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June 21, 2024

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1 Q

(20 points) Consider the following code and then answer the following True/False questions:

[ ]:
```
# Part 1
file = open('example.txt', 'w')
file.write('The early bird catches the worm\n')
file.close()

# Part 2
file = open('example.txt', 'r+')
file.write('Actions speak louder than words.')
file.close()

# Part 3
with open('example.txt', 'a+') as file:
    for line in file:
        print(line, end='')
```

1. (True/False): In Part 1, using open('example.txt', 'w') and writing a string to the file will erase any existing content in 'example.txt' before writing the new string.

- TRUE

2. (True/False): In Part 2, opening the file in 'r+' mode will append the second quote to the end of the file without overwriting existing content.

- FALSE

3. (True/False): In Part 3, when the file is opened in 'a+' mode, the file pointer is initially positioned at the end of the file and the for loop will not have any effect.

- TRUE

4. (True/False): By swapping the modes in Part 2 and Part 3 from 'r+' to 'a+' in Part 2 and using 'r+' in Part 3 for reading, both quotes will be printed.

- TRUE

5. (True/False): Part 3 is a safe way to open the file since the with statement creates a block that automatically closes the file after the printing operation.

- TRUE

2 Q

(20 points) Consider the following code and then answer the question:

[ ]:
```
temperature = 68
if temperature < 55:
    print("It's freezing outside.")
elif temperature < 65:
    print("It's a bit chilly out.")
elif temperature < 75:
    print("It's a nice day.")
else:
    print("It's hot outside.")
```

What message does the code print if the temperature variable is set to 65?

1. It's freezing outside.
2. It's a bit chilly out.
3. It's a nice day. <=== CORRECT ANSWER
4. It's hot outside.

3 Q

(20 points)How do you iterate over the second half of a list named data_list using a for loop?

1. for item in data_list[len(data_list)//2:]: <=== CORRECT ANSWER
2. for item in data_list[:len(data_list)//2]:
3. for item in range(len(data_list)//2):
4. for item in data_list: if item == data_list[len(data_list)//2]: break

4 Q

(20 points) Explain the purpose of the zip() function in a for loop and illustrate its use with a code example.

ANSWER: The "zip()" method creates a "zip" object by combining two or more iterable objects together (Like teeth of a zipper). This new zip object can then be converted into another iterable collection object like a tuple, list, or dictionary.

[ ]:
```
l1 = [1,2,3]
l2 = ['a','b','c']

pack = zip(l1,l2)
print(tuple(pack))
```

```
((1, 'a'), (2, 'b'), (3, 'c'))
```

5 Q

(20 points) Choose and solve ONLY ONE of the following exercises:

[ ]:
```python
# 1. Write code that checks if a given year is a leap year.
# Print the result.

years = [1995, 2014, 2024, 2076]
for year in years:
    if year % 4 == 0:
        print(f'{year} is a leap year.')
    else:
        print(f'{year} is NOT a leap year.')
```

```
1995 is NOT a leap year.
2014 is NOT a leap year.
2024 is a leap year.
2076 is a leap year.
```

6 Q

BONUS (10 points) Given a list of n tuples, write a Python script that creates a new list where each tuple is inverted. If the original tuple was (a, b), the new tuple should be (b, a). Assume each tuple contains exactly two elements.

[ ]:
```python
ogList = [(1, 'a'), (2, 'b'), (3, 'c')]
newList = []
for item in ogList:
    newList.append(item[::-1])
print(newList)
```

```
[('a', 1), ('b', 2), ('c', 3)]
```