What is a Python?

Python is a **text based programming language** that can be used to create small programs, web applications, games and even search engines like Google and YouTube!

Python is easy to learn and is a great beginner language.

Write your first program

- At the prompt, type in the following:

```
>>> print("Hello")
```

- When you hit the Enter key what happens?
- What does the word "print" do?

```
>>> print("Hello")
Hello
>>>
```

Make sure you use a lower case "p" for print or it will not work.

Syntax

Syntax is what we call the format that the code needs to be in, in order to be processed correctly.

If it is not in the correct format then the code will not work.

```
Traceback (most recent call last):
  File "C:/Python33/a.py", line 2, in <module>
    prin (greeting)
NameError: name 'prin' is not defined
>>>
```

Python tells us where the error is and what type it is.

Here it says the line the error is on

Here it says what type of error.

Input statements

Using **var = input ()** we can ask a user to input some information.

We can then **print** this back to the console window.

```
userName = input("what is your name?")
print ("Welcome ", userName)
```

userName is a **variable.** This means we can change the information stored. We can also name it whatever we want.

Print statements

In order to display text in the **shell** you need to use a **Print** statement.

```
print ("Hello World")
print ("I am a programmer")
```

This is the output:

```
Hello World
I am a programmer
```

RULES FOR VARIABLE NAMES

DO'S	DON'TS
Do give your variable a sensible name so it is easy to remember	Don't use words that Python already uses e.g. "print"
Do keep your variable names short	Don't use spaces in variable names
Do use two words together with no spaces e.g. FirstName	Don't use mathematical symbols in variable names
Do begin variable names with a letter or underscore "_"	Don't use uppercases for every letter in a variable

Addition example code

```
number1 = int(input("Input the first number :"))
number2 = int(input("Input the second number :"))
answer = number1 + number2
print("The answer is " + str(answer))
```

The code above takes two number inputs and stores them as variables called number1 and number2. It then adds these together and saves them in a variable called answer. The final line prints the answer out in a sentence.

Variables

A variable is something that can be **used to store information**. The information that is stored can be changed.

Casting to different data types

We often need to change a data type using casting. For example, if text contains numbers and we want to use it to do maths, we need to change the data type from a string to an integer or a float. Data input from the keyboard is an example of this because the data input is always a string data type and never numbers until we use casting to convert it to an integer or a float.

Data types

Different types of data are stored in variables as different **data types**. There are **three** main data types:
String, Integer & Float

String
A type of variable for storing **text** "strings" **e.g.** "Hello World"

```
string = str("This is a string")
```

Integer
A type of variable for storing **whole numbers**
e.g. 10, 182, -44

```
integer = int("This is an integer")
```

Float
A type of variable for storing **decimal numbers**. Also known as a **real** number
e.g. 2.5, 5.05, 3.14

```
decimal = float("This is a decimal")
```

integer

A whole number

```
File  Edit  Format
print(3 + 2)

5
>>>
```

float

A decimal number

```
File  Edit  Format  Ru
print(3.95 * 2.34)

9.243
>>>
```

string

A character or text

```
File  Edit  Format  Run
print("hello world")

hello world
>>>
```

Data types

Data Type	*This indicates how the data will be stored. The most common data types are integer, string, and float/real.*	Casting code
String	A combination of letters, numbers or characters. (eg, Hello, WR10 1XA)	`str(x)`
Integer	A whole number. (eg. 1, 189)	`int(x)`
Float/Real	A decimal number, not a whole number. (eg. 3.14, -26.9)	`float(x)`
Boolean	1 of 2 values. (eg. True, False, Yes, No)	`bool(x)`
Char	A single character	`char(x)`

Comparative operators

==	Equal to
!=	Not equal to (or different to)
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to

Arithmetic operators

Operation	Symbol	Example	Output
Addition	+	2 + 10	12
Subtraction	-	9 – 6	3
Multiplication	*	5 * 4	20
Division	/	5 / 2	2.5
Floor Division	//	7 // 2	3
Remainder	%	7 % 3	1