MODULE M PROGRAMMING · M9

Selection: CASE statements

Original practice questions · 21 marks · ~25 minutes · Cambridge 0478 syllabus 8.1.4(b) (with 7.8, 7.9)

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 **21 marks**. Pseudocode on this sheet follows the Cambridge 0478 pseudocode rules. Write any pseudocode answers in the same style. All data on this sheet is made up.

1 **Total: 3 marks**

Tick (✓) **one** box in each row to show whether each statement about a pseudocode CASE statement is true or false. **[3]**

Statement	True	False
When a case matches, its statement is executed and the remaining cases are not tested.		
Every CASE statement must include an OTHERWISE clause.		
If an OTHERWISE clause is present, its statement is executed only when none of the cases before it apply.		

2 **Total: 5 marks**

This algorithm sets the brightness of the lights in a meeting room from a scene letter.

```
01 DECLARE Scene : CHAR
02 DECLARE Brightness : INTEGER
03 Brightness ← 50
04 OUTPUT "Enter scene letter"
05 INPUT Scene
06 CASE OF Scene
07   'R' : Brightness ← 30
08   'W' : Brightness ← 100
09   'N' : Brightness ← Brightness - 40
10   OTHERWISE OUTPUT "Scene not found"
11 ENDCASE
12 OUTPUT "Brightness is ", Brightness
```

(a) Complete the table to show the output(s) after the prompt for each input. **[3]**

Input	Output(s)
W	
N	
r	

(b) The user enters R. Describe what happens in the algorithm from line 06 onwards. **[2]**

3 **Total: 4 marks**

A bicycle repair shop uses this algorithm to set the cost of a service from a service code. `ServiceCode` is of type CHAR and `Cost` is of type INTEGER.

```
IF ServiceCode = 'B'
  THEN
    Cost ← 25
  ELSE
    IF ServiceCode = 'F'
      THEN
        Cost ← 60
      ELSE
        IF ServiceCode = 'W'
          THEN
            Cost ← 15
          ELSE
            OUTPUT "Unknown service"
        ENDIF
    ENDIF
ENDIF
```

Rewrite this algorithm, using pseudocode, with a CASE statement instead of the IF statements. Your algorithm must give the same result for every value of `ServiceCode`. **[4]**

4 **Total: 4 marks**

A lift in an office building shows a message when a floor button is pressed:

- button 0 shows `Ground floor: reception`
- button 1 shows `First floor: library`
- button 2 shows `Second floor: offices`
- any other number shows `Button not in use`.

This pseudocode algorithm has **four** errors.

```
01 DECLARE Button : INTEGER
02 DECLARE Message : INTEGER
03 OUTPUT "Press a button from 0 to 2"
04 INPUT Button
05 CASE Button
06   0 : Message ← "Ground floor: reception"
07   1 : Message ← "First floor: library"
08   OTHERWISE Message ← "Button not in use"
09   2 : Message ← "Second floor: offices"
10 ENDIF
11 OUTPUT Message
```

Identify the line number of each error and suggest a correction for each error. **[4]**

Error 1 Line number ..... Correction

Error 2 Line number ..... Correction

Error 3 Line number ..... Correction

Error 4 Line number ..... Correction

5 **Total: 5 marks**

A coffee machine sells three cup sizes. Each size is entered as a single character.

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

- input a cup size, with a suitable prompt
- use a CASE statement to set `Price` to 1.80 for size `'S'`, 2.40 for size `'M'` and 2.90 for size `'L'`
- set `Price` to 0.0 for any other input
- output `Price` with a suitable message.

You do not need to declare any variables.

Total for this worksheet: 21 marks