Quiz 03 — Functions & Scope [SOLUTION]

Scope: Lectures 9–10 only · **Time:** 10 minutes · **Marks: 10**

Name: _____ **Roll no:** _____

Section: A **Date:** Oct 8, 2026

Q1 Trace [3 marks]

What does this program print? Write the **exact** output, one line per box line. (1 mark per line)

```
def total(a, b=10):
    return a + b

print(total(3))
print(total(3, 4))
print(total(b=1, a=2))
```

13

7

3

Q2 What is the value? [2 marks]

Given these two functions, write the value of each expression. ($\frac{1}{2}$ mark each)

```
def first(s):
    return s[0]

def is_short(s):
    return len(s) < 4
```

(a) `first("python")` "p"

(b) `is_short("code")` False

(c) `first("ab") + first("cd")` "ac"

(d) `is_short(first("python"))` True

Q3 Fill the blank [3 marks]

`twice(f, x)` calls the function `f` on `x`, then calls `f` again on that result. `add3` is a **lambda** that takes a number and gives back that number plus 3. Complete the program so that it prints 10. (1 mark each)
Write the missing code for each blank on the line below with the same letter.

```
1 def twice(f, x):
2     return ___ⓐ___
3
4 add3 = ___ⓑ___
5
6 print(twice(___ⓒ___, 4))
```

ⓐ `f(f(x))` ⓑ `lambda x: x + 3` ⓒ `add3`

Q4 Fix the bug [2 marks]

This program should print 4 (twice the number of even values from 1 to 4). Instead it prints 2 and then crashes with `TypeError: ... 'NoneType' and 'int'`. It has **one bug**. Circle the buggy line, then write the corrected line below. (1 + 1 marks)

```
1 def count_evens(n):
2     count = 0
3     for i in range(1, n + 1):
4         if i % 2 == 0:
5             count = count + 1
6     print(count)
7
8 answer = count_evens(4)
9 print(answer * 2)
```

Buggy line: 6 Corrected line: `return count`

Quiz 03 — Functions & Scope [SOLUTION]

Scope: Lectures 9–10 only · **Time:** 10 minutes · **Marks: 10**

Name: _____ **Roll no:** _____

Section: B **Date:** Oct 8, 2026

Q1 Trace [2 marks]

What does this program print? Write the **exact** output, one line per box line. (1 mark per line)

```
x = 5

def bump(x):
    x = x + 1
    print(x)

bump(10)
print(x)
```

11

5

Q2 What is printed? [2 marks]

Each snippet below runs **on its own**. Write what it prints. ($\frac{1}{2}$ mark each)

(a)
```
def diff(x, y=1):
    return x - y
print(diff(5))
```
4

(b)
```
def diff(x, y=1):
    return x - y
print(diff(y=2, x=9))
```
7

(c)
```
add2 = lambda n: n + 2
k = add2(5)
print(k * 2)
```
14

(d)
```
def run(f, x):
    return f(x) + 1
sq = lambda n: n * n
print(run(sq, 3))
```
10

Q3 Fill the blank [3 marks]

`sum_between(lo, hi)` returns the sum of the whole numbers from `lo` to `hi`, **both included**. Complete the program so that it adds up 3, 4 and 5 and prints 12. (1 mark each)
Write the missing code for each blank on the line below with the same letter.

```
1 def sum_between(lo, hi):
2     total = 0
3     for i in range(lo, ___ⓐ___):
4         total = total + i
5     ___ⓑ___
6
7 answer = ___ⓒ___
8 print(answer)
```

ⓐ `hi + 1` ⓑ `return total` ⓒ `sum_between(3, 5)`

Q4 Fix the bug [2 marks]

When the user types 30, this program should print `fail`. Instead it prints `pass`, and it prints `pass` for every other mark too. It has **one bug**. Circle the buggy line, then write the corrected line below. (1 + 1 marks)

```
1 def is_pass(mark):
2     return mark >= 50
3
4 mark = int(input())
5 if is_pass:
6     print("pass")
7 else:
8     print("fail")
```

Buggy line: 5 Corrected line: `if is_pass(mark):`

Q5 Concept check [1 mark]

The body of the function `cube(n)` is the one line `print(n ** 3)`. The line `y = cube(2)` shows 8 on the screen, but afterwards `y` holds `None`, not 8. In **one sentence**, why?

`cube prints the value but never returns it; a function with no return hands back None, and that None is what y gets.`