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Foundations of Programming: Python

Assignment 06

<https://github.com/Brocoe/IntroToProg-Python-Mod06>

<https://brocoe.github.io/IntroToProg-Python-Mod06/>

Creating a To Do List – Part 2

Introduction

This week I learned about functions and how they can be used in my code. I learnt about how to construct them, how they take in information and how they output information. I also learnt about how functions can be helpful in organizing my code. I began learning about classes on how those were different from functions and how to debug my code in PyCharm using the built in debugger tool. Finally, I spent some time learning about GitHub webpages and how to make them.

Functions, Parameters and Arguments

A function can be defined as a grouping of one or more statements together. Functions must be defined before they can be used using the 'def' keyword. Once a function is defined it can be called later in the code. Generally, anything that is going to be used more than once in code should be written as a function. Functions can have parameters which allows a code to pass values into a function for processing. Once a value is passed into a parameter it is officially called an argument. In practice these terms are used interchangeably but the technical difference is that arguments are parameters that have been assigned some value.

A return value or values are the set of values that returned from a function. The return keyword makes the function act as an expression. Put another way, the return keyword allows the function to return a result that can be captured by assigning it to a variable or using it in another expression. Capturing the result as a variable allows you to reuse it multiple times but using it as an expression does not allow for this. Importantly a function can return multiple values in the form of a tuple and these can be assigned to variables as well.

Local variables are variables that are contained within a function. Code inside a function can generally only 'see' code that is also within a function. Variables that appear outside of a function are generally called Global variables. These variables will not be used or seen by a function unless they are declared within a function using the global keyword to indicate them as such.

Classes are a way of grouping functions, variables and constants together that may in some way be related. Classes will be discussed more in a future module.

One of the most useful things about functions is that it helps us to organize our code using the separations of concerns pattern. Since processing is the second stage we can put all of our functions in one place right after we have declared all of our variables. This makes our input/output section much cleaner and only requires this section to call functions making it much more readable.

Debugging

PyCharm has a number of debugging tools which makes finding error and fixing bugs to be a lot quicker. Within PyCharm there is a debugger mode which allows a user to run their code in debug mode. Within this mode I can use a number of features to help with debugging. One of these are breakpoints which will stop a script on a certain line and wait for the developer to allow it to run. In the debug window a developer can see what the current values of a cell are as well as allow you skip over certain lines of code. You can call step into the code which will actually take you to the locations where certain actions are happening in your code.

Github Webpage

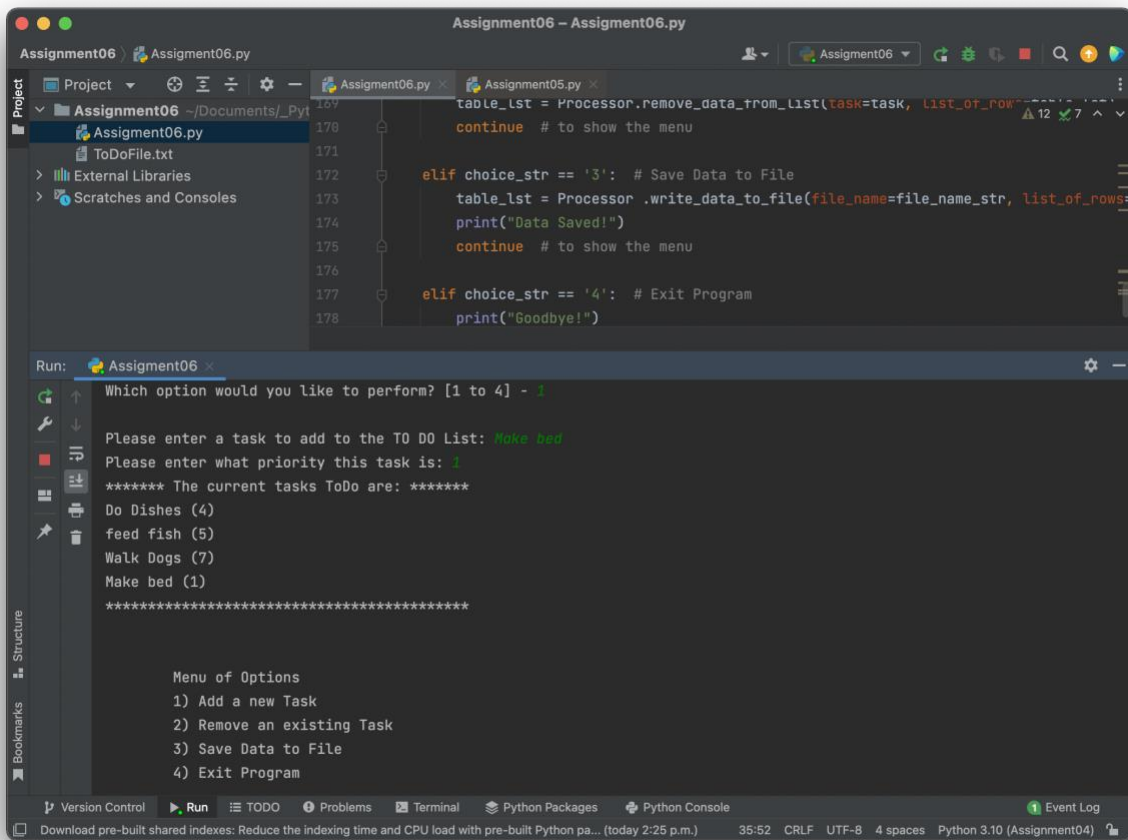
In addition to serving as a repository for code, GitHub can also host simple webpages. These webpages have the extension .md and using a specific style guide in order to make the website appear a certain way. These webpages can act as a front page for certain repositories that you might be hosting on GitHub.

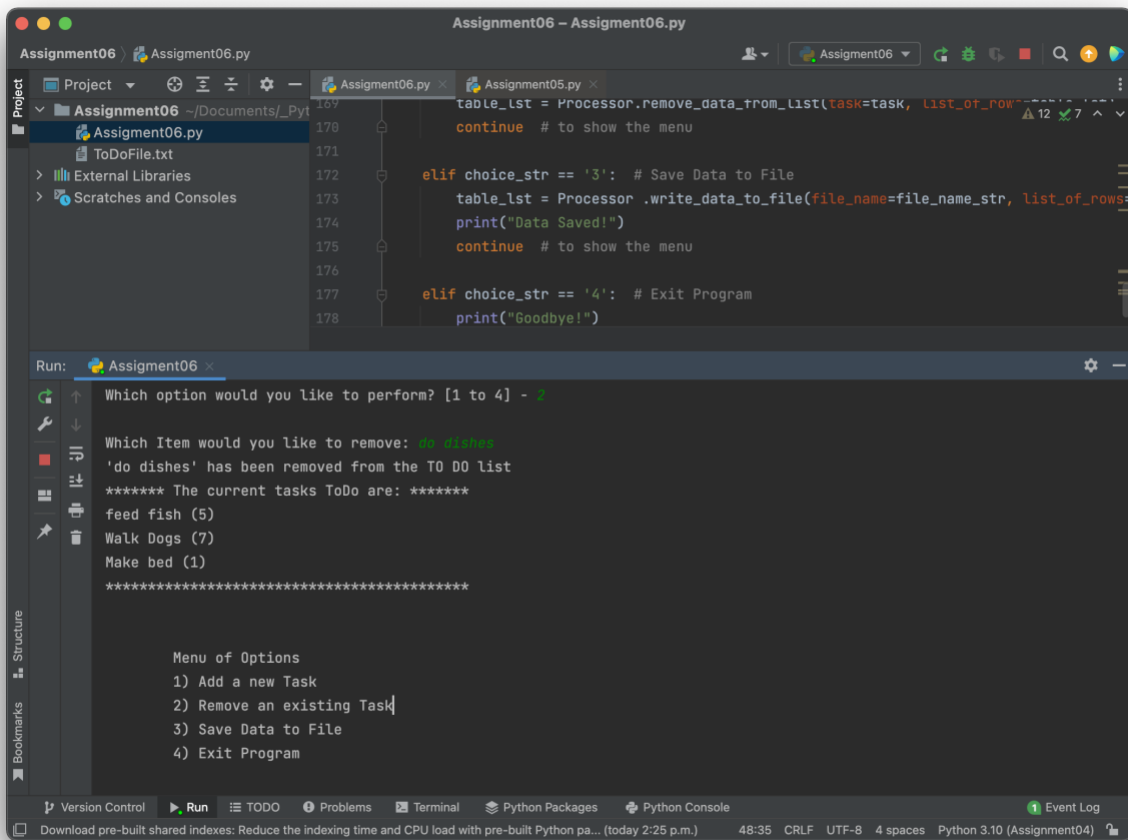
You can find the GitHub webpage that I created for the assignment here:

<https://brocoe.github.io/IntroToProg-Python-Mod06/>

Assignment

For the assignment this week we had to redo the same exercise as last week in terms of writing a program that would allow us to edit and store a to do list. This week we were given a significant amount of code but had to add a few lines of code to some functions in order to complete it. I was able to reuse much of the code I wrote from last week to fill in the missing pieces of code. I was able to run this in both PyCharm and the Console as can be seen in the screenshots below.





```

Assignment06 — Python assignment06.py — 80x55
[brookebiscoe@Brookes-MacBook-Pro ~ % cd /Users/brookebiscoe/Documents/_PythonClass/Assignment06
[brookebiscoe@Brookes-MacBook-Pro Assignment06 % python3 assignment06.py
***** The current tasks ToDo are: *****
Do Dishes (4)
feed fish (5)
Walk Dogs (7)
*****

Menu of Options
1) Add a new Task
2) Remove an existing Task
3) Save Data to File
4) Exit Program

Which option would you like to perform? [1 to 4] - 1

Please enter a task to add to the TO DO List: Make Bed
Please enter what priority this task is: 8
***** The current tasks ToDo are: *****
Do Dishes (4)
feed fish (5)
Walk Dogs (7)
Make Bed (8)
*****

Menu of Options
1) Add a new Task
2) Remove an existing Task
3) Save Data to File
4) Exit Program

Which option would you like to perform? [1 to 4] - 2

Which Item would you like to remove: feed fish
'feed fish' has been removed from the TO DO list
***** The current tasks ToDo are: *****
Do Dishes (4)
Walk Dogs (7)
Make Bed (8)
*****

Menu of Options
1) Add a new Task
2) Remove an existing Task
3) Save Data to File
4) Exit Program

Which option would you like to perform? [1 to 4] - 

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```
Assignment06 — -zsh — 80x55

Please enter what priority this task is: 8
***** The current tasks ToDo are: *****
Do Dishes (4)
feed fish (5)
Walk Dogs (7)
Make Bed (8)
*****

Menu of Options
1) Add a new Task
2) Remove an existing Task
3) Save Data to File
4) Exit Program

Which option would you like to perform? [1 to 4] - 2

Which Item would you like to remove: feed fish
'feed fish' has been removed from the TO DO list
***** The current tasks ToDo are: *****
Do Dishes (4)
Walk Dogs (7)
Make Bed (8)
*****

Menu of Options
1) Add a new Task
2) Remove an existing Task
3) Save Data to File
4) Exit Program

Which option would you like to perform? [1 to 4] - 3

Data Saved!
***** The current tasks ToDo are: *****
Do Dishes (4)
Walk Dogs (7)
Make Bed (8)
*****

Menu of Options
1) Add a new Task
2) Remove an existing Task
3) Save Data to File
4) Exit Program

Which option would you like to perform? [1 to 4] - 4

Goodbye!
brookebiscoe@Brookes-MacBook-Pro Assignment06 %
```

Conclusion

This week I was able to learn about functions and the critical role that they play in a script. I was able to apply my knowledge in the assignment this week and found that functions made the code much cleaner. While I didn't have much need for the debugging tools this week I am sure they will come in handy in the near future.