT Value
6  ENDWHILE
7  PRINT "Accepted: ", Value

```

(a) Give a name for this type of validation check.

.....[1]

(b) Describe what is happening in this validation check.

.....

.....

.....

.....

.....

.....[2]

(c) Complete the trace table for this program code using the test data: 200, 300, -1, 50, 60

Value	OUTPUT

[3]

(d) Draw a flowchart to represent this section of program code.

[5]

- 6.** Explain what is meant by validation and verification.
Give an example for each one.

Validation.....

.....

.....

.....

Example

.....

.....

.....

Verification.....

.....

.....

.....

Example

.....

.....

.....[6]