

I/O and File Handling

Exercises

Week 8

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.

Which of the following represents a Python *f-string*?

- a) `"Hello {}, you have logged in".format(name)`
- b) `"Hello {name}, you have logged in"`
- c) `f"Hello {name}, you have logged in"`
- d) `"Hello %s, you have logged in" % name`

Answer:

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 00000000000010.77

Within an *f-string* **format specifier** what does the '^' alignment character signify?

Answer:

The ^ (caret) alignment character in a format specifier ensures that the value is positioned at the center within the given space.

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:

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

What would the following statement display?

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

Answer:

```
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:

```
C programming language
```

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

```

# # # # # # # #
# # # # # # # #
# # # # # # # #
# # # # # # #
# # # # # #
# # # # #
# # # #
# # #
# #
#

```

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
    formatted_line = line.rjust(10)
    print(formatted_line)
```

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

Answer:

Basic element that all computer files contain is data encoded in binary.

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

Answer:

open() function

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

Answer:

close() method

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

```
f = open("myfile.txt")
```

Answer:

Reading only.

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

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

Answer:

Writing only.

Following execution of the given statement, what would be the *mode of operation* applied to file `gfxlib.so` ?

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

Answer:

Open file for reading in binary mode.

What is the difference between the two following method calls?

```
f.readline()  
f.readlines()
```

Answer:

f.readline() reads first line and returns a string
f.readlines() reads all lines and returns a list of strings

How much of the file content would be read with the following method call?

```
content = f.read()
```

Answer:

Reads entire contents of 'f' contents and returns a single string.

If the variable 'my_file' referred to a text file, what would the following code do?

```
for next in my_file:  
    print(next)
```

Answer:

The for loop iterates over each line of the file, and print(next_line) prints each line to the console.

What is the issue with the following code? And how could it be fixed?

```
f = open("details.txt", "w")  
total = 100  
f.write(total)  
f.close()
```

Answer:

The write() method needs a string, but the variable total is an integer. Converting 'total' to string before writing will solve the issue.

```
f = open("details.txt", "w")  
total = 100  
f.write(str(total))  
f.close()
```

What is the purpose of the file tell() method?

Answer:

tell() method is used to find the current text cursor position of the file.

What does the following code do?

```
f.seek(0)
```

Answer:

f.seek(0) moves the text cursor position to the start of the file.

Why is file handling often done using a 'with' statement as shown below?

```
with open("data.txt") as f:  
    lines = f.readlines()
```

Answer:

The 'with' statement is often used to encompass file handling code. It ensures that the file is properly opened and closed. It automatically takes care of resource management by calling the `__enter__` and `__exit__` methods. This helps prevent issues which could lead to data corruption.

Exercises are complete

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