Module 5:

Parameters and Overloading

COP2274

In-class Assignments

UF UNIVERSITY of FLORIDA

M5A Call-by-value vs. call-by-reference

1. Write a void function called **getNumbers()** that should use *call-by-reference parameters* and read in an int and double from the user.
2. Write a void function called **multiply()** that multiplies two numbers together. Use call-by-value parameters for an int and double, and a call-by-reference parameter for the multiplication result.
3. Write a void function called **print()** that should use *call-by-value parameters* and print an int, *double*, and the result of the multiplication.
4. Test **getNumbers()**, **multiply()**, and **print()** in your main() as shown in the test case.

M5A Call-by-value vs. call-by-reference

Hint:

- *The prototypes of the functions are as follows.*

  void getNumbers(int&, double&);

  void multiply(int, double, double&);

  void print(int, double, double);

Test case

```
Enter an integer and floating point number, seperated by a space: 4 9.362
4 x 9.362 = 37.448
```

M5B Function overloading

1. Write a function called **pyrVol()** that takes in three parameters (double) and returns the volume of a rectangular pyramid.
2. Overload **pyrVol()** to take in *two parameters (double) and return the volume of a square pyramid.*
3. Test the overloaded functions **pyrVol()** in your main() by calling each of them with its arguments.

Notes:

- $volume\ of\ pyramid = (area\ of\ base\ \times heigth)/3$
- *Assume that user will always enter valid inputs.*
- *To guarantee full credit, your main program's output should exactly match the test cases.*

M5B Function overloading

Test cases

```
Welcome to the pyramid calculator!
Please enter 's' for square pyramid or 'r' for rectangular: s
You chose square!
Please enter a length and height, separated by a space: 4.5 6.8
The volume of the pyramid whose attributes you entered is: 45.9
Would you like to continue using this program? (y/n) y

Welcome to the pyramid calculator!
Please enter 's' for square pyramid or 'r' for rectangular: r
You chose rectangular!
Please enter a length, width, and height, separated by spaces: 5.7 11.34 9.3
The volume of the pyramid whose attributes you entered is: 200.378
Would you like to continue using this program? (y/n) n
Thank you for using the pyramid volume calculator. Bye!
```

M5C Let's rotate numbers

1. Write a void function called **rotate()** that takes in 5 integers and rotates their order.

   For example:

   let var1 = 1, var2 = 3, ... , var5 = 5

   after calling rotate(var1, var2, var3, var4, var5)

   var 1 = 5, var2 = 1, var3 = 2, ... var5 = 4
2. Write a void function called **printNums()** that takes in 5 integers and prints them neatly.
3. Test **rotate()** and **printNums()** in your main() based on the test case.

M5C Let's rotate numbers

Test case

```
Original Numbers:
[ 11, 22, 33, 44, 55 ]
After one rotation:
[ 55, 11, 22, 33, 44 ]
After another rotation:
[ 44, 55, 11, 22, 33 ]
```