

# Programming: Python

Python Code	Description
<pre>name = "bob" age = 18 price = 2.99 happy = True</pre>	<b>Assigning values to variables</b> A String An Integer number A Real number (float) A Boolean value
<pre>print("string") print(8) print(name)</pre>	<b>Outputting values</b> A string An Integer Contents of a variable
<pre>name = input() age = int(input()) price = float(input())</pre>	<b>Inputting data and assigning to a variable</b> Inputs a string Converts input into an integer Converts input into a float
<pre>if age == 18:     #Then do this... else:     #Else do this...</pre>	<b>A selection Statement</b> If the condition (the test) is true, Then do this... Else do this...
<pre>count = 0 while count &lt; 5:     #repeatedly do this...     count = count + 1</pre>	<b>Iteration</b> In this example the loop will repeat while count is less than 5 (it will loop 5 times because count starts at 0).

## Syntax

Keywords (commands) must be in lowercase e.g. `print("Hello World!")`

Strings can be inside single quotes 'Hello World!' or double quotes.

= is used for assignment

== is used for comparison

# is used for comments (the interpreter ignores anything after the #)

Statements inside selection or loop structures are indented to show ownership.

BODMAS rules.

Always close your brackets.

Key Word	Definition
Algorithm	A set of step-by-step instructions that solve a problem.
Code	A set of instructions written in a way computers can understand and follow.
Syntax	The grammar of a programming language that must be followed for the translator to understand it.
Assignment	placing a value into a variable for storage
Variable	a place where data is stored whilst the program is running. The data value can change during the program.
Identifier	The name given to a variable (to identify it!)
Data Type	How the data will be stored in a variable (normally integer, real (float), string, boolean)
Integer	A whole number
Real	A decimal number (stored as a float in Python).
Boolean	One of 2 values (True or False)
String	A collection of letters, number and/or characters (sometimes called alphanumeric)
Input	Allows the user to enter data into the program while it is being executed
Selection	Using code to choose what happens next in a program. Relies on a conditional statement being true.
Mathematical Operators	symbols used to indicate a type of calculation to be carried out (e.g +,-,/,*,%)
Comparative Operators	Symbols used to decide true or false conditions by comparing values (e.g. ==,<,>)
Logical Operators	Used to return a boolean value based on a logical condition (e.g. AND, OR, NOT)
Iteration	Code is repeated (or looped). Loops can be conditional or have a fixed number of repetitions

## Rules for variable names (identifiers):

Names must be descriptive and meaningful

Names must not start with a number

Don't use characters (definitely not spaces).

Use camelType to indicate multiple words in a name.

Variables cannot have the same name as a keyword.

## Operators

+	Add
-	Subtract
*	Multiply
/	Divide
%	Modulo (returns the remainder)

==	Equal to
>	Greater Than
<	Less Than
<=	Less than OR Equal to
>=	Greater than OR Equal to
!=	NOT Equal to

## Drawing in Python using Turtle Graphics:

You will need to import the library of turtle commands:

```
import turtle as terry
```

Then tell the turtle (now call terry) to move:

```
terry.forward(50)    terry.right(90)
```

```
terry.backward(10)  terry.left(45)
```