MODULE M PROGRAMMING · M6

Comparison operators

Original practice questions · 22 marks · ~25 minutes · OCR J277 specification 2.2.1

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. All code on this sheet is written in OCR Exam Reference Language. The marks for each part are shown in brackets [ ]. The total for this worksheet is **22 marks**.

1

Total: 4 marks

(a) Complete the table. Write the meaning of each comparison operator given, or the comparison operator for the meaning given. **[3]**

Comparison operator	Meaning
`!=`	
	Greater than or equal to
`==`	

(b) State the data type of the result of a comparison, such as `price < 10`. **[1]**

2

Total: 4 marks

A stock-control program for a clothing warehouse has these variables.

```
stock = 12
reorder = 12
size = "M"
boxes = 3
```

(a) Complete the table to show whether each comparison is **True** or **False**. **[4]**

Comparison	True or False
`stock > reorder`	
`stock >= reorder`	
`size != "M"`	
`boxes * 4 <= stock`	

3 **Total: 3 marks**

Write a condition in OCR Exam Reference Language for each rule. Use the variable name given in bold.

(a) A lift sounds an alarm when the load, **load**, is more than 630 kg. **[1]**

(b) A parcel goes in the small-parcel bin when its weight in kg, **weight**, is 2 or less. **[1]**

(c) A smart lock opens when the code entered, stored as a string in **code**, is B4X9. **[1]**

4 **Total: 4 marks**

A program controls the fan and water pump in a garden centre's greenhouse. It should follow these rules:

- the fan is switched on when the temperature is 30 °C **or higher**, otherwise it is switched off
- the pump runs **while** the soil moisture reading is **below** 40. Each time the pump runs, the program adds 5 to the moisture reading.

```
01 temp = int(input("Enter temperature"))
02 if temp > 30 then
03     print("Fan on")
04 else
05     print("Fan off")
06 endif
07 moisture = int(input("Enter moisture reading"))
08 while moisture > 40
09     print("Pump on")
10     moisture = moisture + 5
11 endwhile
12 print("Pump off")
```

(a) The program contains **two** logic errors. Identify the line number of each error and write the corrected line of code. **[4]**

Line number	Corrected line of code

5 **Total: 3 marks**

A factory checks the speed of a conveyor belt, in cm per second.

```
01 speed = int(input("Enter belt speed"))
02 if speed > 70 then
03     print("Too fast")
04 elseif speed < 30 then
05     print("Too slow")
06 else
07     print("OK")
08 endif
```

(a) Complete the table to show the output of the program for each input. **[3]**

Input	Output
70	
30	
29	

6 **Total: 4 marks**

A farm uses a program to check the water level, in cm, in a cattle trough.

(a) Write an algorithm that: **[4]**

- asks the user to enter the water level
- outputs **Overflow warning** if the level is more than 180
- outputs **Refill needed** if the level is 20 or less
- outputs **Level normal** for any other level.

Only one message should be output.
You must use either: OCR Exam Reference Language, or a high-level programming language that you have studied.

Total for this worksheet: 22 marks