C2

Python Basics, IPython & Jupyter

CHAPTER ASSIGNMENT

Name _____ Class _____ No. _____ Date _____

> Answer every question in the space given. Show your working. You may use the chapter page to help you.

Questions from the Guru Jazzy chapter page (based on *Python for Data Analysis*, 3rd edition, Wes McKinney, O'Reilly).

2.1 The Python Interpreter

1. Write hello_world.py, run it from a terminal, then run it again with %run inside IPython and check the variables it made still exist.

2. Open the plain python prompt and IPython side by side. Type the same three lines in each and list two things IPython does better.

2.2 IPython and Jupyter Basics

1. Run the cells below one at a time and predict each Out before you press Run. Which cell surprised you, and why?

```
In [1]: a = [1, 2, 3]
In [2]: b = a
In [3]: a.append(4)
In [4]: b
In [5]: b?
In [6]: a is b
In [7]: c = list(a)
        c is a, c == a
In [8]: 5 / 2, 5 // 2
In [9]: "5" + 5
```

2. Press Restart kernel, then run only cell 4. Explain the error you would get in a real notebook.

3. In a real notebook, try print?, then type pd.read_ and press Tab. How many read_ functions are there?

2.3 Language Semantics

1. Write a function that takes a list and doubles every value in place. Show that the caller's list changed, then write a second version that returns a new list instead.

2. Write isiterable(obj) using try: iter(obj) — return True or False. Test it on a string, a list, and the number 5.

2.4 Scalar Types

1. Store your birthday as a datetime and print how many days old you are, using datetime.now() and subtraction.

2. Encode "สวัสดี" to UTF-8 bytes and print how many bytes it takes compared with its len() as a string. Why are they different?

2.5 Control Flow

1. Loop over [1, 2, 0, 4, 6, 5, 2, 1] and add values up until you reach a 5, then stop. What is the total?

2. Rewrite the multiples-of-3-or-5 loop using sum() and a generator expression on one line. Check you get the same answer.

```
total = 0
for i in range(100_000):
    # sum the multiples of 3 or 5
    if i % 3 == 0 or i % 5 == 0:
        total += i
print(total)
```

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/books/python-for-data-analysis/chapter-2-python-basics-ipython-and-jupyter/