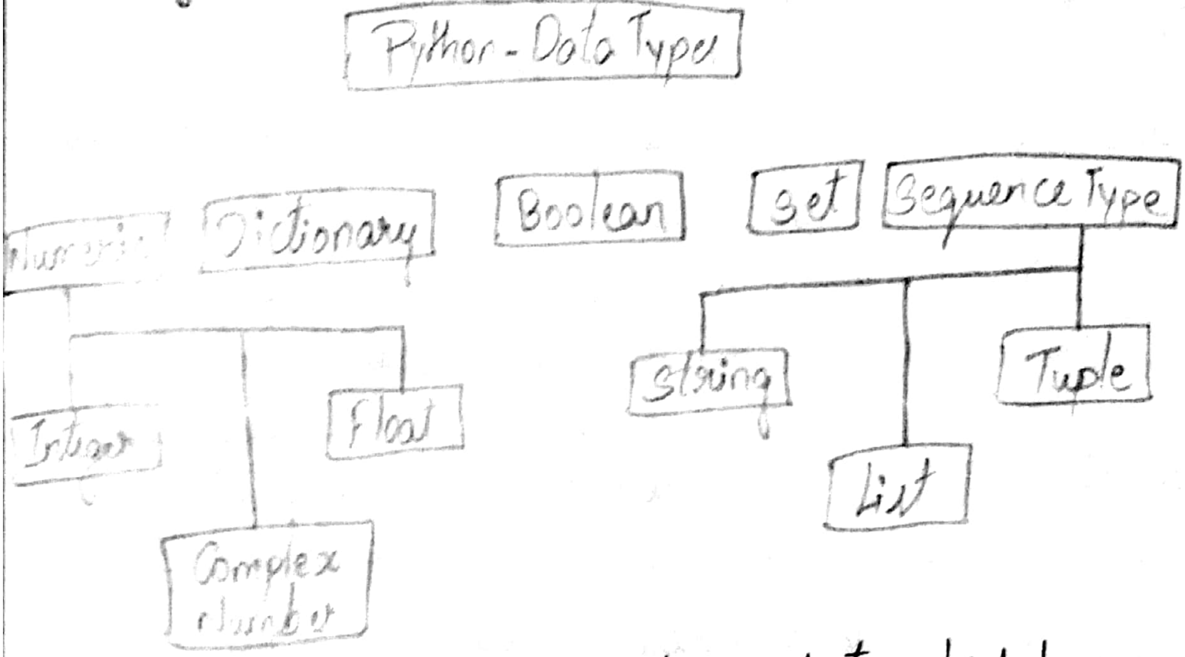
Python
ASS-2

1) What are the data typer in python? Explain

A:- Datatyper in python

. Numeric
. Sequence Type
. Boolean
. Set
. Dictionary.



Numeric datatype : It represent the data which har numeric value. Numeric value Can be integer, floating or even complex value. Numeric value Can be integer, ...

lass in Python

→ Integers – This value is represented by int class. It Contains positive (or) negative whole numbers (without fraction or decimal In Python there is no limit to how long an integer value can be

· Float – This value is represented by float class. It is a real number with floating point representation. It is specified by a decimal point. Optionally, the character e or E followed by a positive (or) negative integer may be appended to specify scientific notation.

-> Complex Numbers: Complex number is represented by Complex class. It is specified as (real part) + (imaginary part)j.

Sequence Type: is the ordered Collection of similar (or) different data types. sequences allows to store multiple values in an organized and efficient fashion.

-> String: These are arrays of bytes representing Unicode characters. A string is a Collection of one (or) more characters put in a single quote, double-quote (or) triple quote. In python there is no character data type, a character is a string of length one. It is represented by str class.

-> List: They are just like arrays, declared in other language Lists need not be homogeneous always which makes it the most powerfull tool in python. A single list may contain Data Types like Integers, strings, as well as Objects. Each element in the list has its definite place in the list, which allows duplicating of elements in the list, with each element having its own distinct place and credibility. It is represented by list class.

-> Tuple: Tuple is an ordered Collection of python objects much like a list. The sequence of values stored in a tuple Can be of any type, and they are indexed by integers. The important difference between a list and a tuple is that tuples are immutable. Also, Tuples are hashable whereas lists are not. It is represented by tuple class.

3) Explain all the Operators in python.

s/:

-> Arithmetic Operations: Arithmetic operations are used to perform mathematical operations like addition, subtraction, multiplication and division.

Eg:- +, -, *, /, //, %, **.

+ Addition : adds two operands x+y

- Subtration: subtracts two operands x-y

* Multiplication : multiplies two operands x*y

/ Division (float): divides the first operand by the second x/y

// Division (float): divides the first operand by the second x//y

% Modulus: returns the remainder when first operand is divided by the second x%y

** Power: Returns first raised to power second x**y

→ Relational Operators: Relational operators compares the values. It either returns True & False according to the Condition

> Greater than: True if left operand is greater than the right x>y

< Less than: True if left operand is less than the right x<y

== Equal to : True if both operands are equal x==y

!= Not equal to - True if operands are not equal x!=y

>= Great than or equal to: True if left operand is greater than or equal to the right x>=y

<= Less than (or) equal to: True if left operand is less than (or) equal to the right x<=y.

→ Logical operators: Logical operators perform Logical AND, Logical OR and Logical NOT operations.

and Logical AND: True if both the operands are true x and y.

or Logical OR: True if either of the operands is true x or y

not Logical NOT: True if operand is false. not x

→ Bitwise Operators: Bitwise operators acts on bits and performs bit by bit operation.

& Bitwise AND x&y

| Bitwise OR x|y

~ Bitwise NOT ~x

^ Bitwise XOR x^y

>> Bitwise right shift x>>

<< Bitwise left shift x<<

→ Assignment Operators: Assignment operators are used to assign values to the variables

= Assign value of right side of expression to left side operand x=y+z

+= Add AND: Add right side operand with left side operand and then assign to left operand a+=b a=a+b

-= Subtract AND: Subtract right side operand from left operand and then assign to left operand. a-=b a=a-b

= Multiply AND: Multiply right operand with left operand and then assign to left operand a=b a=a*b

/= Divide AND: Divide left operand with right operand and then assign to left operand a/=b a=a/b

Eg:- %= , //= , **= , &= , |= , ^= , >>= , <<=

→ Special Operators: There are some special type of operators like

- Identity operators:- is and is not are the identity operators both are used to check if two values are located on the same part of the memory. Two variables that are equal does not imply that they are identical.
- Membership Operators: in and not in are the membership operations; used to test whether a value (or) variable is in a sequence.

2) Briefly explain history of python

A:- 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 Operating system. Its implementation began in December 1989. Van Rossum shouldered sole responsibility for the project as the lead developer, until 12 July 2018, when he announced his "permanent vacation" from his responsibilities as python's

"Benevolent Dicator for Life": a title the python Community bestowed upon lines to reflect his long-term commitment as the projects chief decision-maker. He now shares his leadership as a number of a fire-person steering council. In January 2019, active python Core developes elected Brcet Counon, Nick Coghlan, Barry Warsaw, Carol wiling and Van Rossum to a fire-member "Steering Council" to lead the project.

Python 2.0 was released on 16 october 2000 with many major new features, including a cycle-detecting garbage Collector and support for uniCode.

Python 3.0 was released on 3 December 2008. It was major version of the language that is not Completely backward Compatible. Many of its major features were backported to python 2.6.x and 2.7.x version series. Release of python 3 include the utlity which automates the translation of python Code to python 3.

Python 2.7's end of life data was initially set as 2015 then postponed to 2020 out of concern that are large body of existing Code Could not easily be forward-ported to python 3.

4) Explain the features of python

s/- Easy to Code :-

Python is high level programming language. python is very easy to learn languages as Compared to other languges like C, C++, java script, java etc. It is very easy to Code in python language and anybody Can learn python basic in few hours or days. It is also developer-friendly language.

Free and Open Source

Python language is freely available at official website and you Can download it from the given download link below Since it is open-source, this means that source Code is also available to the public. So you Can download it and use it as well as share it.

Object Oriented Language.

One of the key feature of python is object oriented programming. python support object oriented language and concepts of classes, objects encapsulation etc.

GUI Programming Support:

Graphical user interface can be made using a module such as PyQt5, PyQt4, wx Python or TK in python PyQt5 is the most popular option for creating graphical appl with python

High-level Language

Python is a high-level language. where we write programs in python, we do not need to remember the system architecture, nor do we need to manage the memory.

Extensible feature

Python is a Extensible language. we can write our some python code into C or C++ language and also we can compile that code in C/C++ language.

Python is portable language

Python language is also a portable language. for example if we have python code for window and if we want to run this code on other platform such as Linux, Unix and Max-then we do not need to change it, we can run their code on any platform.

Python is integrated language.

Python is also an Integrated language because we can easily integrated python with other language like C, C++ etc.

Interpreted Language

Python is an interpreted language because python code is executed line by line at a time, like other language C, C++, java etc there is no need to compile python code this makes it easier to debug our code. The source code of python is converted into are immidiate from called byte code.

Large Standard Library

Python has a large standard library which provid rich set of modules and functions. so you do not have to writ you own Code for every single thing. There are many libraries present in python for such as regular expression, unit-testing. web browser etc.

Dynamically Typed Language

python is dynamically-typed language. That means the type for a variable is decided at run time not in advance because of this feature we don't used to specify the type of variable

5) Justify why python is interactive interpreted language.

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- Python program runs directly from source Code.
- Each time python programs are executed Code is requir
- Python Converts source Code written by the programmer into intermediate language which is again translated into the native language /machile language that is executed. So python is an Interpreted language.
- It is processed at runtime by the interpreter.
- The program need not be Compiled before its executi
- It is similar to PERL and PHP.
- Python is also interactive where it can prompt & interact with the interpreter directly to write the programs.
- It supports the object-oriented style of the technique which encapsulates the Code within the objects.