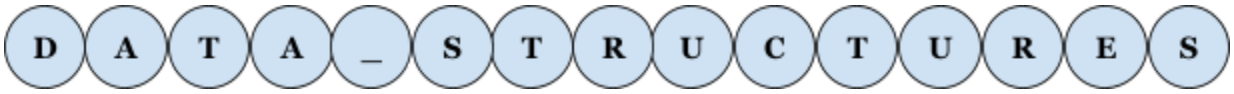
CS261 Data Structures

Assignment 0

Fall 2023

Debugging Review



Contents

Summary

For this assignment, you will learn how to iterate through a loop using the debugger. The primary objectives are to ensure that:

- You are familiar with basic debugging steps (i.e. setting breakpoints and stepping through the code)
- You are aware of and understand the debugger panel and the information it holds
- You are familiar with observing variable changes in the debugger panel
- You are familiar with submitting assignments through Canvas

For this course, we assume you are comfortable with:

- Iterating over a list of elements using `for` and `while` loops
- Accessing elements in a list or array using their indices
- Passing functions as parameters to other functions
- Using classes pre-written for you (imported into your code to create objects)
- Writing your own classes (including extending existing classes)
- Writing unit tests for your code
- Debugging your solutions

None of the functions in this assignment, or CS261 in general, will require Python knowledge beyond what was covered in CS161 and CS162. If you completed the CS161/CS162 classes in Python, you should be able to complete this assignment. In case you need help, please post questions on Ed Discussion, feel free to contact the instructor/ULAs in Teams during Office Hours, and go over the Python Review modules.

General Instructions

1. This assignment will be in correspondence with the Exploration Pycharm Debugging Tips in the Coding Guides and Tips Modules. Read the Exploration before attempting this assignment.

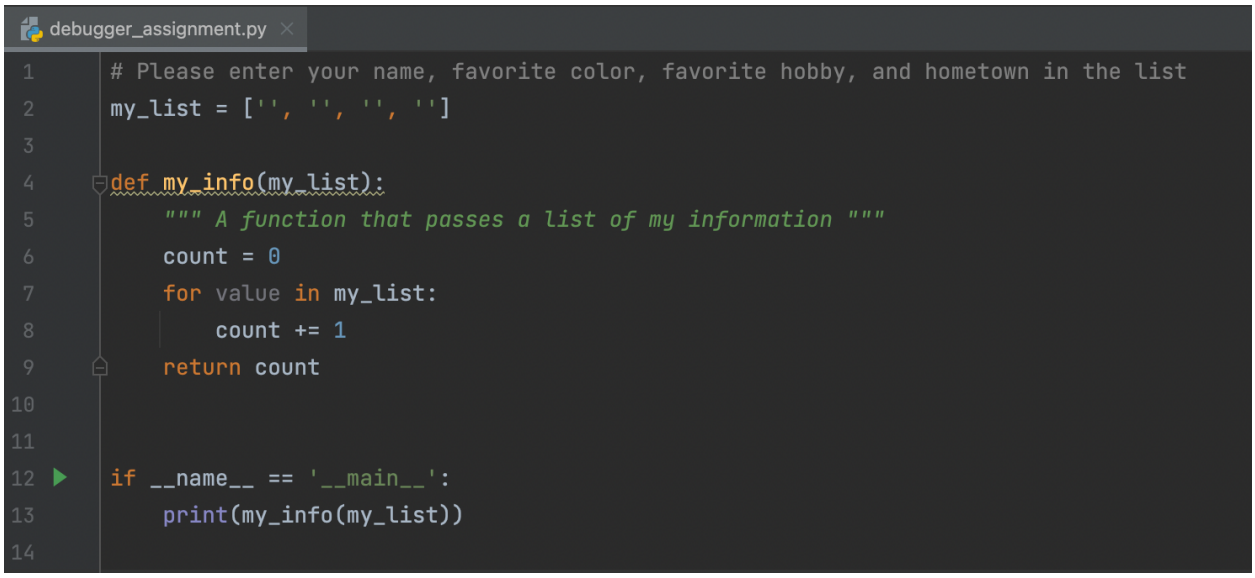
2. The code for this assignment must be written in Python 3 and a screenshot will be submitted to Canvas before the due date specified on Canvas and in the Course Schedule. You may resubmit your screenshot as many times as necessary.

3. You will be provided with a starter "skeleton" code, on which you will build your implementation. For this assignment specifically, we will walk you through the entire implementation of the code. You should be able to follow along through the video provided in the assignment page on Canvas, or through the step by step guidelines written in this PDF.

4. The skeleton code and code examples provided in this document are part of assignment requirements. Please read all of them very carefully.

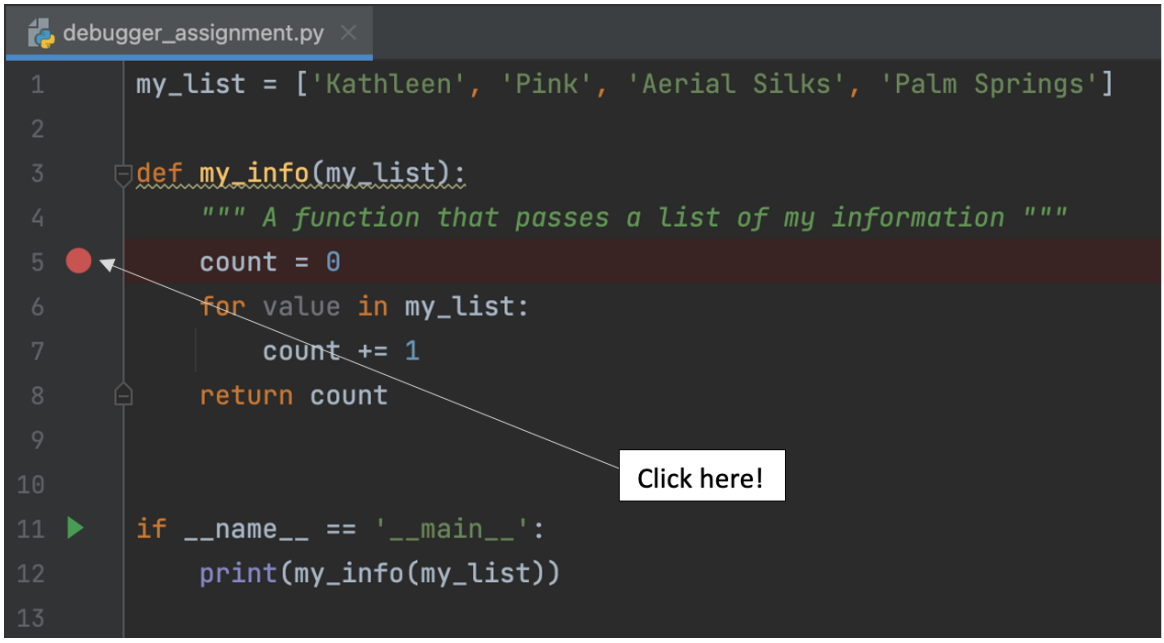
Specific Instructions

1. Download the skeleton file assignment0_debugger.py in the assignments page on Canvas.

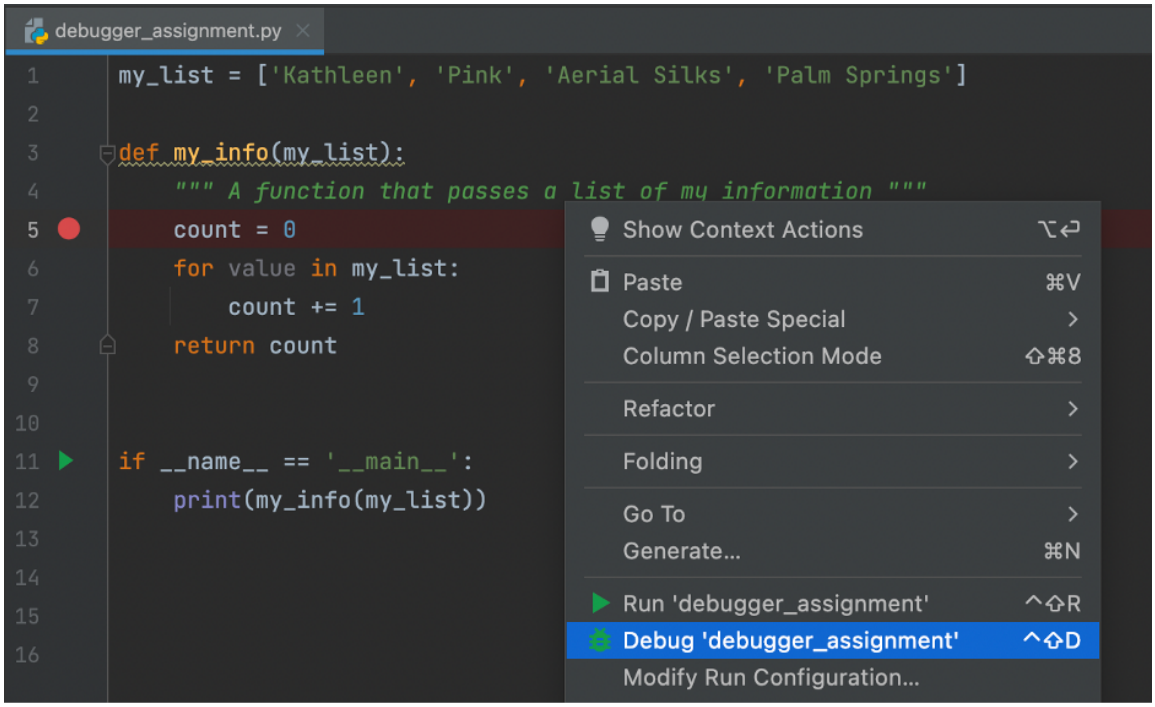


2. Enter your name, favorite color, favorite hobby, and hometown in the list. You should have something like this:

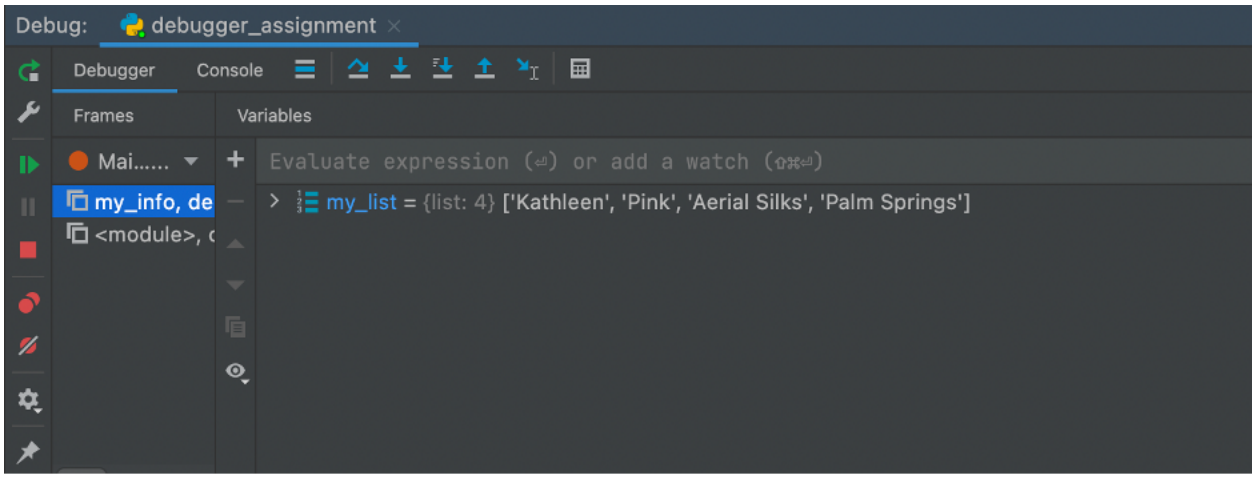
3. Now let’s walk through our code in the debugger. Add a breakpoint at the start of the code in your function by clicking next to the line that holds our count value, here it is on line 5. A red dot should appear.



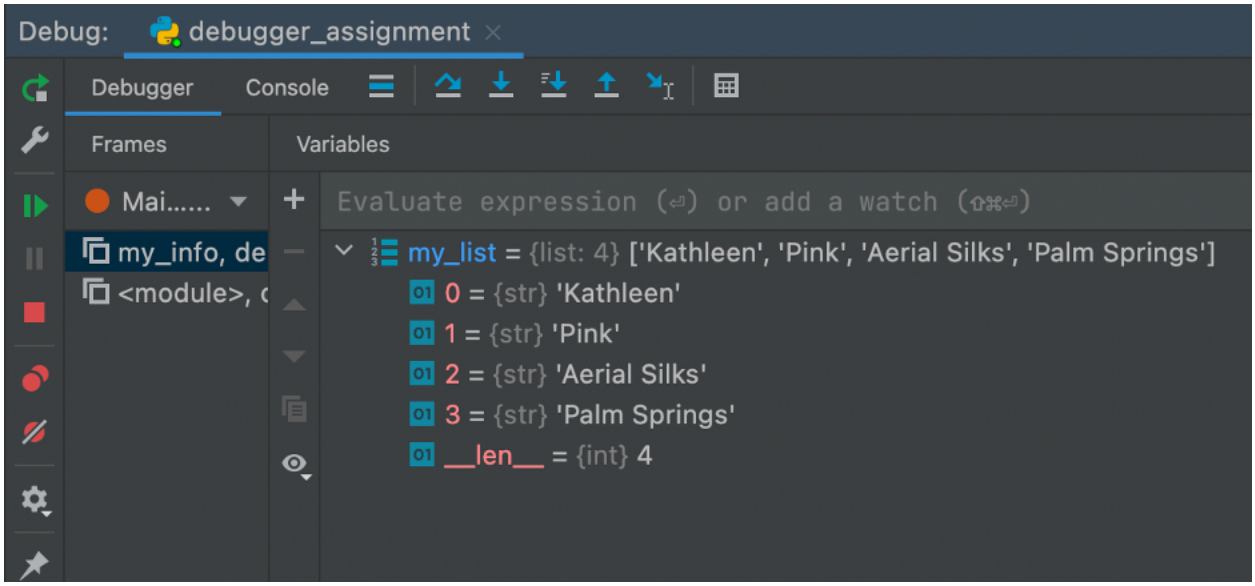
4. After adding that breakpoint we can now step through our code. The breakpoint essentially tells our code to pause at this point. Within your file, right click and select Debug ‘debugger_assignment’



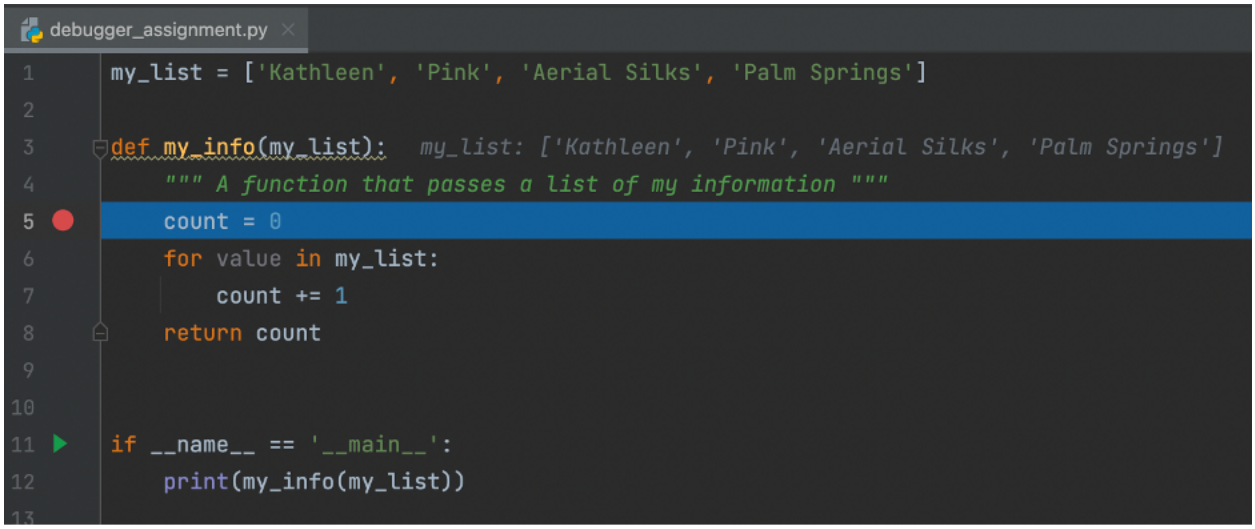
5. You should see a few things happen. First, the debugger panel should have opened up and you should see something like this:



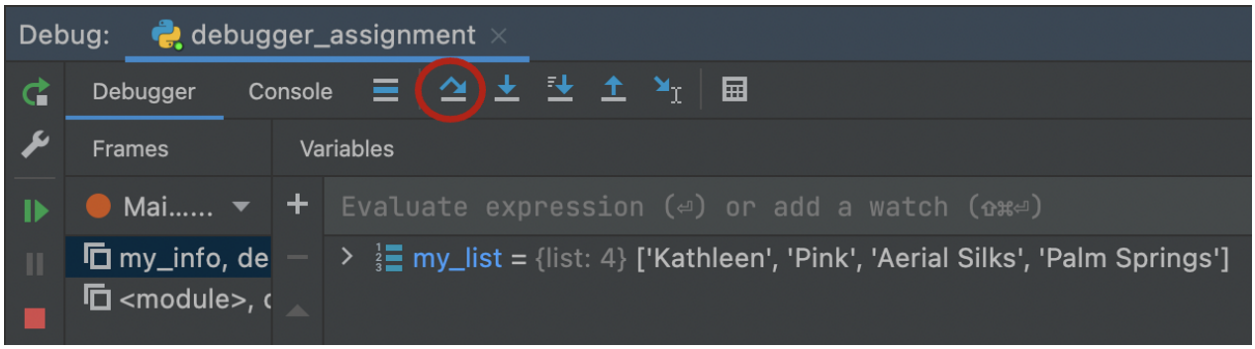
If you click on the arrow for my_list, it'll show you an even greater breakdown of your list:



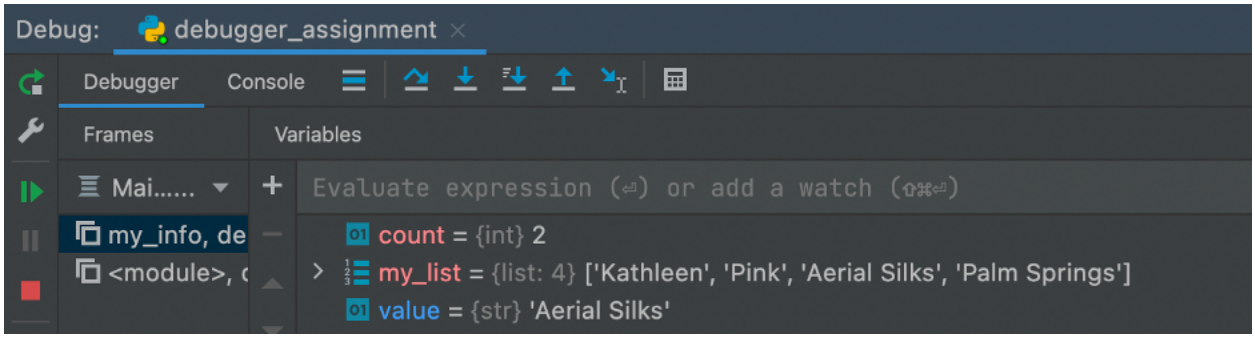
Here you can see the indices and their corresponding values. In index 0 the value should be your name, in index 1 the value should be your favorite color etc. Additionally, you should see your my_list in grey within your code, and the line you added a breakpoint to should be highlighted.



6. Now we are ready to start stepping though. Click the Step Over icon in your debugger panel. Step through your code. You should see that your value variable in your code gets reassigned after it passes the for loop, and you should also see your count variable being reassigned after it passes the count+=1 line.



7. Stop when your value variable holds the value of your favorite hobby. Take a **screenshot of your code and debugger panel** to show that the value is of your favorite hobby. Your screenshots should look like this. Upload it in Canvas directly in the Assignment 0: Debugger Submission page.



After uploading your screenshots to Canvas, you have completed the assignment. Please continue to refer to the Coding Guides and Tips Modules for more in depth information on debugging as you go through this course.