

I understand that some of you (especially those without programming experience) had a difficult time following through during the demo. Please read through this program and try to make sense of each line of code. If you're confused, try running certain sections on Spyder to see what it does.

```
1  import numpy as np
2  import matplotlib.pyplot as plt
3
4  #print statements
5  print("This is a string")
6
7  a = 5
8  b = 3
9
10 print(str(a) + " plus " + str(b) + " is " + str(a+b))
11
12 #math
13 c = a + b
14 print(c)
15 print(7**2)
16
17 #arrays
18 names = ["Justin", "Anya", "Martin", "Emily", "Jonathan"]
19 salaries = [60000, 50000, 90000, 350000, 12]
20
21 print(names)
22 print(names[3])
23
24 print(str(names[0]) + " earns $" + str(salaries[0]))
25
26 #for Loop
27 entryNumber = 0
28 for x in names:
29     print(str(x) + " earns $" + str(salaries[entryNumber]) + " a year.")
30     entryNumber+= 1
31
32 #for Loop and if-statement
33 for x in names:
34     if x == "Emily":
35         print("Found her!")
36         break #introduce this at the end
37
38     else:
39         print("Not her!")
```

```

40
41 #statistics
42 meanSalary = np.mean(salaries)
43 print(meanSalary)
44
45 #plots
46 fig = plt.figure()
47 ax = fig.add_axes([0,0,1,1]) #x0, y0, width, height
48 ax.bar(names, salaries)
49 plt.xlabel("Names", fontweight="bold")
50 plt.ylabel("Salary", fontweight="bold")
51 plt.title("Our Salaries", fontweight="bold")
52

```

Before our second lab session on Tuesday of Week 5, you should be somewhat familiar with the following techniques:

- Print statements
 - Strings vs. integers
 - Concatenating strings with integers
 - Convert integers to strings
- Basic math expressions
 - Add +, subtract -, multiply *, divide /, exponents **
- Arrays
 - String vs. integer arrays
 - Printing the value of a certain element of an array
- For-loops
 - Used to execute lines of code multiple times until a certain condition is met
- If-statements
 - If a certain condition is met, a certain set of code gets executed
- Python Packages
 - Numpy is used for statistics
 - Matplotlib is used for plotting graphs
 - Pandas is used for data analysis
- How to generate plots

We will be applying some of these techniques to analyze the fluorescence data that you obtained from ImageJ.