Lab 2 – CSE 101 (Spring 2021)

This lab will cover using functions and also show off some additional features in Visual Studio Code and some examples of how you can study on your own for this course. At the end, you will submit four Python programs that you made.

1. Use your IDE (Visual Studio Code) to create a new file named calculatearea.py. Type in the following lines, exactly as they are shown here (including the four spaces before the word return) and save the file:

```
def calculateArea(width, height):
    return width * height

# Take input from the user
width = float(input('Enter width in inches: '))
height = float(input('Enter height in inches: '))
# Call the function and store the calculated area
area = calculateArea(width, height)
print('The total area in inches is: ', area)
# Now print the area with 2 decimal precision.
print('The total area in inches is: ', '{:.2f}'.format(area))
```

Now try running the file in Visual Studio Code. Test it out with various inputs, such as a number with several decimal places (e.g. 17.453566), or using negative numbers.

Trying out your program with different inputs can be helpful to understand what it is doing and areas where it may not be working. If this was a proper program to calculate area, we would want to handle negative numbers as input, which we will cover in the future.

2. Use your IDE (Visual Studio Code) to create a new file named countertop.py. Type in the following lines, exactly as they are shown here (including the four spaces before the indented lines of code) and save the file:

```
def countertop(sideLength):
    """
    Compute the area of a square countertop with a missing wedge. The parameter x is
    the length of one side of the square.
    """
    square = sideLength ** 2
    triangle = ((sideLength / 2) ** 2) / 2
    # area of the full square
    triangle = (triangle
```

Now we want to use the countertop function to calculate the area given the user's input and print out the result. Take input from the user like we did in problem 1. Then call the countertop function and store the result in a variable, before printing that variable on the next line. Try running the program in the IDE. 3. Create a new file named spherevolume.py that does the following: Define a function named sphereVolume that accepts a radius value as an argument and returns (not prints) the volume of a sphere with that radius.

Then, you can write your code to test the function with the following code:

```
print(sphereVolume(2.0)) // should print 33.510321638291124 or a number close to it.
print(sphereVolume(5.0)) // should print 523.5987755982989 or a number close to it.
```

4. Submit **calculatearea.py** (1 point), **countertop.py** (2 point), and **spherevolume.py** (2 points) programs on Blackboard.