Programming in Python
Input Functions

There is one input function in python, called the input function.

Anything entered from the input command is automatically a string.

Example:

temp = **input**()   # temp is now a string

Try that line in a program. You will notice that there is no instruction on what should be entered by the user. You would need to use a prompt, such as:

print ("Please enter your first name.")
fName = **input**()

Python allows for both the prompt and the input to be on the same line, as in the following example:

fName = **input**("Please enter your first name.")

All prompts should be polite and use proper grammar rules.

Error Messages

So what happens if you don't enter a string?

Type the following:

```
myAge = input("Please enter your age.")      # enter an integer
```

It does accept it. Try to get it to crash by putting improper input.

This should be impossible. Everything you type is a good example of a string and thus works for input.

But, here's the real problem. Run the following code.

```
myAge = input("Please enter your age.")
friendAge = input("Please enter your friend's age.")
print("The sum of the ages is ", myAge + friendAge, ".")
```

Python is actually adding the strings together, what we call concatenation.
In this situation, we want the integers to be added together.

The following code will fix this problem:

```
myAge = int(input("Please enter your age."))
friendAge = int(input("Please enter your friend's age."))
print("The sum of the ages is ", myAge + friendAge, ".")
```

We have **typecasted** each of the ages as they have been inputted.
Later on, we can use an if statement to ensure that the input is an integer, but that is later.

Types of Errors:

There are two types of errors:

a)   Syntax errors - typing or grammar errors, in programming it means you have typed
         commands in wrong, or your variable name is not quite right

         Can you find all the syntax errors in the following snippet of code?

```
Print "There is an error here.")
fname = input(Please enter your first name.")
print (fName)
```

b)   Semantic errors - these are logic errors. Errors that Python has no problems with, but
         the logic of the programmer is wrong. The program does not do what is required.

         Find the logic error in this snippet of code:

```
num1 = int(input("Please enter the first number."))
num2 = int(input("Please enter the second number."))
average = num1 + num2 / 2
print ("The average of", num1, "and", num2, "is %.2f." %average)
```

Exercise #4

Note that for all of these questions, we will assume the user will input appropriately.

1)   Write a program that asks the user to input the radius of a circle. Your program is to then calculate the area and circumference of the circle as follows:

A circle with radius ? cm has a circumference of ? cm and an area of ? cm^2.

2)   Write a program that asks for three integers. Your program calculates the average of the numbers before displaying it appropriately to 2 decimal places.

3)   Write a program that asks the user to input their name and then age using separate Prompts. Output as follows:

My name is ? and I am ? years old.