python Assignment - 2

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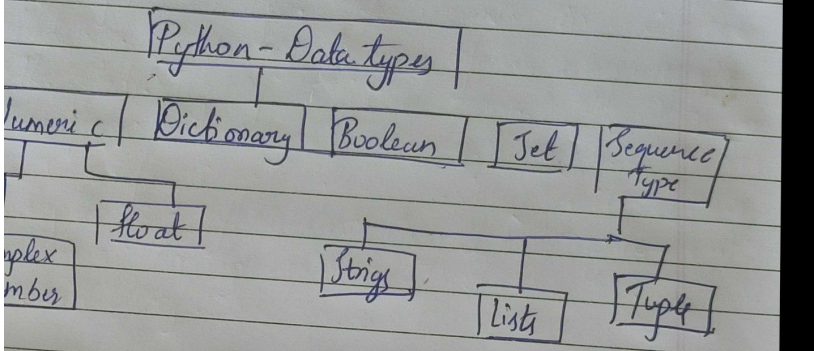
what are the datatypes in python? Explain.

Data type 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 & Boolean (true, False) dat are the most useed data type

- Numeric
- Sequence Type
- Boolean
- Set
- Dictionary



Numeric

In python, numeric data type represent the data which has numeric value.
Numeric value can be integer, floating number or even complex numbers, these values are defined as int, float and complex class in python.

- Integers - This Value is represented by int class. It contains positive or negative whole numbers. 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 a real numbers with floating point representation. It is specified by a decimal.
  Optionally, the character e or E followed by positive or negative integer may be appended to specify scientific notation.
- Complex numbers - Complex is represented by complex class. It is specified as (real part) +(imaginary part)j. for example - 2+3j

Sequence Type

In python, sequence is the ordered collection of similar or different data types. Sequences allows to store multiple values in an organized & efficient fashion. There are several sequence types in python.

- String
- list
- Tuple

String

In python, strings are array 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

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Writing is good, Thinking is better

2. Briefly Explain history of python
- python laid its foundation in the late 1980s
- The implementation of python was started in the december 1989 by Guido Van Rossum at CWI in Netherland.
- In february 1991, Van Rossum Published the code to alt. sources
- In 1994, python 1.0 was released with new features like: Lambda, map, filter, & Reduce
- python 2.0 added new features like: List Comprehensions, garbage Collection System.
- On december 3, 2008, python 3.0 (also called "py3k") was released. It was designed to rectify fundamental flaw of the Language
- ABC programming Language is said to be the predecessor of python Language which was capable of Exception handling & interfacing with Amoeba operating System.
- python is influenced by the following programming Languages
  - ABC Language
  - modula-3

Explain the python Operators

Arithmetic operators: Arithmetic operators are used to perform mathematical operation like addition, Subtraction, multiplication and division.

Operator	Description	Syntax
+	Addition: adds two operands	x+y
-	Subtraction: Subtracts two	x-y

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*	multiplication: multiplies two operands	x * y
/	Division (float): divides the first operand by the second	x / y
//	Division (floor): 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	* ** y.

Relational operators: Relational operators compares the values. It either returns True or False according to the condition.

Operator	Description	Syntax
>	greater than: True if left operand is greater than the right	x > y
	less than: True if left operand is less than the right	
==	Equality: True if both operands are equal	x == y
!=	Not equal to - True if operands are not equal	x != y.
	Greater than or equal to: True if left	

Assignment operators: Assignment operators are used to assign values to the variable.

operator	Description	Syntax
=	Assign value of right side of expression to left side operand	x=y+z
+=	Add AND: Add right side operand with Left side operand & then assign to Left Operand	a+=b a=a+b
-=	Subtract AND: Subtract right operand from Left operand & then assign to left operand	a-=b a=a-b
*=	Multiply AND: Multiply right Operand with left Operand & then assign to Left operand	a*=b a=a*b.
/=	Divide AND: Divide Left operand with right operand & then assign to left operand	a/=b a=a/b
%=	Modulus AND: Takes modulus using Left & right operands and assign result to left operand	a%=b a=a%b

	Divide(floor) AND: Divide left Operand	
//=	with right operand & then assign the Value (floor.) to left operand	a//=b a=a//b
**=	Exponent AND: calculate Exponent (raise Power) Value using Operands & assign Value to left operand	a**=b a=a**b
&=	Performs Bitwise AND and Operands & assign Value to left operand	a&=b a=a&b
|=	Performs Bitwise OR on operands & assign Value to left operand	a|=b a=a|b
^=	Performs Bitwise XOR on operands & assign Value to left operand	a^=b a=a^b
>>=	Performs Bitwise right shift on Operands & assign Value to left operand performs Bitwise left shift on Operands & assign Value to left operand	a>>=b a=a>>b

6. Special operators : there are some special type 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 variable that are equal does not imply that they are identical.

Explain the features of python.

- Easy to learn - python has few keywords, simple structure, and clearly defined syntax. This allows the student to pick up the language quickly.
- Easy-to-read - python code is more clearly defined and visible to the eyes
- Easy-to-maintain - python's source code is fairly easy-to-maintain.
- A broad standard library - python's bulk of the library is very portable and cross-platform compatible on UNIX, windows, & Macintosh.
- Interactive Mode - python has support for an interactive mode which allows interactive testing & debugging of snippets of code.
- Portable - python can run on a wide variety of hardware platforms & has the same interface on all platforms.
- Extended - you can add low-level modules to the python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.

Databases - python provides interfaces to all major Commerical databases.

GUI programming - python supports GUI applications that can be created and ported to many System calls libraries & windows systems, such as windows MFC, Macintosh & X window system of Unix.

Scalable - python provides a better structure & support for large programs than shell scripts.

Justify why python is interactive interpreted language

An interpreter is a kind of program that executes other program. When you write python programs, it converts source code written by the developer into intermediate language which is again translated into the native language / machine language that is executed.

The python code you write is compiled into python byte code, which creates file with extension .Pyc. The byte code compilation happened internally and almost completely hidden from developer. Compilation is simply a translation step, & byte code is a low-level and platform independent representation of your source code. Roughly each of your source statements is translated into a group of byte code instructions. Thus byte code instructions, thus byte code compilation is performed to speed execution.