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IT FDN110 A Spring 24: Foundations of Programming: Python

Assignment 6

https://github.com/bpanganuw524/IntroToProg-Python-Mod06.git

# Functions, Parameters and Arguments

## Introduction

In this week's assignment, we learned some core concepts to creating modular, maintainable and organized code. One tool we learned this week is the use of re-usable code called Functions, where we learned uses cases of global vs. local variables. We also learned about passing data through functions by the use of Arguments. Finally, we learned about the use of Classes to group together functions.

## Functions

The introduction to functions and classes in this week's lesson dove into what it means to have a modular code. From my understanding of functions, it is a way of reusing blocks of code, preventing the need of re-iterating the same code. This saves on lines of code, as well as making the code much more readable. Another useful command within functions is the use of the Pass keyword. This allows for skipping certain areas of code if the definition of the function has not been defined.

## Arguments

To build off the lesson of Functions, the lesson also consisted of the fundamentals of the use of Arguments. Arguments are essential to pass a variety of parameters into your function. This allows you to give default values into your function without changing the underlying use of them. This is very useful in making sure that the program functions as expected.

## Classes

Another important lesson in this week's module is the use of Classes. I found that Classes were a good way to modularize functions and make larger blocks of code more portable. One of the interesting lessons on classes was the use of the Static Method decorator. This allows for the ability to use the classes directly without having to create new objects like variables and functions.

## Separation of Concerns Pattern

One of the most important concepts in this week's lesson is the separation of concerns pattern. It is important to know how to organize tasks and know what order different parts of the code would execute. I personally struggle with this quite a bit and know it is one of the lessons that will continue to be learned.

## Creating the program

The programming assignment this week was to demonstrate the use Classes and Functions to make the program more modular. I started this program by creating the Classes at the very top of the program. I knew that these classes would end up being the containers for many functions that I created.

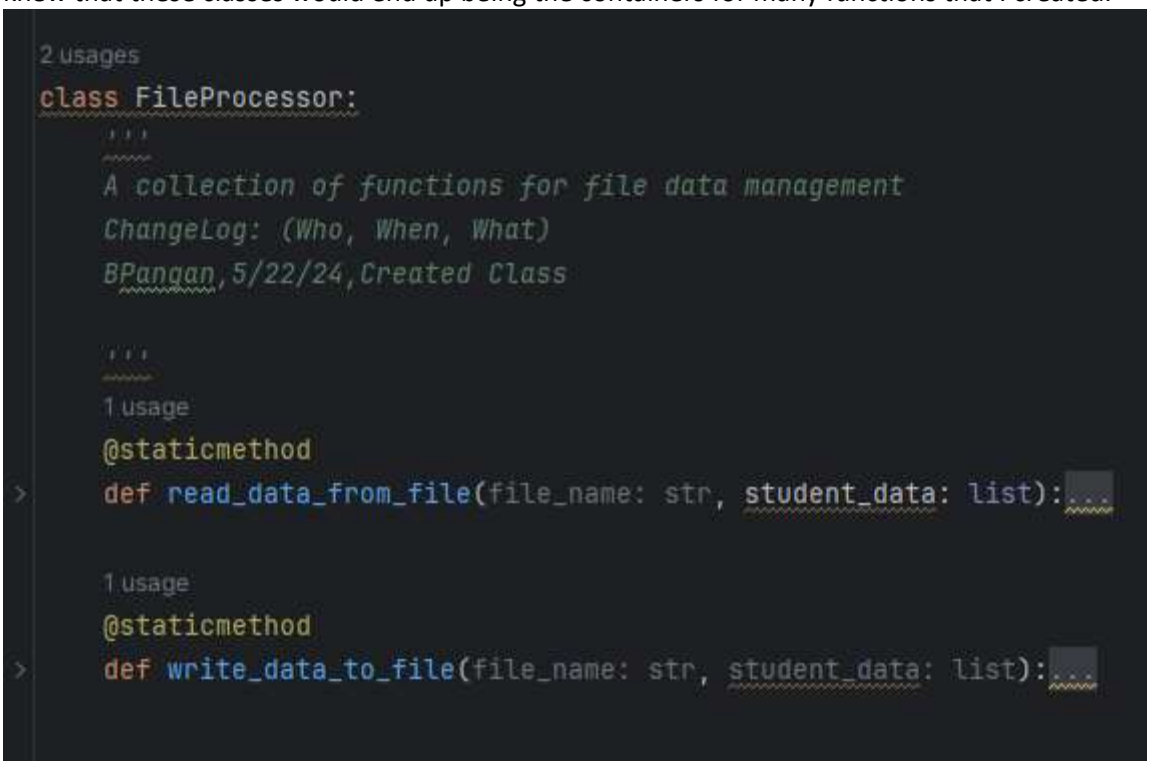


**Figure 1: Creating a File Processor Class containing multiple functions**

I found that my main program was greatly reduced using Classes and functions. I noticed that the program seemed to be much more re-usable in certain areas. The tool I found most useful was the pass command. I was able to write out all the functions I wanted and come back to them later.

```python
# Extract the data from the file
students = FileProcessor.read_data_from_file(file_name=FILE_NAME, student_data=students)

# Present and Process the data
while True:

    # Present the menu of choices
    IOProcessor.output_menu(MENU)
    menu_choice = IOProcessor.input_menu_choice()

    # Input user data
    if menu_choice == "1":  # This will not work if it is an integer!
        IOProcessor.input_student_data(student_data=students)
        continue

    # Present the current data
    elif menu_choice == "2":

        # Process the data to create and display a custom message
        IOProcessor.output_student_courses(student_data=students)
        continue

    # Save the data to a file
    elif menu_choice == "3":

        FileProcessor.write_data_to_file(file_name=FILE_NAME,student_data=students)

        continue

    # Stop the loop
    elif menu_choice == "4":

        break  # out of the loop
    else:
        print("Please only choose option 1, 2, or 3")
```

**Figure 2: Main Code Greatly Reduced**

## Summary

At the completion of this module, I was able to successfully use functions and arguments. I also learned how to use Classes and creating a more modular program. Using the Separations of Concerns pattern was a little confusing, but I think it will be clearer in future modules. The assignment demonstrates my understanding of the topics listed above. This assignment really builds off of what we have learned in previous lessons.