Programming Problem Set #3

1) Write a program called `inspector.py` that takes a single positive integer as input from the command line and checks the following properties:

   - Is the number odd?
   - Is the number a square number?
   - Are all the digits in the number in increasing order? I.e. 146 is increasing, 212 is not.
   - Is the number a palindrome?
   - Is the number a factorial? I.e. 6 is a factorial because 3! = 3 x 2 x 1 = 6.

   Each of these checks must be implemented in a separate function. These functions should be named:

   - isOdd
   - isSquare
   - isIncreasing
   - isPalindrome
   - isFactorial

   Your program must check the presence of the input argument before using it. Each test should output the result of the test. For example, if the input number is 6:

```
The number 6 is not odd.
The number 6 is not square.
The number 6 is increasing.
The number 6 is a palindrome.
The number 6 is a factorial.
```

   Your programs are not allowed to use any global variables. They can only use data they are passed as arguments.

2) Write a program called `wrangler.py` that takes two words as input from the command line and performs the following operations on them:

   - Reverse the letters in the first word.
   - Capitalize (uppercase) the letters in the second word.
   - Thread the two resulting reversed and capitalized words together. For example, if the two words to be threaded are `olleh WORLD`, it would become `oWlOlReLhD`.
     If the words have different length, the thread will be imbalanced. For example if the two words are `gnik CARACTACUS`, the thread would be:
     `gCnAiRkACTACUS`
   - Print the following output:
     ```
     The reverse of hello is olleh.
     The capital of world is WORLD.
     Threaded, they become oWlOlReLhD.
     ```

   Each of these operations must be implemented in a separate function. These functions should be named:

   - spellBackwards
   - capitalize
   - threadTogether
   - printItOut

   Your program must check the presence of both the input arguments before using them. Your programs are not allowed to use any global variables. They can only use data they are passed as arguments.

Grading:

The problem set will be graded using the rubric provided below

	Task	Evaluation Score: Missing = 0; Inadequate = .25; Average = .5; Proficient = .75; Excellent = 1	Weight	Score
inspector.py	No global variables used in the functions		0.1	10%
	isOdd		0.05	5%
	isSquare		0.05	5%
	isIncreasing		0.1	10%
	isPalindrome		0.05	5%
	isFactorial		0.1	10%
	Correct output		0.05	5%
	In argument checked before use		0.05	5%
wrangler.py	No global variables used in the functions		0.1	10%
	Input argument checked before use		0.05	5%
	spellBackwards		0.05	5%
	capitalize		0.05	5%
	threadTogether		0.1	10%
	printOut		0.1	10%
Grade				100%