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CPADS Lab Activity #5
Loops and Functions

Open **Pycharm** making sure to select the Python 3.5 interpreter. Create a new project named **CS100-Lab5**. Download the **LoopsAndFunctions.py** file and save it in your **CS100-Lab5** folder. Open the **CS100-Lab5** project in **PyCharm**, and then open the **LoopsAndFunctions.py** file in the editor.

There are several TODOs to complete in the file. Observe how the code is written for the first few examples. You can use those examples to assist you in completing the TODOs in the lab.

TODO 1: In the **main()** function, you are asked to copy the loop code from above TODO 1, and modify that code to output odd integers instead of even integers. What modification do you need to make to switch from outputting even to odd integers?

TODO 2A: First, create the function in TODO 2A that outputs the first 'n' positive integers. Use the same type of print statements that are included in the first several functions so that you can see which function has executed and produced output.

TODO 2: Now, go back to **main()** and call the function from TODO 2A.

TODO 3A: First, create the function in TODO 3A that calculates and outputs the sum of the first 'n' positive integers. This can be a modification of the function from TODO 2A.

TODO 3: Now, go back to **main()** and call the function from TODO 3A.

TODO 4A: First, create the function in TODO 4A that outputs the sum of the first 'n' squares. This can be a modification of the **printSquares()** function.

TODO4: Now, go back to **main()** and call the function from TODO 4A.

TODO 5: Copy the loop that outputs the squares, and modify it to output the cubes.

TODO 6A: First, create the function that will calculate and output the cubes. This can be a modification of the **printSquares()** function.

TODO 6: Now, go back to **main()** and call the function from TODO 6A.

TODO 7: Create a loop that calls the **calcQuadratic()** function, passing it the *a*, *b*, *c*, and *x* values that were entered earlier.

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TODO 8A: First, create a function that calculates the cubic equation and returns the result. The function should accept parameters for the coefficients *a*, *b*, *c*, *d*, and *x*.

TODO 8: Now, go back to **main()** and call the function , passing *a*, *b*, *c*, *d*, and *x*, to the function.

TODO 9A: First create a function that calculates the distance between 2 points in 3-dimensional space. The function should accept a parameter list of *x1*, *y1*, *z1*, *x2*, *y2*, *z2*, and return the distance between the 2 points. You can use the **calcXYDistance()** function as a model for the new function.

TODO 9: Now, go back to **main()** and call the function, passing in *px1*, *py1*, *pz1*, *px2*, *py2*, *pz2* coordinates that were entered earlier.

Execute your program by selecting **Run->Run->LoopsAndFunctions.** You will then need to enter the requested data, and also hit keys several times to progress through the program, as it will pause at various points. Hit any key in the bottom pane of Pycharm to close the program.

HINT: Work on one TODO at a time, from the 1 through 9. Understand how each one works before moving on to the next TODO.