Lecture 05

Debugging

Types of Error

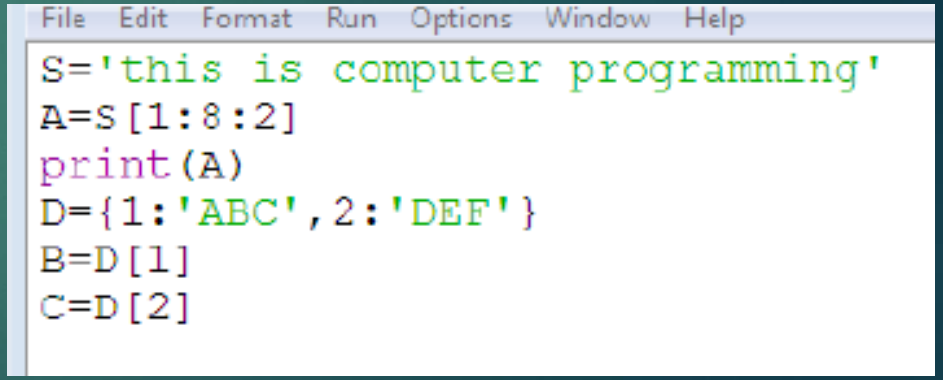
- There are generally two types of errors namely syntax and logical errors.
- Syntax errors occur when a program does not conform to the grammar of a programming language, and the compiler cannot compile the source file.
- Logical errors occur when a program does not do what the programmer expects it to do.
- Syntax errors are usually easy to fix because the compiler can detect these errors.
- The logical errors might only be noticed during runtime. Because logical errors are often hidden in the source code, they are typically harder to find than syntax errors.

Debugging

- The process of finding out defects (logical errors) in the program and fixing them is known as debugging.
- Debugging is an integral part of the programming process.

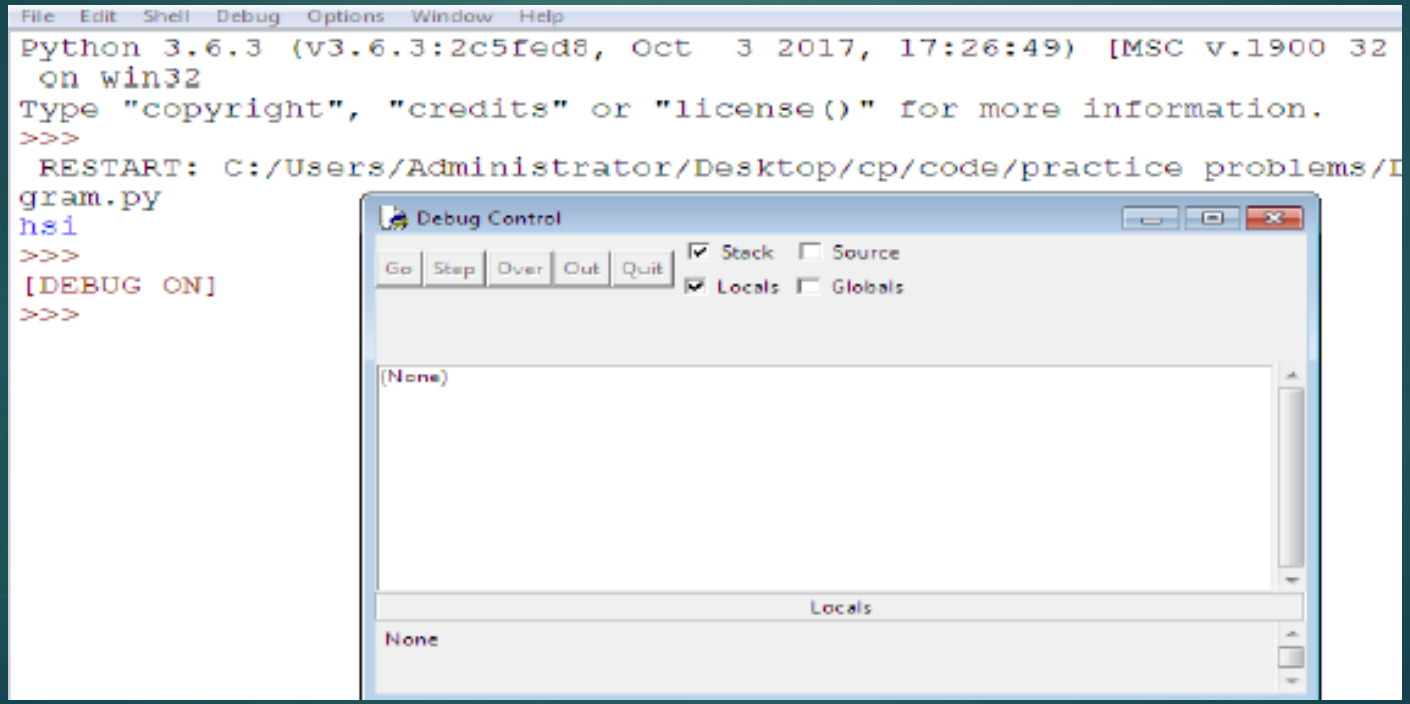
Program Debugging With IDLE

1. Open Python shell
2. Go to file>New and open a python script file
3. Write a program on that file



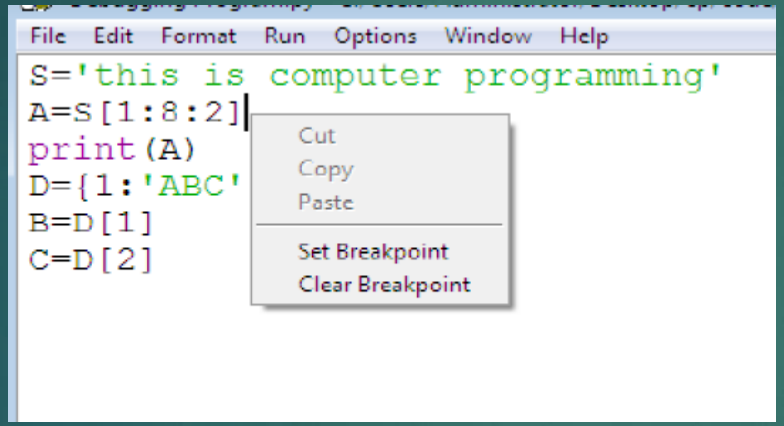
Debugging

4. Go to Python Shell and select the Debug option. A window will appear as shown below



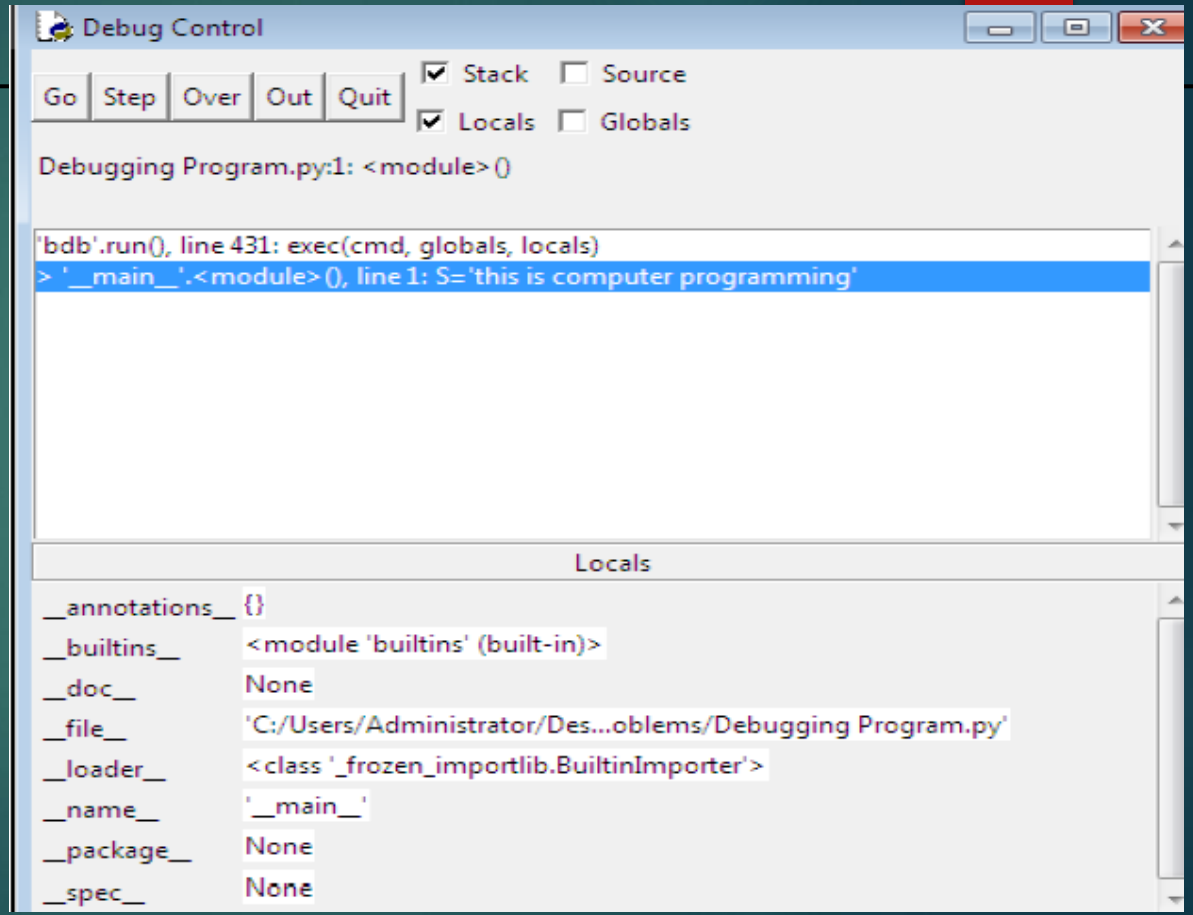
Debugging

5. Set break point by right clicking on the particular line.



Debugging

6. Now go to python script and click Run and notice the line highlighted by blue. Note that the Debug Control window is opened and that the blue line states that the line 1 "S='this is computer programming'" is ready to be executed.



Debugging

NOTE

- Go button will make the program run at normal speed until a breakpoint is encountered (or input is requested or the program finishes).
- Step button is used to step through your code, one line at a time.
- There is a pane "Locals" which shows the value of A and S. This is useful in several ways. It shows the values of variables as they change, and it shows the types of variables.
- Over means that if the statement to be executed has a function call in it, go off and do the function call without showing any details of the execution or variables, then return and give the human control again, "step over the function“
- Out assumes you are in some function's code, finish execution of the function at normal speed, return from the function and then give the human control again, "step out of the function"
- Quit stops the execution of the entire program

Summary

- Setting breakpoints
- Stepping through the source code one line at a time
- Inspecting the values of variables as they change
- Making corrections to the source as bugs are found
- Rerunning the program to make sure, the fixes are correct

Task – 5

1. Write a script that performs at least 5 slicing operation at different position on a string (your Firstname_LastName) saved in a variable. Each slice operation must be saved in a different variable. Debug the program to show the assignment of values to variables through _debug control‘ window through single stepping.
2. Debug at least two programs from previous lab exercises.

Thank you!