Assignment

1) what are data types in python? explain

A) Python has following standard data types:-

1) **Numeric**:- It is representation of data which has a numeric value. It identifies three types of numbers:-

i) integer:- positive, negetive and whole numbers

ii) float:- Any real number with floating point represents fractional component by decimal symbol.

iii) complex:- A number with real and imaginary component represented as x+yj.

2) **Boolean**:- Data with one of two built values True or false. Notice that 'T' and 'F' are capital. True and false are not valid booleans.

3) **Sequence Type**:- It is an ordered collection of similar or different data types.

1) String:- It is collection of one/more characters put in single, double or triple quotes

→list:- A list is ordered collection of one/more data items, not necessarily of same type, put in square brackets.

→Tuple :- It is an ordered collection of one or more data items, not necessarily of same type, put in paranthesis.

4) Dictionary :- It is an unordered collection of data in a key value pair form

ex:- { 1:"steve", 2:"Bill"}

5) mutable and immutable objects:-

mutable object can be changed after it is created and an immutable object can't, objects of built-in types like int, float are immutable. Objects of built-in types like list, dict are mutable

2) Briefly explain history of python?

A) Python was concieved in late 1980's and its implementation was started in December 1989 by "Guido van Rossum" at CWI in Netherlands. Python 2.0 was released on october 16, 2000 with many major new featur including cycle-detecting garbage collector for memory management and support e

However, most important change was to the development process itself with a shift to a more transparent and community-backed process.

python 3.0, a major, backwards-incompatible release, was released on December 3, 2008 after a long period of testing. many of its major feature have also been backported to backwards-compatible, while by now unsupported, python 2.6, 2.7.

3) explain all operators in python?

A) python language supports following types of operators :-

1) Arithemetic operators:

operator	Description	example
(+) Addition	Adds values on either side of operator	a+b=30
(-) subtraction	subtracts right hand operator from left hand operator	a-b=-10
(*) multiplication	multiplies values on either side of operator	a*b=200
(/) Division	Divides left-hand operand by right hand operand.	b/a=2

-lus	Divides left hand operand by right hand operand and returns remainder	b%a=0
(**) expo-nent	performs exponential calculations on operators	a**b=10
(//) Floor division	The division of operands where result is quotient in which digits after decimal points are removed.	9//2=4, 9.0//2.0=4.0

2) comparision operators:- These operators compare values on either sides of them and decide relation among them

operator	Description	example
==	If value of two operands are equal then the condition becomes true	(a==b) is not true
!=	If values of two operands are not equal, then condition becomes true	(a!=b) is true
<>	If values of two operands are not equal, then condition becomes true	(a<>b) is true.
>	If value of left operand is greater than value of right operand then condition becomes true	(a>b) is true a=6, b=4

<	if valueof left operand is lessthan valueof right operand, then condition becomes true	(a<b) is true
>=	If valueof left operand is greater or equal to value of right operand, then condition becomes true.	(a>=b) is not true
<=	If valueof left operand is lese than |equal to right operand, then condition becomes true.	(a<=b) is true

3) Assignment operators :-

operator	Description	example
=	Assigns values from right side operands to left side operand	c=a+b assign a+b value into c
+= Add AND	Adds right operand to left operand and assign result to left operand	c+=a is equivalent to c=c+a
-= Subtract AND	Subtracts right operand from left operand and assign result to left operand	c-=a is equal to c=c-a
*= multiply AND	multiplies right operand with left operand and assign value to left operand	c*=a is equal to c=c*a

/=Divide AND	divides left operandwith right operand and assign result to left operand	c/=a is c=c/a
%= modulus AND	takes modulus using twooperands and assign result to left operand	c%=a is c=c%a
**= exponent AND	performs exponential calculation on operators and assignvalue to left operand	c**=a is c=c**a
//= Floor division	it performs on operators and assign value to left operand	c//=a is c=c//a

4) Bitwise operators:- Bitwise operator works on bits and perform bit by bit operation.

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

compile-ment		
<< Binary left-shift	This value is moved left by the numberof bits specified by right operand	a<<2=240
>> Binary Right shift	left operands value is moved right by number of bits specified by right operand	a>>2=15

5) logical operators :-

operator	Description	example
and logical AND	if both operands are true then condition becomes true	(a and b) is true
or logical OR	if any of two operands are non-zero then condition becomes true	(a or b) is true
not Logical NOT	Used to reverse logical state of its operand	NOT(a and b) is false

6) membership operators:-

in	evaluates to true if it finds a variable in specified sequence and false otherwise	x in y, here in results a in 1 if x is member of sequence y
not in	evaluates to true if it doesn't find variable in specified sequence and false otherwise.	x not in y, here not in results in a if x is not a member of sequence y.

7) identity operators:- it compares memory location of two objects.

is	evaluates to true if variables on either side of operator point to same object and false otherwise	x is y, here x id(x) equals id(y)
is not	evaluates to false if variables on either side of operator point to same object and true otherwise	x is not y, here is not results in if id(x) is not equal to id(y)

4) Explain features of Python?

A). 1) Easy tocode:-

Python is high level programming language. It is very easy to learn language as compared to C, C++, etc. It is also developer friendly language.

2) Free and open source:- Since it is open-source that means the source code is also available to public. so you can download it and use it as well as share it.

3) object-oriented language:- It supports object oriented language and concepts of classes, objects encapsulation etc

4) GUI programming support:- It can be made using a module such as PyQt5, wxPython or Tk in python. In these PyQt5 is popular

5) High-level language:- ~~[illegible]~~ Python is high-level language. when we write programs in python, we do not need to remember the system architechture, nor do we need to manage memory

6) extensible feature:- we can write our some python code into c/c++ language and also we can compile that code in c/c++ language

7) portable language:- If we have python code for windows and if we want to run this code on other platform such as Linux, Unix and mac then we do not need to change it.

8) ~~Integrated~~ interpreted Language:- It is integrated language because python code is executed line by line at a time. The source code of python is converted into an immediate form called bytecode.

5) Justify why python is interactive interpreted language?

A)→Unlike c/c++, python is an interpreted object-oriented programming language. By interpreted it is meant that each time a program is run the interpreter checks through code for errors and then interprets instructions into machine-readable bytecode. An interpreter is translator in computers language which translates given code line-by-line in machine readable bytecodes.

→Python is interactive.when a python statement is entered and is followed by Return key, it appropriate, result will be printed on screen immediately in next line. In interactive mode, the advantage is debugging of process.