**Notes on python:**

1.Created by **Van Rossum** in 1989.

2.Python is a computer programming language designed for readability and functionality.

3.Is easily understood because of the very clear syntax of the language

4.Python is **an interpreted language**, i.e., a programming language whose programs **are not directly executed by the host CPU** but rather executed (or “interpreted”) by a program known as an **interpreter.**

5.The source code of a python program **is translated or (partially) compiled to a “bytecode**” format a Python “process virtual machine” language.

6.Python is a “**dynamically typed”** programming language. A programming language is said to be dynamically typed, **when the majority of its type checking is performed at run-time as opposed to at compile-time**

7.Python is **an object-oriented language.** Object-oriented programming (OOP) uses “objects” - data structures consisting of data **fields and methods - to design computer programs.**

**Object oriented terminologies**:

**1.Object**

An object is **an entity that has attributes and behaviour**.

For example, Ram is an object who has **attributes** such **as height, weight, colour etc.** and has

**certain behaviours such as walking, talking, eating etc.**

**2.Class**

**A class is a blueprint for the objects**.

For example, Ram, Shyamal, Steve, Rick are all objects **so we can define a template (blueprint) class “Human”** for these objects.

**The class can define the common attributes and behaviours of all the objects.**

**3.Methods**

**As we discussed above, an object has attributes and behaviours**.

These behaviours are **called methods** in programming.

**Basic terminologies in python:**

**1.Python comments**

A comment in python is like a sticky note for your code. it doesn’t execute but is used to tell developers what that line does.

**2.Python Variables**

Variables are **used to store data.**

**They take memory space based on the type of value we assigning to them.**

**3.Variable name (Identifiers)**

Variable name is known as identifier.

**Rules for writing variable name in python:**

1.The name of the variable must always **start with either a letter or an underscore (\_).**

For example: \_str, str, num, \_num are all valid name for the variables.

2. The name of the variable **cannot start with a number**.

For example: 9num is not a valid variable name.

3. **The name of the variable cannot have special characters such as %, $, # etc**, they can only have alphanumeric characters and underscore (A to Z, a to z, 0-9 or \_).

4. Variable name is **case sensitive** in Python which means **num and NUM are two different variables in python.**

**Python multiple assignment**

We can assign multiple variables in a single statement like this in Python.

x = y = z = 99

print(x)

print(y)

print(z)

## Data Types in python

A data type defines the **type of data**.

for example, 123 is an integer data while “hello” is a String type

**The data types in Python are divided in two categories:**

1. **Immutable data types** – Values cannot be changed.

2. **Mutable data types** – Values can be changed

Immutable data types in Python are:  
1. [Numbers](https://beginnersbook.com/2018/02/python-numbers/)  
2. [String](https://beginnersbook.com/2018/02/python-strings/)  
3. [Tuple](https://beginnersbook.com/2018/02/python-tuple/)

Mutable data types in Python are:  
1. [List](https://beginnersbook.com/2018/02/python-list/)  
2. [Dictionaries](https://beginnersbook.com/2019/03/python-dictionary/)  
3. Sets

**Immutable data types**

## 1. Numeric Data Type in Python

**Integer** – In Python 3, there is no upper bound on the integer number **which means we can have the value as large as our system memory allows.**

**Float** – **Values with decimal points are the float values**, there is no need to specify the data type in Python. It is automatically inferred based on the value we are assigning to a variable.

**Complex Number** – **Numbers with real and imaginary parts are known as complex numbers**. Unlike other programming language such as Java, Python is able to identify these complex numbers with the values.

## 2. Python Data Type – String

String is a **sequence of characters** in Python.

The data type of String in Python is called **“str”.**

Strings in Python are either enclosed with single quotes or double quotes.

“shreyank” or ‘shreyank”

## 3. Python Data Type – Tuple

Tuple is **immutable data type** in Python which means it cannot be changed.

It is **an ordered collection of elements** enclosed in **round brackets**() and **separated by commas.**

**Numbers= (1,2,3)**

**Names=(‘raj’,’shayam’)**

**What is ordered collection?**

it means that the items will show up in the **order you put them in**.

**Mutable data types**

## 1.Python Data Type – List

List is similar to tuple, it is also **an ordered collection** of elements.

However, list is a mutable data type which means **it can be changed** unlike tuple which is an immutable data type.

Enclosed in [] brackets. Can be string or integers

**Numbers= [1,2,3]**

**Name=[‘raj’,’shayam’]**