

Functions and Modules

IT Adventures: Smart IT

Reading Assignment

- [How to Think Like a Computer Scientist: Interactive Edition](#)
- Required: 5.1-5.5
- Required: 6.1-6.10
- Recommended: 6.12

Functions

- A function is a block of code that only runs when it is called.
- When calling a function you can pass information called arguments, or parameters, for use in the function.
- You can have the function have 3 main purposes, return data, print something, and modify variables.
- Variables created inside a function are only useable inside the function.
- A function can call itself, this is called recursion.
 - This can lead into an infinite loop if used improperly.

How to Write Functions

- Similarly to if statement there's a one line statement to define the function and everything within will be indented.
- The define statement will take the form of:
 - `def functionname(argument n):`
- Functions must be declared before they are called.
- To help other programmers reading your code, your names should be as descriptive as possible.

```
def my_function(first_name, last_name):  
    print("My name is: " + fname + " " + lname)  
  
|  
fname = "Morgan"  
lname = "Freeman"  
my_function(fname, lname)
```

Modules

- A module is a file that contains prewritten functions that can be called from other programs.
- This saves a ton of time as you only need to focus on using the functions rather than writing them.
- It also allows for easy program maintenance as it keeps the files organized instead of a single very long file.
- Bundles of modules are known as packages.
- There are a large number of packages available online for just about every need.
 - Beware of shady packages as they could contain malicious code.

How to use Modules

- Place the module file into the same directory as your program.
- At the beginning of your program add the line:
 - `import modulename`
- Call the function using the syntax of:
 - `modulename.functionname()`

Technical Challenge

- First write a program that calculates and prints each term of the fibonacci sequence until reaching N.
- The calculation should be done in it's own function.
 - The define statement for the function should be:
 - `def fibonacci(n):`
- The file name should be `fibonacci.py`.
- Then write another program in the same directory as the original which will call upon `fibonacci.py` to do the same thing as before.
 - In the python terminal you'll need to use the command `import fibonacci.py` to gain access to the functions within `fibonacci.py`.