1. What the data types in python ? Explain.

Data types are the classification or categorization of data items. Data types represent a kind of value which determines what operations can be performed on that data.

⟹ Numeric, non-numeric and Bodean (true/false) data are the most used data types.

<u>Numeric</u> - A numeric value is any representation of data which has a numeric value.

→ Python identifies three types of numbers:

  ✶ Integer : Positive and negitive values.

  ✶ Float : real numbers with a floating point representation in which a fractional component is denoted by decimal symbols

  ✶ Complex number :

  ↳ A num with a real and imaginary component represent as x+yj.

<u>Bodean</u> -
      Data with one of two built-in values

<u>True</u> or <u>False</u>. Notice that 'T' and 'F' are capital true and false are not valid booleans and Python will throw an error for them.

<u>Sequence Type</u> - A sequence is an ordered collection of similar or different data types. Python has the following built-in sequence data types:

✶ String A string value is a collection of one or more characters put in single, double or triple quotes.

* **List**: A list object is an ordered collection of one or more data items, not necessarily of the same type, put in square brackets.
* **Tuple**: A Tuple object is an ordered collection of one / more data items, not necessarily of the same type, put in parentheses.

Dictionary:

A dictionary object is an unordered collection of data in a key:value pair form. A collection of such pairs is enclosed in curly brackets. For ex:

{ 1: "Steve", 2: "Bill", 3: "Ram",
                            4: "Fasha"}

* -type () function

2. Briefly explain history of python?

Python was conceived in the late 1980s by Guido van Rossum at Centrum Wiskunde & informatica in the Netherlands as a successor to the ABC language capable of exception handling and interfacing with the Amoeba OS.

⇒ The Program Python was named after a TV show called 'Monty Python's Flying circus'.

⇒ Python is a snake name.

⇒ Python supports the OOps language.

Language designers : Guido van Rossum

Language paradigms : Interpreted language, Dynamic

Programming language,

First appered : 1990; 30 year ago.

OS : Linux, macos, windows and more

3. Explain all the operators in python ?

Python Operators :

① Arithmetic Operators: There are used to perform
mathematical operations like addition, subtraction,
multiplication and division.

$$+ \rightarrow x+y, \quad * \rightarrow x*y, \quad // \rightarrow x//y, \quad ** \rightarrow$$
$$- \rightarrow x-y, \quad / \rightarrow x/y, \quad \% \rightarrow x\%y, \quad x**y$$

② Relation Operator : There will compare the
values. It either returns True or False accor-
ding to the condition.

$$> \rightarrow x>y, \quad == \rightarrow x==y, \quad != \rightarrow x!y$$

$$>= \rightarrow x>=y, \quad --$$

③ Logical Operators :- These perform Logical

AND, Logical OR and Logical NOT operations.

$$\Rightarrow and \rightarrow x \ and \ y$$
$$\Rightarrow or \rightarrow x \ or \ y$$
$$\Rightarrow not \rightarrow not \ x$$

(4) **Bitwise Operators :** these operators acts on bits and performs bit by bit operation.

$\Rightarrow$ & $\longrightarrow$ $x \& y$

     | $\longrightarrow$ $x | y$

     ~ $\longrightarrow$ $\sim x$

     ^ $\longrightarrow$ $x \wedge y$

     >> $\longrightarrow$ $x >>$

(5) **Assignment Operators :** These are used to assign values to the variables.

$\Rightarrow$ = $\longrightarrow$ $x = y + z$, $\rightarrow$ += $\rightarrow$ $a += b$
                                    $\hookrightarrow a = a + b$

$\Rightarrow$ -= $\rightarrow a -= b$, $\rightarrow$ *= $\rightarrow$ $a* = b$
                $\hookrightarrow a = a - b$ $\hookrightarrow a = a * b$

$\Rightarrow$ /= $\rightarrow a / = b$ $\Rightarrow$ %= $\rightarrow a \% = b$
            $\hookrightarrow a = a / b$ $\hookrightarrow a = a \% b$

$\Rightarrow$ //= $\rightarrow a // = b$ $\Rightarrow$ **= $\rightarrow a ** = b$
             $\hookrightarrow a = a // b$ $\hookrightarrow a = a ** b$

$\Rightarrow$ &= $\rightarrow a \& = b$ $\Rightarrow$!= $\Rightarrow a ! = b$
            $\hookrightarrow a = a \& b$ $\hookrightarrow a = a ! b$

$\Rightarrow$ ^= $\rightarrow a \wedge = b$ $\Rightarrow$ >>= $\rightarrow a >> = b$
            $\hookrightarrow a = a \wedge b$ $\hookrightarrow a = a >> b$

(6) **Special Operators :** these are some special type of operators like —

       identity operators $\rightarrow$ is, isnot

4 : Explain the features of python ?

① <u>Simple</u> → This language is very easy to understand.

② <u>Easy to code</u> → it is very easy to learn and code the program, it is high level language.

③ <u>Free and Open Source</u> → it is freely available at official website and. This means that source code is also available to the public.

④ <u>Object-Oriented Language</u> → one of the key feature of python is OOP's programming. Python supports OOP's and concepts of classes, objects and encapsulation etc --

⑤ <u>GUI Programming Support</u> → Gratical Users interfaces can be made using a model such as PyQt 5, PyQt 4, WxPython oo Tk in python.

⑥ <u>High level language</u> → Python is high level language. when we write programs in python, we do not need to remember the system architecture, nor do we need to manage the memory.

⑦ <u>Extensible feature</u> → Python is Extensible language we can write our some python code into c or c++ language.

⑧ <u>Portable :</u> → Python is a Portable language. A property of a program that can run on more than one kind of Computer.

(9) **Integrated :-** It is an integrated language because we can easily integrated python with other language like, c, c++, etc.

(10) **Interpreted language** → Python is an interpreted language. because python code is exectly line by line at a time.

5 : justify why python is interactive interpreted language ?

⇒ Unlike c /c++ etc, python is an interpreted object - oriented programming language.

unlike c language, which is a compiled programming language. The compiler translates the whole code in one go rather than line by line . This is the reason why in c language, all the errors are listed during compilation only.

An interpreter is a translator in computer's language which translate the given code line by line in machine readable bytecodes.

⇒ python is a interactive. when a python stmt is entered, and is followed by

the Return key, if appropriate, the result will be printed on the screen, immediatly, in the next line.