BASIC RULES FOR PYTHON VARIABLES:

- A variable name must start with a letter or the underscore character
- A variable name cannot start with a number
- A variable name can only contain alpha-numeric characters (A-z, 0-9) and underscores
- Variable names are case-sensitive, e.g., amount, Amount and AMOUNT are three different variables.
- A variable name cannot be any of the Python keywords.

Remember that variable names are case-sensitive

Camel Case

Each word, except the first, starts with a capital letter:

```
myVariableName = “John”
```

Pascal Case

Each word starts with a capital letter:

```
MyVariableName = "John"
```

Snake Case

Each word is separated by an underscore character:

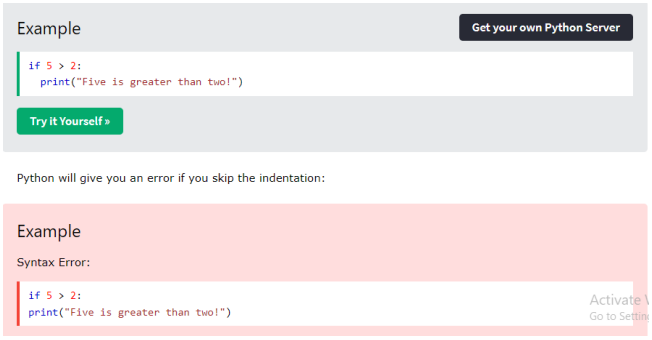
```
my_variable_name = "John"
```

PYTHON INDENTATION

Indentation refers to the spaces at the beginning of a code line.

Where in other programming languages the indentation in code is for readability only, the indentation in Python is very important.

Python uses indentation to indicate a block of code.



CASTING

If you want to specify the data type of a variable, this can be done with casting

```
x = int(1.4)
y= float("3")
z = str(2)

print(x)
print(y)
print(z)
```

1, 3.0, 2

GET THE TYPE

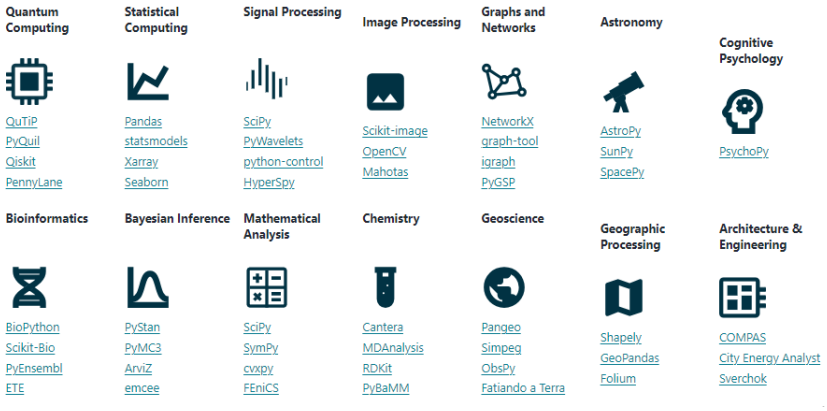
```
x = 1
y = 2.8
z = 3 + 2j

print(type(x))
print(type(y))
print(type(z))
```

```
<class 'int'>
<class 'float'>
<class 'complex'>
```

	Data Type	Example
Text Type	str	"Hello World"
Numeric Types	int	10
	float	10.5
	complex	1j
Sequence Types	list	["apple", "banana", "orange"]
	tuple	("apple", "banana", "orange")
	range	range(5)
Mapping Type	dict	{"name" : "vishnu", "age" : 27}
Set Types	set	{"apple", "banana", "orange"}
	frozenset	frozenset({"apple", "banana", "orange"})
Boolean Type	bool	True, False
Binary Types	bytes	b"Hello"
	bytearray	bytearray(5)
	memoryview	memoryview(bytes(5))

NumPy - NumPy is the fundamental package for scientific computing with Python



• **SciPy - SciPy is** a free and open-source Python library used for scientific computing and technical computing. SciPy contains modules for optimization, linear algebra, integration, interpolation, special functions, FFT, signal and image processing, ODE solvers and other tasks common in science and engineering

Matplotlib

- Matplotlib is a Python 2D plotting library

example: https://matplotlib.org/stable/plot_types/index.html