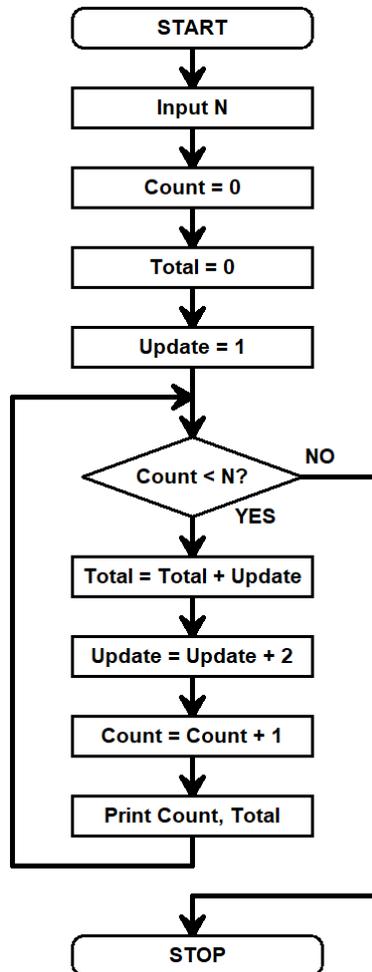


# COMPSCI 119

## LAB #1 – Converting a Flowchart into Python

The following flowchart is of a simple mathematical process to generate a list of numbers and their squares using only integers. Your task is to convert the flowchart into an exactly equivalent, running, Python 3 program. Do not write any functions or code not shown here in your solution. All variables are integers.



You ***must*** include a comment at the top of your program containing your name, “Lab #1”, and the date – ***failure to put your name on this or any other program you write will incur an automatic zero*** as the score on the assignment. When you are done, turn in the assignment through the on-line code submitter on the class Web page as **Lab 1**.

## **Grading**

Study carefully the “Grading Codes” document on the class Web site. That is the generic rubric for all programming assignments in this class. It lays out the rules you must follow for all programs (you must have your name, lab number, and date in a comment at the top of the program, the program must run to completion without errors, it must solve the assigned problem, etc.) Each infraction gets a certain number of points removed and a letter code indicating which infraction was involved. The generic rubric covers codes A-G and Z.

For this particular assignment, the additional error codes are as follows:

- H. -1 Python variable names differ from flowchart.** The program will work correctly with other variable names, but since it would not be what the flowchart states this error code is incurred.
- I. -1 Statements are omitted.** In some cases, omitting a statement may cause the program to crash (handled by error code C, not here), but in other cases the program simply computes the wrong answers because one or more statements are missing. Those cases incur this error code.
- J. -1 Statements are out of order,** possibly causing incorrect answers. For an example, if the first four rectangular boxes of the flowchart are translated into a different order the program will still work correctly, but the Python program will not match the flowchart. However, if the four rectangular boxes inside the loop are translated in a different order the program will not crash but may instead generate incorrect results. Both of these examples incur this error code.
- K. -1 Statements are translated incorrectly,** or expressions within statements are not in the same order as shown in the flowchart. For example,  $\text{Update} = \text{Update} + 1$  is a clear mistranslation of  $\text{Update} = \text{Update} + 2$ . The program runs but computes the wrong answers. For another example, the result of  $\text{Update} = 2 + \text{Update}$  is a mistranslation of  $\text{Update} = \text{Update} + 2$ , even though it generates the same answer. Since neither example exactly matches the flowchart this error code is incurred.
- L. -1 Extra code is added that is not in the flowchart.** This should be self-explanatory.