MODULE M PROGRAMMING · M10

Count-controlled loops (FOR)

Original practice questions · 22 marks · ~25 minutes · Cambridge 0478 syllabus 8.1.4(c) (with 8.1.4(d))

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **22 marks**. Pseudocode on this sheet follows the Cambridge 0478 pseudocode rules. Write any pseudocode answers in the same style.

1

Total: 5 marks

Each loop below contains one `OUTPUT` statement inside it.

Complete the table to show how many times the statement inside each loop is executed. **[5]**

First line of the loop	Number of times executed
`FOR Count ← 1 TO 8`	
`FOR Count ← 0 TO 15 STEP 5`	
`FOR Count ← 20 TO 2 STEP -3`	
`FOR Count ← 6 TO 6`	
`FOR Count ← 7 TO 3`	

2

Total: 5 marks

A bakery records how many loaves it sells each day for four days.

```
01 Total ← 0
02 Best ← 0
03 FOR Day ← 1 TO 4
04     INPUT Sold
05     Total ← Total + Sold
06     IF Sold > Best
07       THEN
08         Best ← Sold
09     ENDIF
10 NEXT Day
11 OUTPUT "Total ", Total, " Best ", Best
```

Complete the trace table for the algorithm using the input data: 35, 52, 41, 60 **[5]**

Day	Sold	Total	Best	OUTPUT

3

Total: 3 marks

The display on a water tank is being tested. It must show the values 100, 75, 50, 25 and 0, in that order, one value on each line.

Write pseudocode that uses a count-controlled loop to output these five values. **[3]**

4 **Total: 4 marks**

A park has a walking trail with a marker post every 5 metres. This algorithm should store the distances 5, 10, 15, … 60 in the array `Marker`, so that `Marker[1]` stores 5 and `Marker[12]` stores 60. It then outputs the distance of the last marker.

```
01 DECLARE Post : REAL
02 DECLARE Marker : ARRAY[1:12] OF INTEGER
03 FOR Post ← 1 TO 11
04     Marker[Post] ← Post + 5
05 NEXT Marker
06 OUTPUT "Last marker is at ", Marker[12], " metres"
```

There are four errors in this algorithm. **[4]**
Identify the line number of each error and suggest a correction.

Line number	Correction

5 **Total: 5 marks**

A minibus company makes 12 journeys each day.

Write an algorithm using pseudocode to: **[5]**

- use a count-controlled loop to input the number of passengers on each of the 12 journeys
- total the number of passengers
- count how many journeys had more than 10 passengers
- output the total and the count, with suitable messages, after all 12 journeys have been input.

You do not need to declare any variables.

Total for this worksheet: 22 marks