CSE101: Introduction to Programming
HW Assignment 2
Deadline: 15th Sept. 2019

Learning Outcomes:

1.How to use call frames to model function execution.

2.The difference between a call frame and global space.

3.Implement basic functions in Python

For this assignment, you need to model function executions as explained in Lecture-7. Make sure your diagrams follow the conventions and are easy to read.
This is a hand-written assignment. You need to attempt these questions on A4 sheets and submit them in a drop-box before the deadline.

Q1. Consider the code below:

```
def lastOne(y,x):
      x ^= y
      y ^= x
      x ^= y
      return x

def finalOne(x,y):
      x,y=y,x
      return lastOne(y,x)

def anotherOne(x,y):
      x=x+y
      y=x-y
      x=x-y
      return finalOne(x,y)

def one(x,y):
      t=x
      x=y
      y=t
      return anotherOne(y,x)

x=6
y=9
print(one(x,y))
```

a) Predict the output of the program.
b) Create a model call frame of the program when executed. Make edits in the call frame itself as each line is executed. Keep in mind the local and global variable scope.

Q2. Draw the model call frame diagram for the following program:

```
def tripleTrouble(x,y,z):
      y+=x
      z=y//2
      x=int(False!=z>=x+int(14.9) and y*7<=14)

a="IIIT"
b="Delhi"
x=len(a+b)
y=x%7
z=14-2**4>>2
tripleTrouble(y,x,z)
```

Q3. **Python id**() **function** returns the "**identity**" of the object. The **identity** of an object is an integer, which is guaranteed to be constant for this object during its lifetime. You can read more about it here.

Consider these 2 scripts:

b.py

```
import a1

def f(x):
      print(id(x)) #line 4
      x=8
      print(id(x)) #line 5

y=7
print(id(y))
f(y)
z=7
print(id(y)==id(z)) #line 6
print(id(f(7))==id(f(9))) #line 7
print(id(f(7))==a1.f(7))  #line 8
```

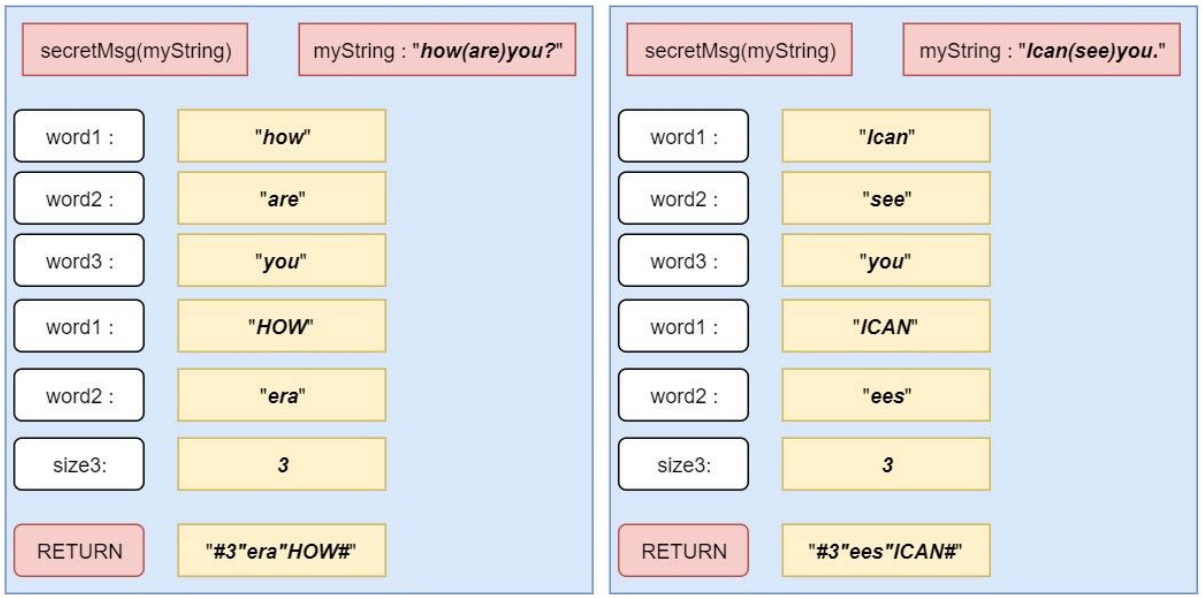
a1.py

```
def f(x): #line1
      print(id(x)) #line2
      x=8
      print(id(x)) #line3
```

Suppose b.py is run. Answer and **Justify** the following:

a) Are the outputs of line2 and line 3 same?
b) Are the outputs of line 4 and line 5 same?
c) Will line 6 print true?
d) Line 7 prints true, but line 8 does not. Explain.

Q4. See the below-given block diagram of how our function secretMsg() behaves. Try and write the python code for it.



Note:

1. secretMsg() takes in myString as input and returns another string as output.
2. myString has the type **p(q)r** string.
3. The output string is of the type **#n"s"t#** string.
4. Size3 is in reference to word3.
5. **You have to necessarily define the given variables with given order and working structure**, however, you can use more too.

Q5. Write a function **<checkString.py>**. Within this file, take **user input** for an **integer x and a string A** and give them as a parameter to the function **checkIt()**. Also, print the value returned by **checkIt(x,A)**.

checkIt(x,A)

- **Print** the **maximum number** such that it is **less than the length of A and divisible by x**.
- Also, you have to **return a boolean value**. That is,
  True if the length of the string A is even or greater than the given x,
  False otherwise.

Q6. Write a function **<string_module.py>**. Make a function playString() in it, which takes two strings **Astring** and **Bstring** (consisting only of **English alphabets)** as parameters.
Do the following task in the function ***playString(Astring, Bstring)*** :

1. **Print** whether Astring has **all the vowels**(a,e, i,o,u) or not. **// True or False**
   (If string Astring has “e” or “E” or both then we say e is in Astring.)
2. **Print** whether Bstring is a **substring** of Astring. **// True or False**
3. **Return** the count of consonants in Bstring.

REMINDER: Conditional statements or loops are not allowed. Using them would fetch you no marks for that particular question.