

CSSE1001/7030

SAMPLE EXAM

Replace with titlepage

Error is the correct answer for any question with code that throws an error of any kind.

Multiple Choice

Question 1. [1 MARK]

What does `4 + 7 // 2` evaluate to?

C

- A. 5
- B. 5.5
- C. 7
- D. 7.5

Question 2. [1 MARK]

What does the expression `[1, 2] + [2, 3]` evaluate to?

A

- A. `[1, 2, 2, 3]`
- B. `[1, 2, 3]`
- C. `[3, 5]`
- D. Error

Question 3. [1 MARK]

What does `(1, 'a') + (2, 'b')` evaluate to?

B

- A. `{1: 'a', 2: 'b'}`
- B. `(1, 'a', 2, 'b')`
- C. `(3, 'ab')`
- D. `[(1, 'a'), (2, 'b')]`

Question 4. [1 MARK]

What does the expression `(0 < 2 < 4 and not 3 > 0 > 1)` evaluate to?

True

C

- A. 0
- B. 4
- C. True
- D. False

Then twenty-six more multiple choice questions ...

The following will be used to match your exam with your name. Please use BLOCK LETTERS and write as legibly as possible.

Student Number

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Family Name

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Given Name

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Fill in the Blank

The next *five* questions refer to the following class definitions.

```
1 class A():
2     def __init__(self, x) :
3         self._x = x
4
5     def f(self, x) :
6         return self.g(x) + 1
7
8     def g(self, x) :
9         return x * x
10
11 class B(A):
12     def g(self, y) :
13         return self._x * y
14
15 class C(B):
16     def __init__(self, x, y) :
17         super().__init__(x)
18         self._y = y
19
20     def f(self, x) :
21         return x * self._y
22
23 class D(B):
24     def __init__(self, x, y) :
25         super().__init__(x)
26         self._x -= y
27         self._y = y
28
29     def f(self, x) :
30         return super().f(x) * x
31
32     def g(self, y) :
33         return self._y * y
34
35 a = A(4)
36 b = B(2)
37 c = C(4, 3)
38 d = D(4, 1)
```

a. $g(2)$ $A(4)$ $= 4$
b. $f(3)$ $B(2)$ $= 5$
c. $g(2)$ $C(4, 3)$ $= 8$
d. $f(2)$ $D(4, 1)$ $= 4$
d. $g(2)$ $= 2$

Write a *single number* in the answer box *and nothing else*.

Question 5. [1 MARK]

What does `a.g(2)` return?

Question 6. [1 MARK]

What does `b.f(3)` return?

Question 7. [1 MARK]

What does `c.g(2)` return?

Question 8. [1 MARK]

What does `d.f(2)` return?

Question 9. [1 MARK]

What does `d.g(2)` return?

Full Solution

Question 10. [5 MARKS]

Write a function `foo` that satisfies the following specification.

```
1 def foo(f_path: string) -> bool:
2     """
3     Positive integers separated by spaces and newlines are stored in a file
4     at <f_path>.
5
6     Check if the file has the property that the smallest number on each line
7     forms an increasing sequence.
8
9     Preconditions:
10    There is a file at f_path with proper formatting.
11
12    Example 1:
13    Suppose run.txt contains the following lines:
14        4 1 3
15        512 3 5 2
16        83 7
17    the smallest number from each line: 1, 2, 7 form an increasing sequence.
18
19    >>> foo("run.txt")
20    True
21
22    Example 2:
23    Suppose run.txt contains the following lines:
24        4 8 3
25        512 3 500 9
26        83 7
27    the smallest number from each line: 3, 3, 7 do not form an increasing
28    sequence.
29
30    >>> foo("run.txt")
31    False
32    """
```

Write your answer on the next page.

```
def foo(file_path: str) -> bool:
    mini = []
    with open(file_path, 'r') as file:
        for line in file.readlines():
            line = line.strip().split()
            data = [int(number) for number in line]
            mini.append(min(data))
    if len(mini) != len(sorted(mini)):
        return False
    else:
        if mini == sorted(mini):
            return True
        else:
            return False
```

END OF EXAMINATION