EGR 680
Fall 20xx
Laboratory #7

Python Functions, File I/O, and Object-Oriented Programming

Due Date: By beginning of next lab section

Objectives

- To be able to develop a modular design using Python functions
- To be able to read and write to a text file stored on a PC
- To be able to develop Python programs using classes and methods

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Part I – Modular programming using functions

For this lab, you will be using the same ATM machine code from the previous lab. Instead of having all of your code in one large main function, you will break up your code and perform all of the ATM operations using functions. The ATM machine should behave the same exact way as in the previous lab.

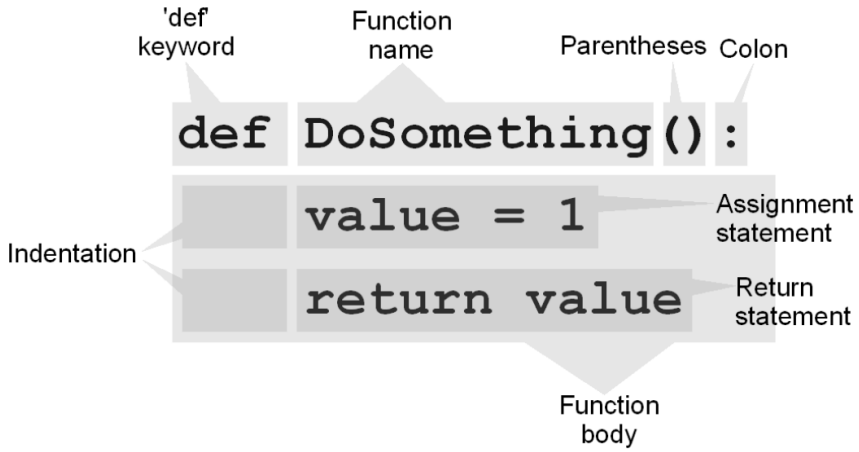

Figure 1: Python function

1. Open the **Python** environment by launching the **Anaconda Distribution** and then opening **Spyder**.

2. Click **File → New File** to open a new blank file.

3. Click **File → Save As** and name your file "***atm_func.py***".

4. Next, recreate the same **ATM** program as you did in the previous lab using functions.

    a. The only code that should be in your main function is function calls and the **ATM** state-machine.
    b. Each menu item pressed should call the corresponding function.
    c. The **ATM** output should be identical to the previous lab.

Part II – File I/O

In this part, you will be using the **Python File I/O** functions to generate an **ATM** receipt. The receipt should be structured the same way as if you went to an actual **ATM** machine and received a receipt. The top of the receipt should display a welcome message and the name of the bank. Every transaction performed while in a single instance of the **ATM** machine should print to the receipt. If the receipt does not exist in your folder, your program should create a new receipt file called ***"atm_receipt.txt"***. Every time you exit the **ATM** machine and relaunch a new instance, the receipt text file should clear and allow a new receipt to print. Your receipt should look like the output in Figure 2.

1. Open your "***atm_func.py"*** program.

2. Click **File → Save As** and rename your file ***"atm_receipt.py"***.

3. Modify your program to add the receipt functionality described above.

```
-----------------BANK of GVSU----------------
--------------Transaction Receipt------------
*****************************************

Your checking account balance is----> $0.00

Your deposit amount is--------------> $100.00

Your checking account balance is----> $100.00

Your withdraw amount is-------------> $25.00

Your checking account balance is----> $75.00

You have changed your PIN number

THANK YOU FOR CHOOSING BANK OF GVSU!
```

Figure 2: ATM receipt

Part III – Classes and Methods

For this part, you will recreate the program from Part II using object-oriented classes and methods. Your program should consist of two separate files. One file should hold your class definition and corresponding methods, and the other should only contain the main program function and ATM logic. Structure your methods the same way you did for the functions in Part II. Your ATM machine should function exactly the same way as in Part II and the output should also be the same as the output in Figure 2.

Laboratory Deliverables

You are required to turn in a hard copy of the report. Report should have the following items:

- Cover page with few paragraphs description of Parts I, II and III
- Printout of your code with comments (Parts I, II and III)
- Snapshot of your outputs (highlighting various conditions that you have tested)

You also have to demonstrate your design and turn in a copy of source code for all the parts.