15-110 Recitation
Week 5 (2/13/2020): Exam 1 Review

Problem 1: decimal & binary

Convert the decimal value 84 to 8-bit binary

Recall that 'A' is 65, '0' is 48 in ASCII
Encode the string 'C2' in ASCII.

Problem 2: xnor

Consider xnor, the opposite of xor. xnor is true when *both* x and y are true OR neither x nor y are true.

1. Write a boolean expression for this

2. Create a truth table for xnor

3. Create a logical circuit for xnor

Problem 3: code trace 1

```
def f(n):
    return n+5
def g(n):
    return 10*f(n) + f(n+2)
print(g(2))
```

Problem 4: code trace 2

```
def ct1(s):
    t = ''
    for c in s:
        if ((c.isdigit() == True) and (int(c)%2 == 1)):
            t += c
    return t
print(ct1('I had 253 dogs and 762 cats!'))
```

Problem 5: errors

What type of error do the following statements have, if any?

`print(2+2=4)` **Error: _____**

`print(1/0)` **Error: _____**

Say we have this snippet of code to find the average of x and y:

```
x = float(x)
y = float(y)
z = x+y/2
```

What will this return? Is there an error?

Problem 6: port authority

From 8am - 10am and 5pm - 7pm everyday, the 61A, 61B, 61C, and 61D are excessively crowded. Usually, by the time they arrive at Forbes and Morewood, they can only fit 10 people on any given bus. However, when it isn't these hours, up to 30 people can fit on the buses.

Help Port Authority be less frustrating and allocate the right number of buses by writing a function **PortAuthority(time, num_people)** that given the time and number of people, returns the number of buses needed to accommodate everyone. Times will be stored in military time for your convenience.

PortAuthority(4, 20) → 1
PortAuthority(9, 43) → 5
PortAuthority(18, 34) → 4

Problem 7: strings

Print every other character in a string in function everyOther(s). If there are uppercase letters, make them lowercase.

Now, only print the letters in a string that are lowercase.