CS 112 Assignment 6b

Submit your finished code to the Dropbox. You will need to pass off the assignments with the TA or tutor during their office hours (their information is in the CS 112 Course Information section of the Table of Contents), or the instructor in class. Follow the formatting guide which is also found in the CS 112 Course Information section.

Read the instructions carefully. Make sure your output matches the example run.

Objectives:

In this assignment you will practice the following:

- Write a function
- Pass arguments to the function
- Return a value from the function back to your main program

Program: function power()

Write a program that asks the user for two numbers. The numbers will represent X and y in the mathematical function $\mathbf{x^{y}}$. Use input validation to ensure the user entered valid numbers.

Have your main() function call a second function that you write called power(), passing the two numbers as arguments. Your power() function will raise the first number to the power of the second number and return that value back to main() via the return statement. You must use a for-loop to perform this calculation. You may NOT use Python's built-in ** operator. Print out the value of $\mathbf{x^{y}}$ in main().

After the program has finished, ask the user if they would like to play again. Use input validation to ensure the user answered with a 'Y' or 'N'. Keep the program running in an infinite loop until the user indicates they want to quit.

Key program requirements:

- Do input validation on both numbers and the 'Y'/'N' play again question
- Write a function called power() which has two parameters (X and y)
- Return the value of $\mathbf{x^{y}}$ to your main() function via the return statement
- Print out the value of $\mathbf{x^{y}}$ in main()
- Use of Python's ** operator is NOT allowed
- Use of global variables is NOT allowed
- The names of the two variables inside main() which are passed to power() as arguments MUST be different than the names of the two parameters inside of your power() function

Ponder – Discuss the following with your partner. Failure to do this activity and discuss these questions before you attempt to pass off your program will result in a failed pass off.

- On a separate piece of paper, draw boxes that represent the various memory locations that will be used by your program.
- With your partner, use your finger or a pen to point at each line of code as you trace through the program from beginning to end. Yes, really use your finger or a pen.
- Step through each line IN THE ORDER THAT IT WILL BE EXECUTED from beginning to end.
- Discuss what each line of code does.
- Make assumptions of what numbers the user will enter, then write those numbers in the appropriate memory locations as you trace through the code with your finger.
- Show the paper with your memory locations to the TA or instructors when you pass off the program.

Example Run

```
This program will ask the user for 2 numbers and raise the first number to the power of the second.

Please enter the first number (X): five
Invalid response.  Please enter a whole number.

Please enter the first number (X): 5
Please enter the second number (y): three
Invalid response.  Please enter a whole number.

Please enter the second number (y): 3

5 raised to the power of 3 is: 125

Would you like to play again? (Y/N): yep
Invalid response.  Please answer with a 'Y' or 'N'.
Would you like to play again? (Y/N): Y


This program will ask the user for 2 numbers and raise the first number to the power of the second.

Please enter the first number (X): 3
Please enter the second number (y): 3

3 raised to the power of 3 is: 27

Would you like to play again? (Y/N): N
>>>
```