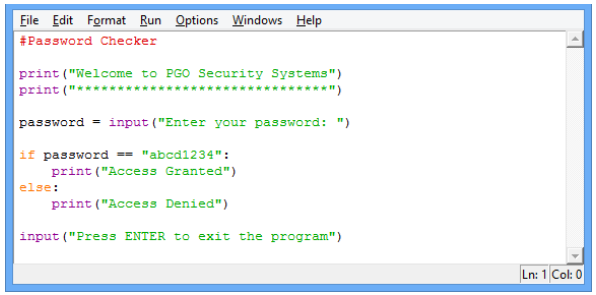
Year 8 Python Knowledge Organiser

Programming with Python



Python's Development Environment

Called IDLE – Integrated Development Environment

Two Modes:
Interactive Mode lets you see your results as you type them.
Script Mode lets you save your program and run it again later.

Writing error-free code

When writing **programs**, **code** should be as legible and error free as possible. **Debugging** helps keep **code** free of **errors** and documenting helps keep **code** clear enough to read.

Syntax errors

Syntax is the spelling and grammar of a **programming language**. In **programming**, a **syntax error** occurs when:

- there is a **spelling mistake.**
- there is a **grammatical mistake.**

Data Types

String - holds alphanumeric data as text
Integer - holds whole numbers
Float - holds numbers with a decimal point
Boolean - holds either 'True' or 'False'

Defining Variable Data Types

Python automatically assigns a data type to a variable. You can override this to manually define or change the data type using:

str() , **int()** or **float()**

Selection

When designing **programs**, there are often points where a **decision** must be made. This **decision** is known as **selection** and is implemented in **programming** using **IF statements**.

Operator	Meaning	Example	Evaluates to
==	equal to	7==7	True
!=	not equal to	6!=7	True
>	Greater than	7>6	True
<	Less than	5<8	True
>=	Greater than or equal to	6>=8	False
<=	Less than or equal to	7<=7	True

Iteration

Algorithms consist of steps that are carried out (performed) one after another. Sometimes an **algorithm** needs to **repeat** certain steps until told to stop or until a particular condition has been met.

Iteration is the process of repeating steps.

Variables

A **variable** is a location in **memory** in which you can temporarily store text or numbers. It is used like an empty box or the Memory function on a calculator. You can choose a name for the box (the "**variable name**") and change its contents in your **program.**

Using a Variable (firstname)

print ("What is your name?")
firstname = input()
print ("Hello,",**firstname**)

Functions

Functions are special keywords that do a specific job. **Functions** appear in purple.

print() and **input()** are examples of functions

```
print ("What is your name?")
firstname = input()
print ("Hello,",firstname)
```

Adding Comments

Comments are useful to help understand your **code.** They will not affect the way a **program** runs. **Comments** appear in red and have a preceding # symbol.

```
#firstname is a variable
print ("What is your name?")
firstname = input()
print ("Hello,",firstname)
```