Python Assignment-02

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① What are the data types in Python? Explan

Data type represents a kind of value which determines what operations can be performed on that data numeric, non-numeric and boolean (true/false) data.

There are five standard data types -:

→ Numbers
→ String
→ List
→ Tuple
→ dictionary

Numbers -: Integers, floating point numbers & complex numbers fall under python num. They are defined as int, float, complex.

We can use the type() function to know which class a variable or a value belongs to. Similarly the isinstance() function is used to check if an object belongs to a particular class.

```
a = 5
print(a, " is of type ", type(a))

a = 2.0
print(a, " is of type ", type(a))
a = 1+2j print(a, " is complex?", isinstance(1+2j,
```

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List: List is an ordered sequence of items. It is one of the most used data type in python and is very flexible. All the item in a list do not need to be of the same type.

```
a = [1, 2.2, 'python']
```

Tuple: Tuple is an ordered sequence of items same as a list. The only difference is that tuples are immutable. Tuple once created cannot be modified. These are used to write-protect data and are usually faster than lists as they cannot change dynamically.

Strings: It is a sequence of unicode charaters. We can use single quotes or double quotes to represent strings. Multi line strings can be denoted using triple quotes, (''') or (""" """).

Dictionary: It is an unordered collection of key value pairs. It is generally used when we have a huge amount of data. Dictionaries are optimised for retrieving data. Dictionaries are defined within braces {} with each item being a pair in the form.

② Briefly explain history of python ?

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*Python is a widely used purpose, high level programming language. It was initially deigned by Guido van Rossum in 1991.

* Developed by python software foundation
* It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines code.

Python programming history.

Python 1.0 → Jan 1994
Python 1.5 → Dec 1997
Python 1.6 → Sept 2000
Python 2.0 → oct 2000
Python 2.1 → Apr 2001
python 2.2 → dec 2001
Python 3.1 → Jun 2009
Python 3.0 → dec 2008
Python 2.6 → oct 2008
Python 2.5 → Sept 2006
Python 2.4 → Nov 2004
Python 2.3 → Jul 2003
Python 2.7 → Jul 2010
Python 3.2 → Feb 2011
Python 3.3 → Sept 2012
Python 3.4 → Mar 2014
Python 3.5 → Sept 2015
Python 3.6 → Dec 2016

③ Explain all the operators in python.

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Ans: Operators are special symbols in python that carry out authematic. The value that the operator operates on is called the operand.

Types of operators

① Arthematic operators :

operator	Description	Example
(+) Addition	add values on either side of the operator	a + b = 30
- substraction	Substracts right hand operand from lyt hand operator.	a - b = 10
* multiplic - ation	multiplies values on either side of the operator	a * b = 200
/ Division	divides lyt hand operand by right hand operand	b / a = 2
% modulus	Divide lyt hand operand and by right hand operand returns reminds	b % a = 0

Relational operators:

These operators compare the values on either sides of them and decide the relation among them.

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operators	Description	Example.
==	If the value of 2 operands are equal, then the condition is true	(a == b) is not true
!=	If the value of 2 operands are not equal, then condition becomes true	(a != b) is true.
<>	If values of 2 operands are not equal, then condition becomes true	(a <> b) is true.
>	if the value of left operand is > than the value of right operand, becomes true.	(a > b) is not true
<	if the value of left operand is less than the value of right operand	(a < b) is true.

③ Assignment operator.

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Operator	Description	Example
=	Assigns value from left side to right side operator.	c = a+b value of a+b into c.
+= Add AND	It adds right operand to the left operand. & assign the result to left operand	c += a is equivalent
-=	It subtracts right operand from the left operand and assign the result	c -= a is equivalent to c = c - a.

④ Bitwise operator.

Operator	Description	Example.
& Binary AND	operator copies a bit to the result	(a & b) (means 0000 1100)
| Binary OR	it copies a bit if it exists in either operand	(a | b) = 61 €
^ Binary XOR	it copies the bit if it set in one operand.	(a ^ b) = 49.

⑤ Bitwise operator :

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operator	Description	Example
& Binary AND	operator copies a bit to the result if it exists in both operands	(a & b)
| Binary OR	it copies a bit if it exists in either operand	(a | b)
^ Binary XOR	it copies the bit if it operands in one operand but not both	(a ^ b) = 49
~ Binary ones complement	it is unary & has the effect of 'flipping' bits	(~a) = -61

Python operators precedence.

1) ** (exponentiation)
2) ~ + - complement unary plus & minus
3) * / % // Multiply, divide, modulo
4) + - Addition & subtraction
5) >> << Right and left bitwise shift

6) & Bitwise 'AND'

7) ^ | Bitwise exclusive 'OR' and regular 'OR'

8) <= < > >= comparision operator

9) < > == != equality operator

10) = %= /= //= -= += *= **= Assignment operator

11) is is not identity operator

12) in not in membership operator

13) not or and logical operator.

④ Explain the features of python.

A:* Easy to learn python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly.

2) Easy to read :- Python code is more clearly defined and visible to the eyes.

3) Easy to maintain Python's source code is fairly easy to maintain.

4) A broad standard library. Python's bulk of the library is very portable and

and cross-platform compatible on Unix, Windows

5) Interactive mode:- Python has support for an interactive mode which allows interactive testing and debugging of snippets

6) Portable: Python can run on a wide variety of hardware platform and has the same interface on all platforms.

7) Extendable:- You can add low level modules to the python.

(5) Justify why python is interactive interpreted language.

Unlike C/C++ etc. python is an interpreted OOPs. By interpreted it is meant that each time a program is run the interpreter checks through the code for errors and then interrupts the instruction into machine readable byte code. An interpreter is a translator in computer's language which translate the given code line by line in machine readable byte code. And if any error is encountered it stops the translation until the error is fixed. When a python statement is entered, and is followed by by the return key, if appropriate, the result will be printed on the screen.