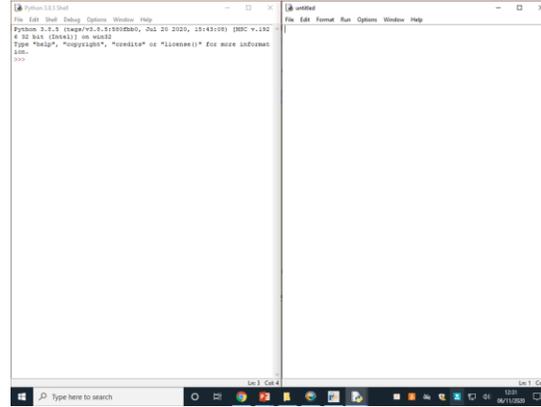




Year 8 - Python Programming

Opening Python

1. Click the Windows button
2. Go to the ICT folder
3. Click on IDLE (Python 3.8)
4. Keyboard shortcut: Windows + left arrow key (puts the shell on the left side of the screen)
5. Keyboard shortcut: Ctrl + N (open a new editing window)
6. Keyboard shortcut: Windows + right arrow key (puts the editing window on the right side of the screen)



Random Function

`import random` Imports the random module

`random.randint(a, b)`

Generates a random number between the start and stop values (a, b) given

Selection (IF statement)

```

num = int(input("please enter a number"))
if num > 10:
    print("too high")
else:
    print("thank you")
if num > 10:
    print("too high")
elif num < 5:
    print("too low")
else:
    print("thank you")

```

What is Programming?

Programming is writing computer code to create a program, to solve a problem. Programs are created to implement algorithms. Algorithms can be represented as pseudocode or a flowchart, and programming is the translation of these into a computer program.

Iteration (loops)

Iteration is the term given to the repetition of a block of instructions (code) within a computer program for a number of instances or until a condition is met.

Example

```

While Loop (Conditional Loop)
number = 1
while number < 5:
    print(number)
    number = number + 1

```

Explanation

The loop will continue until a condition is met

```

For Loop
for i in range(5):
    print("hello world")

```

Will print 5 times

```

for i in range(1, 5):
    print i

```

You can specify the range

```

for I in (clothes):
    print i

```

Print items in a collection

Input and Output

Syntax	Example
<code>print()</code>	<code>print("Hello world")</code>
<code>input()</code>	<code>name=input("What is your name?")</code>

Data Types

String (str), Integer (int), Boolean (True or False), Float/Real, Character (chr)

Comparison Operators

Operator	Explanation
<code>==</code>	Equal to
<code>!=</code>	Not equal to
<code><</code>	Less than
<code>></code>	Greater than
<code><=</code>	Less than or equal to
<code>>=</code>	Greater than or equal to

Vocabulary and Examples

Keyword	Definition
Variable	A label referring to a location in memory containing a value that can be accessed or changed by a program
Arithmetic operators	An operator that programs use to carry out simple mathematical operators.
Data type	Tells you what kind of data it is, e.g. integer, string, real, etc.
String	A string of alphabetise and/or numeric characters
Integer	A whole number, positive or negative, with no decimal or fractional part
Boolean	A data type that has two values: true or false.
Input	The function input() presents a prompt to the user, gets input from the user.
Comments	A note added to the code to say what part of a program does.
Concatenate	Combining two string together into a single string.
Casting	Converting from one data type to another.
Shell mode	An interactive feature used to execute a single Python command and get the result.
Edit mode	A feature within Python that allows the modification of files.
Loop	Part of a program where the same activity is specified once and then repeated for a fixed number of times or until a condition is met.
Syntax	Rules of spelling, punctuation and grammar of a language so that the meaning of what is being communicated is clear.
Syntax error	the rules of a language are broken by the program
Logic error	the logical structure of the program produces unexpected results
Runtime error	Only appear once you are attempting to run the program and they will cause the program to crash and display an error message
Comparison Operators	operators that compare values and return true or false
Programming	Programming is writing computer code to create a program, to solve a problem
Programming Language	a formal language comprising a set of instructions that produce various kinds of output. Programming languages are used in computer programming to implement algorithms.
Algorithm	a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.
Python	an interpreted, high-level and general-purpose programming language.
Sequence	the main logical structure of algorithms or programs. When creating algorithms or programs, the instructions are presented in a specific correct order. A sequence can contain any number of instructions but each instruction must be run in the order they are presented. No instruction can be skipped.
Selection	A selection is used to make choices depending on information. An algorithm can be made smarter by using IF, THEN, and ELSE functions to reiterate instructions, or to move the process in question to different parts of the program
Iteration	in programming means repeating steps, or instructions, over and over again. This is often called a 'loop'. Iteration is the process of repeating steps.