Computing

Y8 Spring 2: Python using Edublocks

Programming is writing computer **code** to create a program, in order to solve a problem. Programs consist of a series of instructions, like **algorithms**, to tell a computer exactly what to do and how to do it.

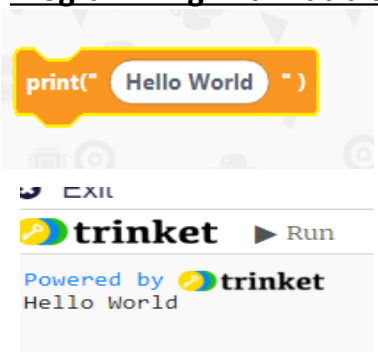
Larry Page | 1973 - alive

American computer scientist Larry Page, one of the original owners of Google, developed PageRank. This is the algorithm Google uses to select and show webpages, and to show YouTube videos. You use this every day!

"We have a mantra: don't be evil, which is to do the best things we know how for our users, for our customers, for everyone. So I think if we were known for that, it would be a wonderful thing."

	Key term	Definition
1	Python	A high-level programming language, named from the Monty Python TV show
2	Programming language	An artificial language that a computer understands
3	Variable	A small area of memory inside the computer where we store a changeable value
4	String	A combination of any characters that appear on a keyboard
5	Integer	A whole number
6	Float	A number which contains a decimal point
7	Boolean	Either TRUE or FALSE
8	Sequence	Creating a set of instructions to complete a task
9	Iteration	Allows us to repeat certain instructions several times
10	Selection	A decision or question

Programming with Edublocks



Using EduBlocks

Edublocks will be use as a transition to using Python. The language is Python but using the familiar block based format from Scratch, where you can drag and drop. Edublocks is an all in one **online editor**.

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.

Using edublocks helps transition towards using Python by not having to deal with Syntax or spelling errors, as the code is pre-made in blocks.

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

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)
```

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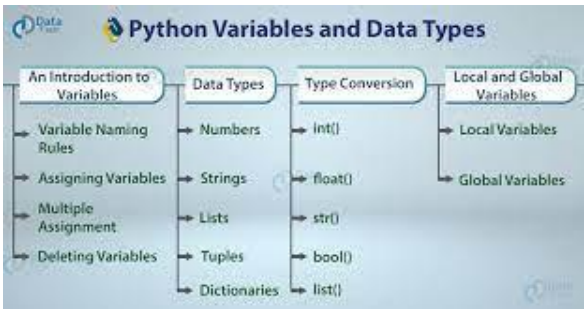
Data Types

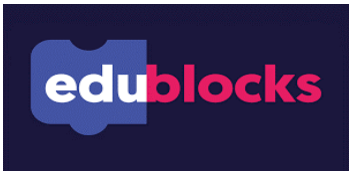
String - holds alphanumeric data as text
Integer - holds whole numbers
Float - holds numbers with a decimal point
Boolean - holds either 'True' or 'False'

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()**





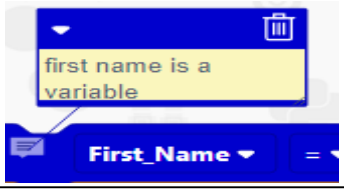
Functions

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

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

Adding Comments

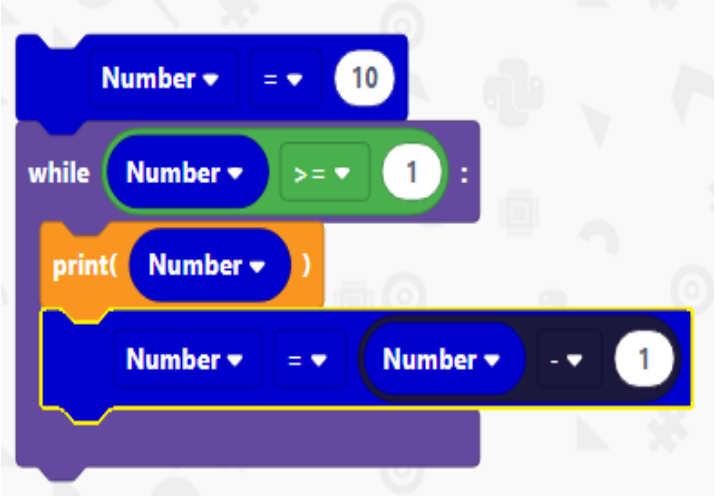
Comments are useful to help understand your **code.** They will not affect the way a **program** runs. **We can right click, and add comment to add them.**



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.



This simple program declares a variable called number is equal to 10.
Then while this variable is 1 or greater , prints the number out.
After each iteration it takes one away from number , until it is zero, and would stop