COMP10001 Foundations of Computing
Semester 2, 2016

Tutorial Questions: Week 5

1. Given the assignment `d = {"R": 0, "G": 255, "B": 0, "other": {"opacity": 0.6}}`, evaluate the following expressions, and determine: (a) the value the expression evaluates to; and (b) the final value of `d`. Assume that `d` is reset to its original value for each sub-question:

   (a) `d["R"]`

   (b) `d.pop("R")`

   (c) `d["R"] = 255`

   (d) `d["H"]`

   (e) `d.keys()`

   (f) `d["other"]["blur"] = 0.1`

   (g) `d[["H", "S", "L"]] = [120, 98, 5]`

   (h) `d["R", "B", "G"]`

2. Write a function that prints the keys of a dictionary in descending order of their values. For example, for a dictionary `fruit_prices = {"apple": 0.5, "banana": 19, "durian": 7}`, your program should print:

```
banana
durian
apple
```

3. Both lists and dictionaries have a `pop` method, with the important distinction that it can be called without any argument for lists, but can't for dictionaries. What does `pop` do in each case, and what is the reason for this difference between the two types?

4. What is the output of the following code:

```
def foo(x, y):
    print(x**y)

exp = foo(2,2)
print(exp)
```

5. What is the output of the following code:

```
def mutate(x, y):
    x = x + "--The End--"
    y.append("The End")
    print(x)
    print(y)

mystr = "It was a dark and stormy night."
mylist = mystr.split()
mylist2 = mylist
mutate(mystr, mylist2)
print(mystr)
print(mylist)
```

6. Write a function `letter_overlap(s1, s2)` that takes two string arguments (`s1` and `s2`), and returns the number of unique letters that are present in both strings.

Optional Extension Questions for Self-study

1. Write a function `freq_letter(string)` that takes a single argument `string` (a string) and returns the most common letter in `string`, and how many times it occurs.