MODULE M PROGRAMMING · M25

Local and global variables

Original practice questions · 22 marks · ~25 minutes · OCR J277 spec 2.2.3

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**. Code is written in OCR Exam Reference Language. All data on this sheet is made up.

1

Total: 3 marks

(a) Tick (✓) **one** box in each row to show whether each statement describes a local variable or a global variable. **[3]**

Statement	Local variable	Global variable
It can be used in the main program and inside every sub program.		
It is declared inside a procedure or function.		
It only exists while the sub program it belongs to is running.		

2 **Total: 9 marks**

A pay machine in a multi-storey car park charges for each stay and keeps a running total of the money taken.

```
01 global totalTakings = 0
02
03 procedure takePayment(hours)
04     const RATE = 2
05     fee = hours * RATE
06     totalTakings = totalTakings + fee
07     print("Fee: " + str(fee))
08 endprocedure
09
10 takePayment(3)
11 takePayment(5)
12 print("Total: " + str(totalTakings))
```

(a) Identify the global variable in the program. **[1]**

(b) Identify the local constant in the program. **[1]**

(c) State the **three** lines of output when the program is run. **[3]**

1

2

3

(d) A programmer adds this line to the end of the program:

```
13 print(fee)
```

Explain why line 13 causes an error. **[2]**

(e) Explain why `totalTakings` needs to be a global variable in this program. **[2]**

3 **Total: 4 marks**

A team of programmers is writing a large booking system for a theatre. Each programmer writes their own procedures and functions.

(a) Explain **two** benefits of the team using local variables, rather than global variables, inside their sub programs. **[4]**

1

2

4 **Total: 6 marks**

A café gives customers loyalty stamps. The main program already contains this line:

```
global totalStamps = 0
```

(a) Write a procedure called `addStamps` that: **[5]**

- takes the amount a customer spends, in whole pounds, as a parameter
- calculates the number of stamps earned, which is one stamp for every full £5 spent, and stores it in a **local** variable
- adds the stamps earned to the global variable `totalStamps`
- outputs the number of stamps earned.

You must use either:

- OCR Exam Reference Language, or
- a high-level programming language that you have studied.

(b) `totalStamps` starts at 0. The procedure is called twice: `addStamps(23)` and then `addStamps(12)`. State the value of `totalStamps` after both calls. **[1]**

Total for this worksheet: 22 marks