9608_w15_qp_22

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1

Cambridge International Examinations
Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME			
CENTRE NUMBER	CANDIDATE NUMBER		

COMPUTER SCIENCE 9608 / 22
Paper 2 October/November 2014 2 hours
Candidates answer on the Question Paper.
Additional Materials: None

READ THESE INSTRUCTIONS FIRST

- Write your centre number, candidate number and your name in the spaces provided.
- Answer all questions.
- Use a black or dark blue pen.
- Write your answers in the spaces provided on the question paper.
- Do not use a pencil or a pen with erasable ink.
- Do not use paper clips, glue or correction fluid.
- Do not write in the barcode.
- Do not write in the margins.

This document consists of 20 printed pages.

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2

Refer to the Pseudocode for the Pseudocode Guide and answer the following questions.

1 (a) (i) Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

Output	Explanation
3	The number 3 is a prime
5	The number 5 is a prime
7	The number 7 is a prime
11	The number 11 is a prime

(ii) Rewrite the pseudocode so that it uses a FOR loop instead of a WHILE loop.

```
FOR Count = 2 TO 12
    IF Count MOD 2 = 0 THEN
        NEXT Count
    ELSE
        Divisor = 3
        Prime = TRUE
        WHILE Divisor * Divisor <= Count
            IF Count MOD Divisor = 0 THEN
                Prime = FALSE
                Divisor = Divisor + 2
            ELSE
                Divisor = Divisor + 2
            ENDIF
        ENDWHILE
        IF Prime THEN
            OUTPUT Count
        ENDIF
    ENDIF
NEXT Count
```

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3

(iii) Rewrite the pseudocode so that it uses a REPEAT ... UNTIL loop instead of a WHILE loop.

```
FOR Count = 2 TO 12
    IF Count MOD 2 = 0 THEN
        NEXT Count
    ELSE
        Divisor = 3
        Prime = TRUE
        REPEAT
            IF Count MOD Divisor = 0 THEN
                Prime = FALSE
                Divisor = Divisor + 2
            ELSE
                Divisor = Divisor + 2
            ENDIF
        UNTIL Divisor * Divisor > Count
        IF Prime THEN
            OUTPUT Count
        ENDIF
    ENDIF
NEXT Count
```

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4

(iv) Rewrite the pseudocode so that it uses a CASE OF ... OTHERWISE ... ENDCASE instead of the IF ... THEN ... ELSE ... ENDIF in the main loop.

```
FOR Count = 2 TO 12
    CASE OF Count MOD 2
        0 : NEXT Count
        OTHERWISE :
            Divisor = 3
            Prime = TRUE
            REPEAT
                IF Count MOD Divisor = 0 THEN
                    Prime = FALSE
                    Divisor = Divisor + 2
                ELSE
                    Divisor = Divisor + 2
                ENDIF
            UNTIL Divisor * Divisor > Count
            IF Prime THEN
                OUTPUT Count
            ENDIF
    ENDCASE
NEXT Count
```

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5

(v) Rewrite the pseudocode so that it uses a FOR ... NEXT loop instead of the WHILE loop.

```
FOR Count = 2 TO 12
    IF Count MOD 2 = 0 THEN
        NEXT Count
    ELSE
        Divisor = 3
        Prime = TRUE
        FOR Divisor = 3 TO Count
            IF Count MOD Divisor = 0 THEN
                Prime = FALSE
                Divisor = Divisor + 2
            ELSE
                Divisor = Divisor + 2
            ENDIF
        NEXT Divisor
        IF Prime THEN
            OUTPUT Count
        ENDIF
    ENDIF
NEXT Count
```

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6

2 The Pseudocode Guide defines a procedure and a function.

(a) Explain the difference between a procedure and a function.

(b) The following pseudocode defines a procedure called Swap and a function called Max.

```
PROCEDURE Swap(Number1, Number2)
    Temp = Number1
    Number1 = Number2
    Number2 = Temp
ENDPROCEDURE

FUNCTION Max(Number1, Number2)
    IF Number1 > Number2 THEN
        RETURN Number1
    ELSE
        RETURN Number2
    ENDIF
ENDFUNCTION
```

(i) Write a pseudocode statement to call the procedure Swap.

(ii) Write a pseudocode statement to call the function Max.

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7

3 (a) The Pseudocode Guide defines a data type called a record.

(i) Explain what is meant by a record.

(ii) Write pseudocode to define a record type called Student with the following fields:

Field	Type
Name	STRING
Year	INTEGER
Tutor	STRING

(iii) Write pseudocode to declare a variable MyStudent of the record type Student.

(iv) Write pseudocode to assign the following values to the variable MyStudent:

Field	Value
Name	"Jim Smith"
Year	12
Tutor	"Mr Jones"

(v) Write pseudocode to output the value of the field Tutor for the variable MyStudent.

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8

(b) The following pseudocode is intended to output the sum of the two numbers entered by the user.

```
DECLARE Number1 : INTEGER
DECLARE Number2 : INTEGER
DECLARE Sum : INTEGER
OUTPUT "Enter two numbers"
INPUT Number1
INPUT Number2
Sum = Number1 + Number2
OUTPUT "The sum is", Sum
```

(i) Rewrite the pseudocode so that it uses a FOR loop to output the sum of the two numbers entered by the user.

(ii) Rewrite the pseudocode so that it uses a WHILE loop to output the sum of the two numbers entered by the user.

(iii) Rewrite the pseudocode so that it uses a REPEAT ... UNTIL loop to output the sum of the two numbers entered by the user.

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9

(c) The following pseudocode is intended to output the sum of the numbers in a list.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
Sum = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
```

(i) Rewrite the pseudocode so that it uses a FOR loop to output the sum of the numbers in a list.

(ii) Rewrite the pseudocode so that it uses a REPEAT ... UNTIL loop to output the sum of the numbers in a list.

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10

(d) The following pseudocode is intended to output the sum of the numbers in a list.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
Sum = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
```

(i) Rewrite the pseudocode so that it uses a CASE OF ... OTHERWISE ... ENDCASE instead of the IF ... THEN ... ELSE ... ENDIF in the main loop.

(ii) Rewrite the pseudocode so that it uses a FOR ... NEXT loop instead of the WHILE loop.

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11

4 (a) Complete the following sentences, using the words in the brackets.

Pseudocode is a ..... (language, algorithm, flowchart)

The ..... (Pseudocode Guide, Pseudocode Manual, Pseudocode Standard) defines the syntax of pseudocode.

The ..... (Pseudocode Guide, Pseudocode Manual, Pseudocode Standard) defines the meaning of pseudocode.

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode variable names.

Variable name	Valid	Invalid
Number1		
1Number		
Number_1		
Number 1		
Number-1		
Number+1		
Number.1		
Number$1		
Number@1		
Number&1		

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12

(c) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
INPUT Number		
INPUT "Enter a number", Number		
INPUT "Enter a number"		
INPUT Number, "Enter a number"		
INPUT "Enter a number", Number, "Enter a number"		
INPUT "Enter a number", Number, Number, "Enter a number"		
INPUT "Enter a number", Number, Number, Number, "Enter a number"		
INPUT "Enter a number", Number, Number, Number, Number, "Enter a number"		

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13

(d) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
OUTPUT "Hello"		
OUTPUT "Hello", "Goodbye"		
OUTPUT "Hello", "Goodbye", "Morning"		
OUTPUT "Hello", "Goodbye", "Morning", "Afternoon"		
OUTPUT "Hello", "Goodbye", "Morning", "Afternoon", "Evening"		
OUTPUT "Hello", "Goodbye", "Morning", "Afternoon", "Evening", "Night"		
OUTPUT "Hello", "Goodbye", "Morning", "Afternoon", "Evening", "Night", "Sleep"		

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14

(e) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER, Sum : INTEGER		
DECLARE Number : INTEGER, Sum : INTEGER, Product : INTEGER		
DECLARE Number : INTEGER, Sum : INTEGER, Product : INTEGER, Average : INTEGER		
DECLARE Number : INTEGER, Sum : INTEGER, Product : INTEGER, Average : INTEGER, Total : INTEGER		
DECLARE Number : INTEGER, Sum : INTEGER, Product : INTEGER, Average : INTEGER, Total : INTEGER, Count : INTEGER		
DECLARE Number : INTEGER, Sum : INTEGER, Product : INTEGER, Average : INTEGER, Total : INTEGER, Count : INTEGER, Result : INTEGER		

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15

(f) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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16

5 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
4					
5					
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7					
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11					
12					

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17

6 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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18

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
IF Number > 0 THEN		
IF Number > 0 THEN Sum = Sum + Number		
IF Number > 0 THEN Sum = Sum + Number ELSE		
IF Number > 0 THEN Sum = Sum + Number ELSE Sum = Sum - Number		
IF Number > 0 THEN Sum = Sum + Number ELSE Sum = Sum - Number ENDIF		
IF Number > 0 THEN Sum = Sum + Number ELSE Sum = Sum - Number ENDIF Sum = Sum / 2		
IF Number > 0 THEN Sum = Sum + Number ELSE Sum = Sum - Number ENDIF Sum = Sum / 2 Sum = Sum + 1		
IF Number > 0 THEN Sum = Sum + Number ELSE Sum = Sum - Number ENDIF Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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19

7 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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20

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
WHILE Number > 0 THEN		
WHILE Number > 0 THEN Sum = Sum + Number		
WHILE Number > 0 THEN Sum = Sum + Number ENDWHILE		
WHILE Number > 0 THEN Sum = Sum + Number ENDWHILE Sum = Sum / 2		
WHILE Number > 0 THEN Sum = Sum + Number ENDWHILE Sum = Sum / 2 Sum = Sum + 1		
WHILE Number > 0 THEN Sum = Sum + Number ENDWHILE Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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21

8 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
4					
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12					

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22

9 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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23

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
REPEAT		
REPEAT Sum = Sum + Number		
REPEAT Sum = Sum + Number UNTIL		
REPEAT Sum = Sum + Number UNTIL Number = 0		
REPEAT Sum = Sum + Number UNTIL Number = 0 Sum = Sum / 2		
REPEAT Sum = Sum + Number UNTIL Number = 0 Sum = Sum / 2 Sum = Sum + 1		
REPEAT Sum = Sum + Number UNTIL Number = 0 Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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24

10 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
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12					

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25

11 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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26

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
FOR Number = 1 TO 10		
FOR Number = 1 TO 10 Sum = Sum + Number		
FOR Number = 1 TO 10 Sum = Sum + Number NEXT Number		
FOR Number = 1 TO 10 Sum = Sum + Number NEXT Number Sum = Sum / 2		
FOR Number = 1 TO 10 Sum = Sum + Number NEXT Number Sum = Sum / 2 Sum = Sum + 1		
FOR Number = 1 TO 10 Sum = Sum + Number NEXT Number Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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27

12 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
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11					
12					

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28

13 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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29

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
CASE OF Number		
CASE OF Number 0 : Sum = Sum + Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE :		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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30

14 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
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11					
12					

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31

15 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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32

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
CASE OF Number		
CASE OF Number 0 : Sum = Sum + Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE :		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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33

16 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
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12					

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34

17 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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35

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
CASE OF Number		
CASE OF Number 0 : Sum = Sum + Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE :		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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36

18 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
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10					
11					
12					

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37

19 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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38

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
CASE OF Number		
CASE OF Number 0 : Sum = Sum + Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE :		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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39

20 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
4					
5					
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7					
8					
9					
10					
11					
12					

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40

21 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER		
DECLARE Number : INTEGER = 0, Sum : INTEGER = 0, Product : INTEGER = 0, Average : INTEGER = 0		

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41

(b) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
CASE OF Number		
CASE OF Number 0 : Sum = Sum + Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE :		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1		
CASE OF Number 0 : Sum = Sum + Number OTHERWISE : Sum = Sum - Number ENDCASE Sum = Sum / 2 Sum = Sum + 1 Sum = Sum - 1		

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22 Complete the table below to show the output from the pseudocode when the input is 3 4 5 6 7 8 9 10 11 12.

```
DECLARE Number : INTEGER
DECLARE Sum : INTEGER
DECLARE Count : INTEGER
Sum = 0
Count = 0
OUTPUT "Enter a number"
INPUT Number
WHILE Number <> 0 THEN
    Sum = Sum + Number
    Count = Count + 1
    OUTPUT "Enter a number"
    INPUT Number
ENDWHILE
OUTPUT "The sum is", Sum
OUTPUT "The count is", Count
```

Input	Output	Input	Output	Input	Output
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

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43

23 (a) Complete the following table by ticking the boxes to show which of the following are valid pseudocode statements.

Statement	Valid	Invalid
DECLARE Number : INTEGER		
DECLARE Number : INTEGER = 0		
DECLARE Number : INTEGER = 0,