Python Assignment-2

1. What are the data types in python? explain?

A. Every value in python has a datatype. since everything is an object in python programming, data types are actually classes and variables are instance of these classes

There are various data types in python. Five of the important data types are listed below

a) Numeric:

A numeric value is any representation of data which has a numeric value. python identifies 3 types of numbers.

i) integer:- it includes positive or negative whole numbers.

ii) Float:- it includes any real number with a floating point representation in which a fraction component.

iii) complex number:- It number the combination of a real number and imaginery component represented as x+yj where x and y are real numbers and value of j is -1

b) boolean:-

Data with one of two built-in value. True or false in this 'T' and 'F' are of upper case. true and false are not valid and python will throw an error for them

c) sequence type:

A sequence is an ordered collection of similar or different data types. python has the following built in sequence data types

i) string:- A string value is a collection of single or different data types. Python has the following built in sequence data types.

ii) list:- A list object is an ordered collection of one or more characters put in one or more data items, not necessarily of the same type, put in square brackets.

iii) Tuple:- A Tuple object is an ordered collection of one or more data items, not necessarily of the same type, put in parenthesis.

d) dictionary:-

A dictionary object is an unordered collection of data in a key-value pair form is enclosed in curly brackets.

ex:- {1:"steve", 2:"Bill", 3:"Ram", 4:"Pavan"}

2. Briefly explain history of python

A. python is an interpreted high-level, general-purpose programing language created by "Guido van Rossum" and first released in 1991, python's design philosophy.

It's language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.

python is dynamically types and garbage-collected. it supports multiple programming paradigms, including structured, objects-oriented and functional programming.

python is often described as a battories included language due to its comprehensive standard library. python was concieved in the

python 2.0 released in 2000, introduced features like list comprehensions and a garbage collection systems with reference counting.

python 3.0 released in 2008, was a major revision of the language which is not completely backward-compatible and major of the python 2 code doesn't run unmodified on python 2 released.

The python 2 language was officially discontinued in 2020 and python 2.7 is the last python 2.7 released and therefore, the last python 2 released

No more security patches or other improvements will be released for it. with python 2's end of life, only python 3.5+ and later are supported.

systems. A global community of programmers develops and maintains cpython, an open source reference implementation.

A non profit organisation, the python Software Foundation, manages and direct the resources for python and cpython developments.

3) explain all the operators in python

a) Arithmetic operators :-

Arithmetic operators are used to perform mathematical operators like +, -, *, /, etc.

operator	meaning	Example
+	add 2 operands (or) unary plus	x+y
-	subtracts right operand from the left (or) unary minus	x-y
*	multiplies 2 operands	x*y
/	divides left operand by the right one	x/y
%	gives the remainder of the division of the left operand by right	x%y
//	division that result into whole number adjusted to the left in number line	
**	left operand raised to the power of right operand	x**y

b) comparison operators:-

comparison operands are used to compare values it returns either true or False according to the condition.

operator	meaning	example
>	greater than- True if left True if left operand is greater than the right	x>y
<	less than-True if left operand is less than the right	x<y
==	True if both operands are equal	x==y
!=	True if operands are not equal	x!=y
>=	True left operand is greater than or equal to the right.	x>=y
<=	True if left operand is less than or equal to the right.	x<=y

c) logical operators:-

logical operators are the and, or, not operators.

And	True if both the operands are	xandy

or	True if either of the operands is true	x or y
not	True if operand is false	not x

d) bitwise operators:

operators	meanings	example
&	Bitwise AND	x & y = 0
|	Bitwise OR	x | y = 14
~	Bitwise NOT	~x = -11
^	Bitwise XOR	x ^ y = 14
>>	Bitwise right shift	x >> 2 = 2
<<	Bitwise left shift	x << 2 = 40

e) Assignment operators:-

operators	meaning	example
=	x = 5	x = 5
+=	x += 5	x = x + 5
-=	x -= 5	x = x - 5
*=	x *= 5	x = x * 5
/=	x /= 5	x = x / 5
%=	x %= 5	x = x % 5
//=	x //= 5	x = x // 5

** =	x**=5	x=x**5
& =	x&=5	x=x&5
| =	x|=5	x=x|5
^ =	x^=5	x=x^5
>> =	x>>=5	x=x>>5
<<=	x<<=5	x=x<<5

f) identity operators

operator	meaning	example
is	True if the operands are identical	x is true
is not	True if the operands are not identical	x is not true

g) membership operator :-

operator	meaning	example
in	True if value is found in the sequence	5 in x
not in	True if value is not found in the sequence	5 not in x

4) explain the features of python.

A) python provides lots of features that are e- listed below

1) easy to learn and use

python is high level programming language. it is easy to learn and use.

2) expressive language:-

python language is more expressive that means it is more understandable and readable.

3) interpreted language:-

python is an interpreted language i.e. interpreter excutes the code line by line at a time.

4) cross-platform language

python can run equally on different platforms such as windows, linux, unix and macintosh etc. so we can say than python is a portable language

5) free and open source

python language is freely available at official web address. The source-code is also available. therefore it is open source.

6) object-oriented language

python supports object oriented language and concepts of classes, objects and encapsulation etc. come into existence.

8) GUI programming support:
graphical user interfaces can be developed using python.

9) integrated
it can be easily integrated with the languages like C, C++, Java etc.

5) Justify why python is interactive interpreted language.

A) unlike c/c++ etc. python is an interpreted object oriented language. By interpreted it is meant that each time a program is run the interpreter checks through the code for errors and then interprets the instruction into machine-readable byte code.

An interpreter is a translator in computer language which translates the given code line by-line in machine readable byte codes. And if any error is encountered it stops the transition until the error is fixed. it simply returns the ">>>" prompt or the corresponding output of the statement if appropriate and returns error for incorrect statements.

In this way if you have any doubt. like: whether the syntax is correct or the module you are importing exists or anything like that, you can be sure wi

within seconds using Python interactive mode.