Python

{ Debugging your code

Women Who Code DC - Violet Cullors

What is debugging?

- More Art than Science: Diagnosing errors in programming and apply the appropriate techniques to eliminate the problem.
- Trap & Identify errors: Logical, Syntax, Runtime
- Bugs are found throughout the software life cycle by: Programmer, Software Tester, End User
- Compared to unit testing: the use of test cases that checks what happens in all possible states that the current program module can enter.

How can debugging work for you?

- The flow of the program (what happens next on a line by line basis)
- The creation & initiation of variables
- The data being stored in each variable
- The data value entering/leaving of functions
- The calculations that are made
- The entering of IF statements or ELSE statements
- The LOOPING of code.
- There's others

Tools You Need

- Print statements
- IDE for Debugging tools

Integrated Development Environment (IDE) for Python with Debugging Tools

- PyCharm – Free Community Editor
- Eclipse – with plugin PyDev
- GitHub's Atom IO – requires plugins - Free
- IDLE – use with plugins IDLEX - Free
- Komodo Edit - Free
- PyScripter – MIT licensed – Free
- Spyder – MATLab look/fee - Free

Debug Concepts

- Breakpoint: Halt the execution of the code at this point.
- Watch: A view of the data within a variable's during a program's flow.
- Step In : Process next line of code. If is a function call, then step into the first line of function.
- Step Over: Process next line of code. If is a function call then execute function without entering it and go to the next line of code.
- Step Out: If current line of code is within a function this will execute the rest of function code without stepping through it and leave you at the code where this function was initially called.

Try this:

```
## person data - string type
Person1 = 'AMarySmith'
Person2 = 'DJohnWater'

## list of string types
personList = [Person1, Person2]

#city dictionary
cityCode = {'A':'Alexandria', 'D':'District of Columbia'}

#MAIN PROGRAM

for Person in personList:
    ctype = Person[0:1]
    Fname = Person[1:5]
    Lname = Person[5:10]

    print (Fname + " lives in " + cityCode[ctype] + ".")

#end FOR loop

#end MAIN program
```

Use this program to debug in your IDE