

2.2 PROGRAMMING TECHNIQUES · 2.2.1(C)(D)

Subroutines, parameters & scope

Original practice questions · 30 marks · about 45 minutes · spec 2.2.1(c)(d)

Instructions. Answer all questions. Marks are shown in brackets []. The extended question assesses quality of written communication.

1 Total: 6 marks

(a) State the difference between a *function* and a *procedure*. [2]

.....

(b) State the difference between a *parameter* and an *argument*. [2]

.....

(c) State what is meant by *modularity*. [2]

.....

2 Total: 6 marks

Consider this procedure and the call that follows it.

```
01 procedure tryDouble(n)
02   n = n * 2
03 endprocedure
04 x = 5
05 tryDouble(x)
06 print(x)
```

(a) State the value printed if x is passed **by value**. [1]

(b) State the value printed if x is passed **by reference**. [1]

(c) Explain the difference between passing a parameter by value and by reference. [2]

.....

(d) State which method must be used if a subroutine needs to update the caller's variable, and give one reason passing by value is otherwise safer. [2]

.....

3

Total: 5 marks

```
01 score = 0 // main program
02 procedure addBonus()
03     bonus = 10
04     score = score + bonus
05 endprocedure
```

- (a) Identify the **global** variable and a **local** variable in this code. _____ [2]
- (b) State what is meant by the *scope* of a variable. [2]
- _____
- _____
- (c) State when the variable `bonus` stops existing. _____ [1]

4

Total: 4 marks

- (a) Write a function `isEven(n)` that returns `True` if `n` is even and `False` otherwise. [3]
- _____

- (b) State whether `isEven` is a function or a procedure, and why. _____ [1]

END OF QUESTIONS