I/O and File Handling

Exercises

Week8

Prior to attempting these exercises ensure you have read the lecture notes and/or viewed the video, and followed the practical. You may wish to use the Python interpreter in interactive mode to help work out the solutions to some of the questions.

Download and store this document within your own filespace, so the contents can be edited. You will be able to refer to it during the test in Week 6.

Enter your answers directly into the highlighted boxes.

For more information about the module delivery, assessment and feedback please refer to the module within the MyBeckett portal.

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. "Hello {}, you have logged in".format(name)
2. "Hello {name}, you have logged in"
3. f"Hello {name}, you have logged in"
4. "Hello %s, you have logged in" % name

*Answer:*

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| --- |
| c |
|  |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Given the following definition of value, what would each of the following statements display?

value = 10.768572 print(f"Value is {value}")

*Answer:*

Value is 10.768572

print(f"Value is {value \* 10}")

*Answer:*

|  |
| --- |
| Value is 107.68572 |
|  |

print(f"Value is {value:.2f}")

*Answer:*

|  |
| --- |
| Value is 10.77 |
|  |

print(f"Value is {value:16.2f}")

*Answer:*

|  |  |
| --- | --- |
| Value is | 10.77 |
|  |  |

print(f"Value is {value:0>16.2f}")

*Answer:*

|  |
| --- |
|  |
| Value is 000000000010.77 |
|  |

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*Answer:*

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| --- |
| The ^ alignment character within an f-string format specifier is used to **center-align** the |
| value within the specified width. |
|  |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write a statement which uses the str.format() to generate the same output as the following *f-string* statement -

print(f"pi to 5 decimal places is {math.pi:.5f}")

*Answer:*

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| --- |
| import math  print("pi to 5 decimal places is {:.5f}".format(math.pi)) |
|  |
|  |

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print("Length = {1} Width = {0}".format(10,20))

*Answer:*

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| --- |
| Length = 20 Width = 10 |
|  |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What *exactly* would the following statement display?

print("Hello".rjust(10)) *Answer:*

|  |
| --- |
| Hello |
|  |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

On which older programming language is the *%-formatting* style loosely based?

*Answer:*

The *%-formatting* style in Python is loosely based on the C programming language.

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Write a Python program that uses a loop and the str.rjust() method to generate the following output.

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#

*Hint:* The program will start as follows

for n in range(10,0,-1): line = "#" \* n

# rest of code....

*Answer:*

|  |
| --- |
| for n in range(10, 0, -1):  line = "#" \* n |
| print(line.rjust(10)) |
|  |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the basic element that *all* computer files contain?

*Answer:*

The basic element that all computer files contain is binary data.

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What *function* must be called before the contents of a file can be accessed?

*Answer:*

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|  |
| Before accessing the contents of a file in Python, you must call the open() function. |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What *method* must be called on a file object once processing is complete?

*Answer:*

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| Once processing is complete, the close() method must be called on a file object. |
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# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Following execution of the given statement, would the file ‘myfile.txt’ be open for *reading* or for *writing*?

f = open("myfile.txt")

*Answer:*

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| --- |
|  |
| The statement f = open("myfile.txt") opens the file myfile.txt in read mode by |
| default |

# \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Following execution of the given statement, would the file yourfile.txt be open for *reading* or for *writing*?

f2 = open("yourfile.txt", "w")

*Answer:*

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| --- |
| Following the execution of the statement f2 = open("yourfile.txt", "w"), the file |
| yourfile.txt would be open for writing |

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f3 = open("gfxlib.so", "r+b")

*Answer:*

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| --- |
|  |
| The mode of operation applied to the file 'gfxlib.so' would be read and write binary |
| mode ("r+b"). |

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f.readline()

f.readlines() *Answer:*

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| --- |
| f.readline() reads and returns one line at a time, while f.readlines() reads the |
| entire file and returns all the lines as a list. |

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content = f.read()

*Answer:*

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| --- |
| The method reads the entire content of the file. |
|  |

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** If the variable ‘my\_file’ referred to a text file, what would the following code do?

for next in my\_file:

print(next)

*Answer:*

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| --- |
| It would iterate over each line in the file and print each line one by one. |
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f = open("details.txt", "w") total = 100

f.write(total)

f.close() *Answer:*

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| --- |
| The issue with the code is that f.write() expects a string as an argument, but total is |
| an integer. |

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*Answer:*

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| The purpose of the tell() method is to retrieve the current position of the file pointer |
| within the file. |

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** What does the following code do?

f.seek(0) *Answer:*

The code moves the file pointer to the beginning of the file.

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with open("data.txt") as f:

lines = f.readlines()

*Answer:*

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| --- |
| File handling is often done using a with statement because it ensures proper resource |
| management. |
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# Exercises are complete

Save this logbook with your answers. Then ask your tutor to check your responses to each question.