420-LCU-05 Programming in Python - Review T1
March 17, 2022

Goals for this lab:

Practice on Booleans, Lists, and strings.
`Manually` figure out the print result of each program.Remember you will not have access to a computer during the midterm, so try to answer these without using Python In a second pass, type each program in python to verify your answers. If python answer is different, make sure you understand why.

1. Which of the following items if it is valid Python 3 list.

(a)
```
['a', 2, 5.0, []]
```

(b)
```
[+1e10]
```

(c)
```
[5 5 9]
```

(d)
```
[, 5, 9, 2]
```

(e)
```
[1+1, 2*2, 4/9, ]
```

(f)
```
[[[]]]
```

2. What would each of the following Python programs print?

(a)
```
x, y = 13.0, 4
print(x // y, x / y, x % y)
```

(b)
```
my_list = [0]
for i in range(3):
    my_list += [2 ** i]
print(my_list)
```

(c)
```
x, y = -1, 19
def f(x):
   y, z = 1, 1
   while y < x:
      y, z = y * 2, y
   return z
print(f(x), f(y))
```

(d)
```
text = 'To be or not to be'
print(text.split()[::-2])
```

(e)
```
array = [5,4,3,2,1]
s = 0
for n in array[::2]:
  s += n
print(s)
```

(f)
```
a, b, c = 'False', '', 0
print(not a or not b or not c)
```

(g)

```
x, y, z = [0],"0",0 # y is the digit 0
print(bool(x and y[0]) or z, z and not y or bool(x))
```

(h)

```
x, y, z = [], [0], True
print(x and y[0] or z, z and not y or bool(x))
```

(i)

```
x = [9, 1, 0]
y = x
y.clear()
print(x)
```

(j)

```
y = []
for v in range(0, 30, 5):
   y.append(v % 2 != 0)
print(all(y))
```

(k)

```
L = [3,6,8,10,11]
total = 1
while L:
    total = total * L[-1]
    L.pop()
print(total/5)
```

---

3. Write a function `check_card_number(x)` to verify that a string x represents a valid credit card number. For the purposes of this question, a credit card number is valid if:

   - It contains exactly 16 characters.
   - All 16 characters are digits from 0 to 9.
   - The sum of the digits is an even integer.

   Your function should return True if all of these conditions are met, and False otherwise. Your code can assume x is a Python string. For example:

```
cc1 = '5191241074527994' # sum is 70
cc2 = '5191241076621233' # sum is 53
cc3 = '51912410C6621233'
print(check_card_number(cc1)) #prints True
print(check_card_number(cc2)) #prints False
print(check_card_number(cc3)) #prints False
```

4. Write a function `count_capitalized(text)` . The function takes a text string as parameter and prints the number (count) of capitalized words (words that start with a capital letter) in the text string. The input to your function is a text string that contains any number of words separated by spaces.
   Here is an example, given for a correct implementation of the function:

```
# Test cases for Function count_capitalized
str1 = "Our Home and Native Land"
print(count_capitalized(str1)) # prints 4
str2 = "On Oct 10, a wedding in British Colombia has led to 49 COVID 19 cases"
print(count_capitalized(str2)) # prints 5
```