**Python Basics Lesson 6 Tracing**

Logic, runtime and syntax

* Tracing a program means running the program, by hand, on paper.
* Tracing a program is an excellent way to:

1. Find errors in your own program.
2. Understand what someone else’s program is doing.

**How to Trace**

1. Find all variables in the program.
2. Write these variables as headings in a nice neat table.
3. Add a heading for output.
4. Follow the program one line at a time and record any changes to the variables.

* Keep in mind that variables only hold one value at a time so any reference to a variable refers to its current value (the bottom value in that column)

Algorithm

1. Number = 3
2. Print number
3. For I from 1 to 3:
4. Number = number+5
5. Print number
6. Print “?”

|  |  |  |  |
| --- | --- | --- | --- |
| Line | number | i | output |
| 1 | 3 |  |  |
| 2 |  |  | 3 |
| 3 |  | 1 |  |
| 4 | 8 |  |  |
| 5 |  |  | 8 |
| 3 |  | 2 |  |
| 4 | 13 |  |  |
| 5 | |  |  | 13 |
| 3 | |  | 3 |  |
| 4 | | 18 |  |  |
| 5 | |  |  | 18 |
| 6 | |  |  | ? |