CMSC21 Lab Exercise 7 – Top Down Design

Following the design recipe, create the following functions. Do not remove the stub and template after completing the function; just leave it commented out.

Design recipe steps:

1. Signature, purpose and stub
2. Define examples
3. Template and inventory (create constants)
4. Code the function body
    a. While making the body for the big problem, see if it can be split up into smaller subproblems.
    b. "Wish" for the additional functions you need.
    c. Design the functions in the wishlist. When the wishlist is empty, you're done!
5. Test and debug until correct

Testing:

- Create a complete set of test cases for each category of inputs
- Include all boundary cases
- Show that there is 100% code coverage

1. Create a function that returns the larger value of either x, y, or z

2. Metro Ayala is on sale! Any accumulated purchase cost exceeding P1000 is given a discount of 8% on the whole amount. Create a function that determines the change to be returned to a customer given the total purchase cost and the amount paid

3. Write a function to determine the length of a ladder required to reach a given height when leaned against a house. The height and angle of the ladder are given as inputs. To compute length, use

$$length = \frac{height}{\sin angle}$$

.
Note: the angle must be in radians. Accept as input parameters an angle in degrees and use this formula to convert:

$$radians = \frac{\pi}{180}\ degrees$$

4. Write a function that calculates the cost per square inch of a circular pizza, given its diameter and price. The formula for area is $A = \pi r^2$