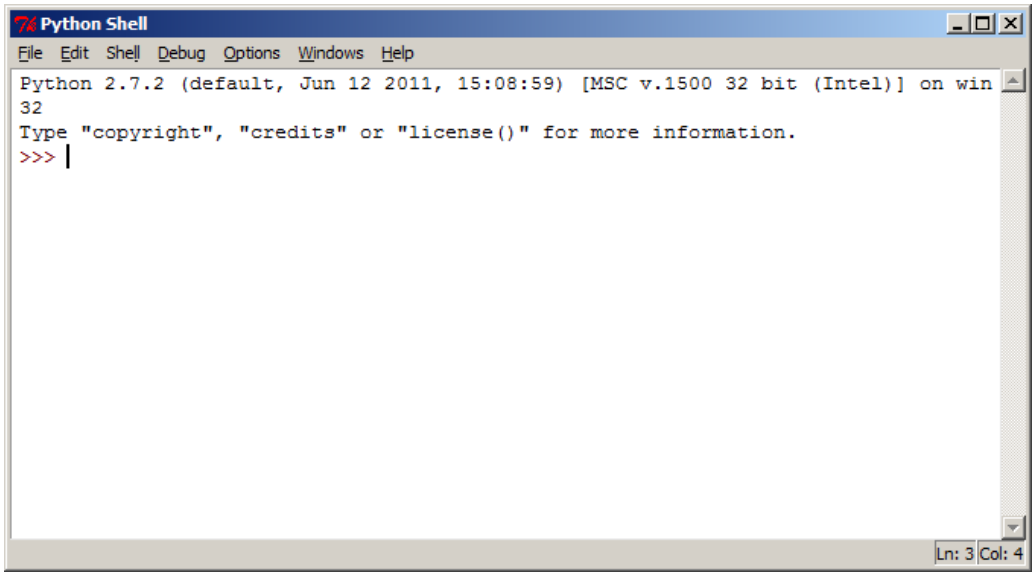
Python

Python is a programming language used in many different environments : online role-playing games, Web apps, instrument control, etc. Programming is providing the computer with a set instructions to carry out. The instructions (or procedure) must be very precise in order for the coputer to understand it.

Python is a free language and can be downloaded to your home computer :
https://www.python.org/downloads/

There are a few ways to run the Python program. The easiest way for the Windows environment is to run the IDLE editor for python.



First Program :

>>> is the command line.

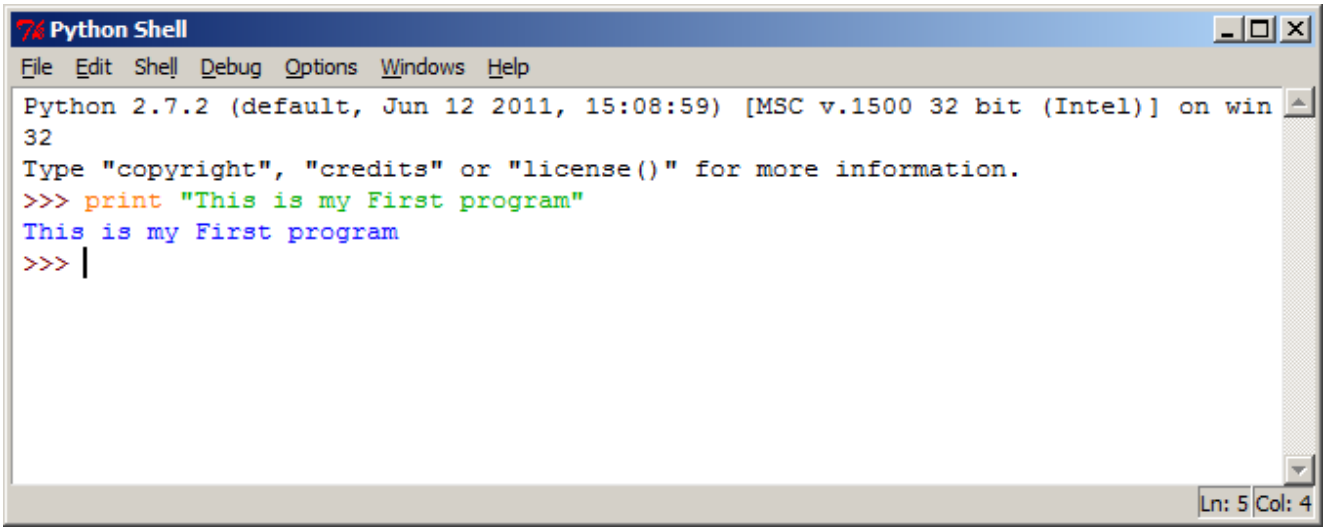
For the first program we are going to tell the computer to Print a word/saying to the screen. This is a 1 line program. Type the following and hit enter :

>>> print ("This is my First program")

* **Note**: Python commands are case sensitive. Meaning the ***print*** command is not the same as Print or PRINT.

The line could have also read …

>>> print "This is my First program" → ( ) are not needed but are useful
>>> print 'This is my First program' → " " (double) can also be ' ' (single)



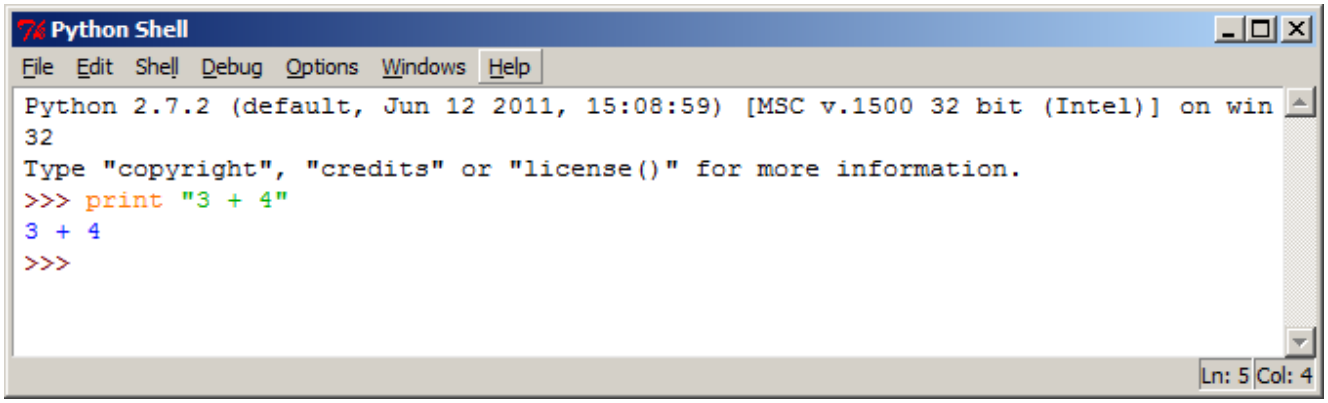
Notice that IDLE color codes the various entries, so that they're easier to see and understand. The colors codes are your indicator that you've done something right.
Four color codes are used :

- ✓ **Orange :** Indicates that you have typed a command
- ✓ **Green:** Specifies the content sent to a command
- ✓ **Blue:** Shows the output from a command
- ✓ **Black:** Defines non-command entries

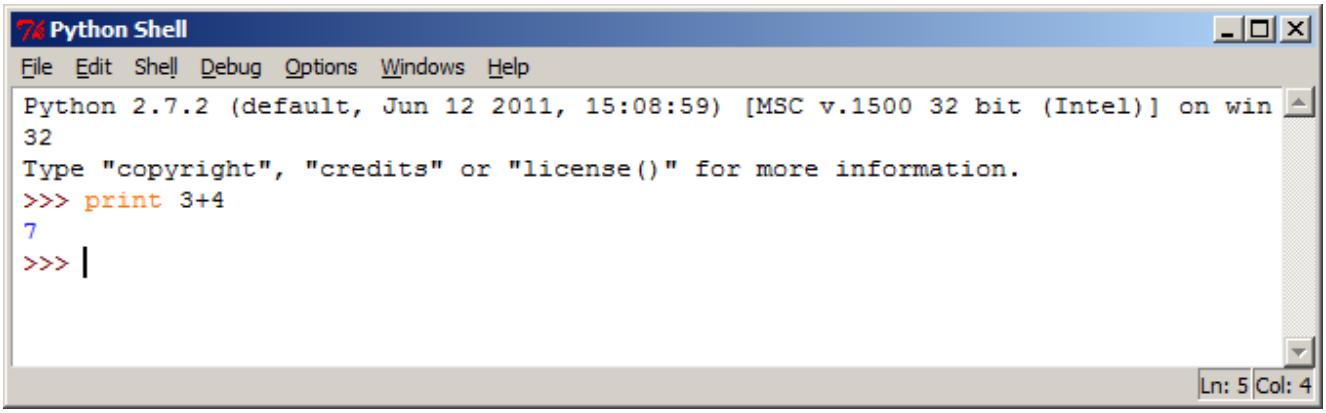
Text vs Numbers :

Anything in " " is called ***Text***. Text is printed exactly as it is written. If it is in " ", Python will not differentiate numbers, letters, symbols, or anything else. Type the line :

>>> print " 3 + 4"

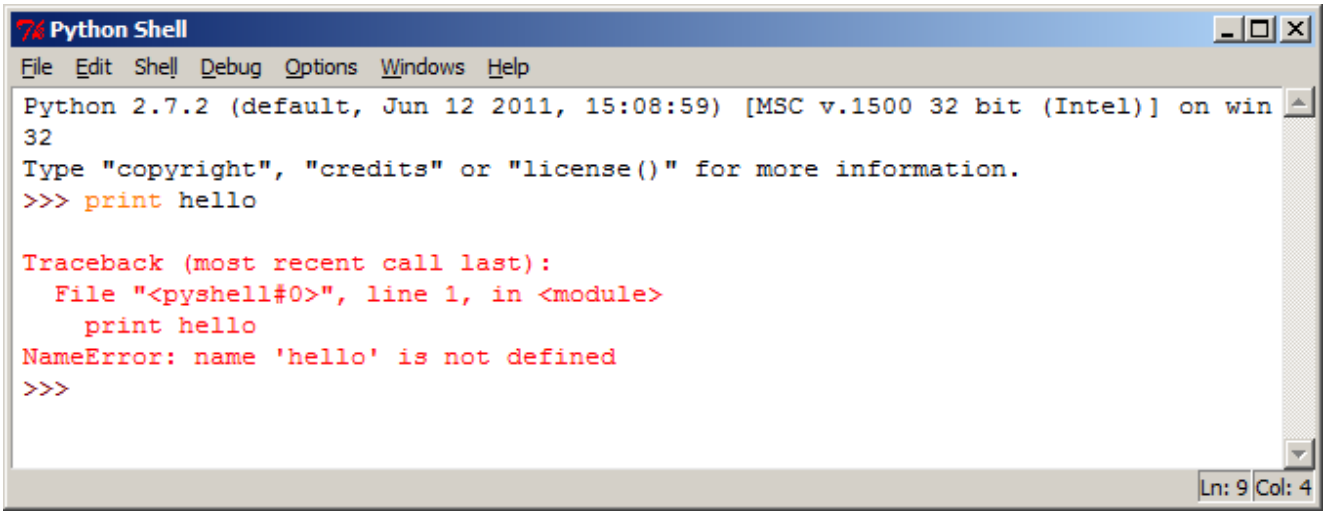


Now type the line : >>> print “3 + 4



When 3 + 4 is not in “ “, python recognizes them as numbers and does the math

* Trying to enter Text without “ “ will result in an error, as Python cannot define it as a number.



Storing information in Variables :

Variables are used to store data for future use. It gives a name to the memory location that will store the data.

Ex : x = 4 → stores the value **4** in a memory location under the name **x**

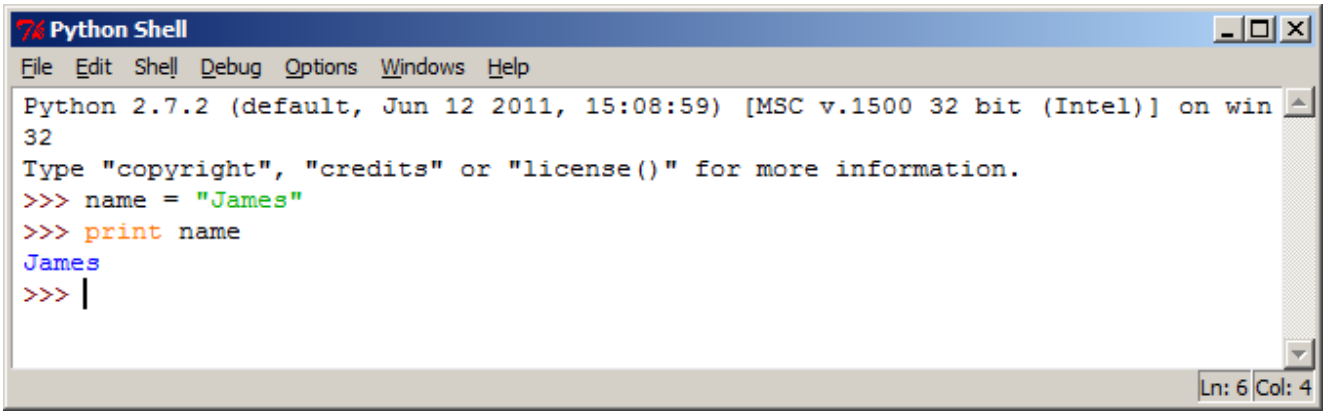
→ x will hold the value 4 throughout the program.

Ex : name = “Tony” → opens a storage location called “**name**” and stores “**Tony**” in it

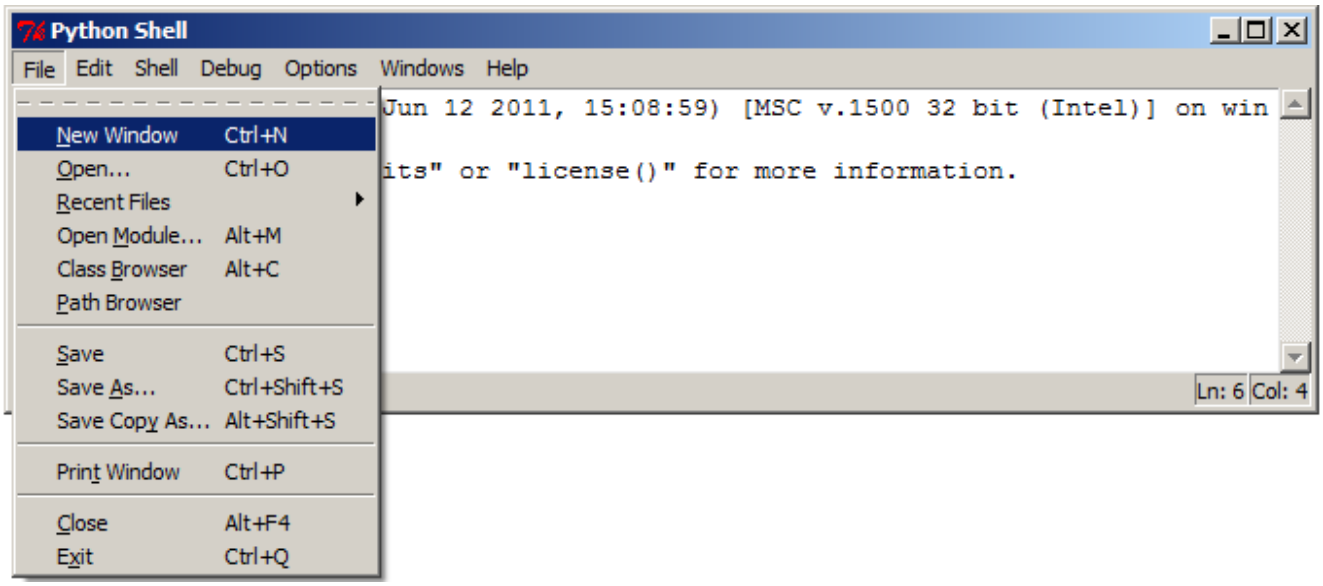
Type the following lines :

```
>>> name = “James”
>>> print  name
```

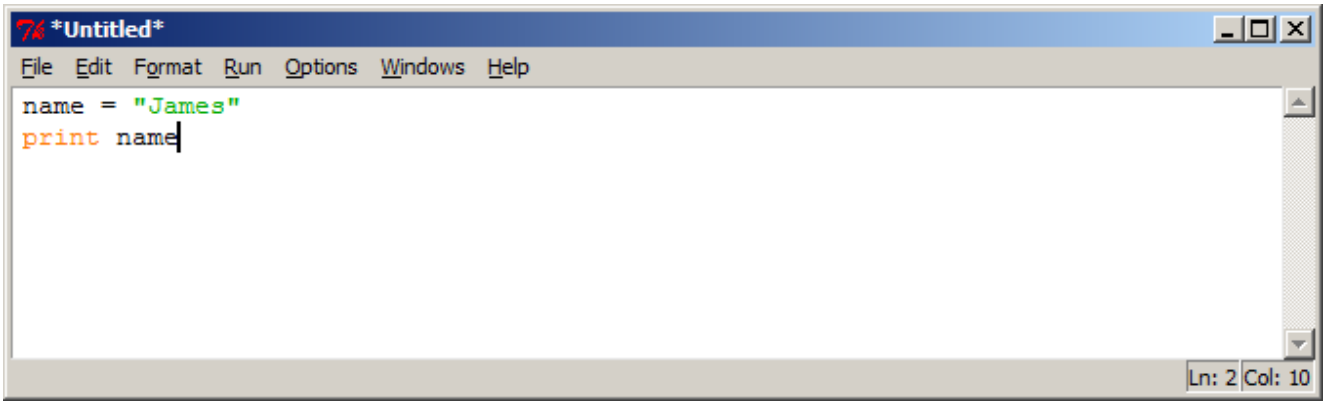
→ ***name*** is not is “ “. It is not text. Python will print whatever is stored in the Variable ***name***



Multi-Line programs can also be created without the Python Shell. Select “New Window” from the file menu.



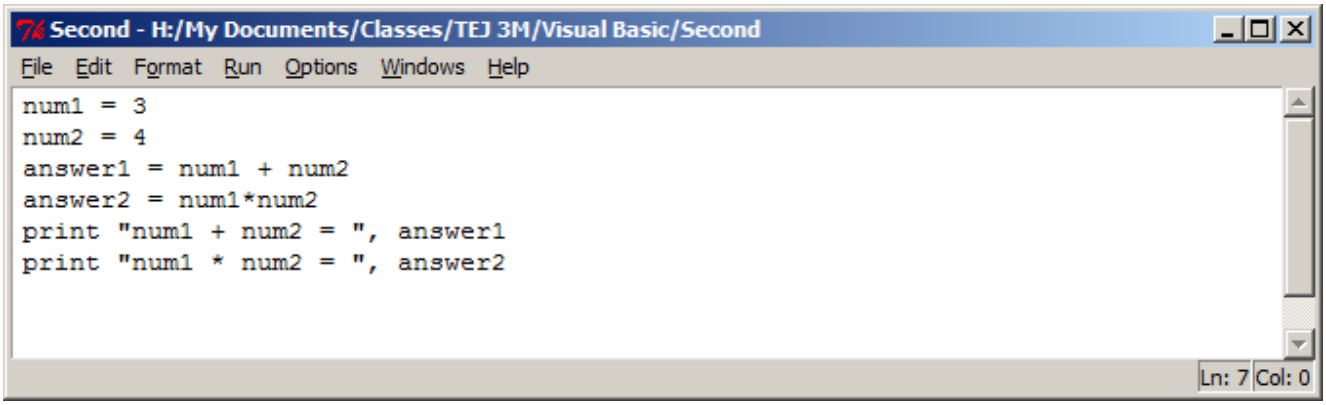
The >>> will not be present while entering code.



To execute this program:

1) You must first Save the file. → select Save As and save it to your files on the h: drive as "Second.py"
2) press **F5** → this will bring you back to the Python Shell and show only the output.

Number can also be store in variables :



*** Note the print statements :** → "num1 + num2 = " is text because it is in quotes.

→ Print statements can print multiple things, they just have to be separated by commas

Change your print statements to the following and notice the difference in the output. Note the parts that are in quotes and what is not.

```
print num1, " + ",  num2, " = ", answer1
print num1, " * ",  num2, " = ", answer2
```

Math Operations that python can perform :

- Addition +
- Subtraction -
- Multiplication *
- Division /
- Quotient // (like the whole number part of a mixed fraction)
- Modulo (remainder) %
- Negation (change the sign) -
- Absolute Value (no sign) abs()
- Exponent **