

COMP10001 Foundations of Computing

Semester 2, 2016

Tutorial Questions: Week 4

1. What is wrong with the following code, and how can you fix it?

```
eggs == 3
if eggs = 5:
    print('spam')
else:
    print('not spam')
```

2. Given the assignment `mylist = [3, ["green", "eggs"], True, "computing"]`, evaluate the following statements and provide: (a) the value the expression evaluates to; and (b) the value of `mylist` after the code statement has been executed. Assume that `mylist` is reassigned to its original value for each sub-question:

- (a) `mylist[2]`
- (b) `mylist[3:]`
- (c) `mylist[1][1][: -1]`
- (d) `mylist.pop()`
- (e) `mylist.append("new item")`

3. Rewrite the following code using a `for` loop:

```
count = 0
items = ['eggs', 'spam', 'moreeggs']
while count < len(items):
    print("We need to buy {0}!".format(items[count]))
    count += 1
```

4. Rewrite the following code using a `while` loop:

```
for i in range(1, 6):
    print("The square of {n} is {nsq}.".format(n=i, nsq=i*i))
```

5. Write a function `num(obj)` that takes a single object `obj` as an argument, and returns `True` if `obj` is an `int` or a `float`, and `False` otherwise.
6. Write a function `sqsum(n)` that takes a single positive integer `n` as an argument, and returns the sum of the squares of the integers from 1 to `n` inclusive, i.e. $\sum_{i=1}^n i^2$.

OPTIONAL EXTENSION QUESTIONS FOR SELF-STUDY

7. The FM frequency for commercial radio in Australia falls in the range 88.0 to 108.0MHz inclusive, at increments of 0.1MHz, and the frequency for a given radio station is represented as a value in that range with strictly one decimal place (e.g. 105.9 or 103.5). Write a function `valid_fm(val)` that takes a single string argument (`val`), and returns a `bool` evaluation of whether `val` is a valid FM frequency for a radio station or not. For example:

```
>>> valid_fm("107.5")
True
>>> valid_fm("107")
False
>>> valid_fm("107.51")
False
>>> valid_fm("007.5")
False
>>> valid_fm("blah")
False
```

8. Write a function `sum_multiples` that returns the sum of all the multiples of 3 or 5 between 1 and 999 inclusive (Problem 1 of Project Euler)