Assignment-2

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1. What the datatypes in python? Explain.

A. Data types:- It defines the type of the variable, whether it is an integer variable, string variable, tuple, dictionary, list etc.

Python datatypes

Python datatypes are divided in two categories, mutable datatypes and immutable datatypes.

* Immutable data types
1. Numeric
2. String
3. Tuple

* Mutable Datatypes
1. List
2. Dictionary
3. Set.

1. Numeric Data Type

In numbers, there are mainly 3 types which include Integer, Float, and Complex.

These 3 are defined as a class in python. In order to find to which class the variable belongs to you can use type () function.

Example:- type (8)

output:- <class 'int'>

2) String :- A string is an ordered sequence of characters. We can use single or double quotes to represent strings. Multiline strings can be represented using triple quotes.

We can perform several operations in strings like concatenation, Repetition, and slicing.

Example :-
```
String1 = "Welcome"
String2 = " To Python"
print (String1 + string2)
```
output - Welcome To Python.

3) List :- A list can contain a series of values.

List variables are declared by using brackets [ ].

A list is mutable, which means we can Modify the list.

Example :-
```
List = [2, 4, 8.6, "Teja"]
print ("List[2]=", List[2])
```
output : List[2] = 8.6

4) Tuple :- A tuple is a sequence of python objects separated by commas.

Tuples are immutable, which means tuples one created can not be modified. Tuples are defined using parentheses ( ).

Example :-
```
Tuple = (50, 15, 25.6, "Teja")
print ("Tuple[i] =", Tuple[i])
```

5) **Set**:- A set is an unordered collection of items Set is defined by values seperated by a comma inside braces.

Ex:-
```
set = { 5, 1, 2.6, "Teja" }
Prient(set)
```
output:
```
{ 'Teja', 1, 5, 2.6 }
```

6) **Dictionary**:- Dictionaries are the most flexible buit-in data type. Dictionaries items are stored and fetched by using the key. These are used to store huge amount of data. We use the key to retrive the respective value.

Ex:-
```
Dict = { 1: 'Hi', 2: 7.5, 3: 'Teja' }
Print (Dict)
```
output:
```
{ 1: 'Hi', 2: 7.5, 3: 'Teja' }
```

2. Briefly Explain Histry of python?

Ans) i) Python laid its foundation in the late 1980s.

ii) The implementation of python was started in the December 1989 by Guido Van Rossum at CWI in Netharland.

iii) In Feb 1991, Van Rossum published the code to al sources.

iv) later one by one versions were introduced with new features.

iv) The last and latest version is python 3.0..

Python is influenced by following programing languages: (i) ABC language.
(ii) ABC language.

3. Explain all the Operators in python?

Ans) Operators are special symbols in Python that carry out arithmetic or logical computation. The value that the operator operates on is called the operand.

Ex:- 2+3

5

1) Arithmetic operators: Arithmetic operators are used to perform mathematical operations like addition, sub, multi etc.

op	Meaning	Example
+	Add two operands or unary plus.	x+y +2
-	Subtract right operand from the left or unary minus	x-y-2
*	Multiply two operands	x*y
/	Divide left operand by the right one.	x/y
%	Modulus -remainder of the division of left operand by the right	x % y [remainder of x/y]

//	Floor division-division that results into whole number adiusted to the left in numberline	x // y
* *	Exponent-left operand raised to the power of right	x** y[x to the power y]

Ex:-

```
x=15
y=4
print('x+y=', x+y)
print('x-y=', x-y)
print('x*y=', x*y)
print('x/y=', x/y)
print('x//y=', x//y)
Print('x**y=", x**y)
```

output:-

```
x+y = 19
x-y = 11
x*y = 60
x/y = 3.75
x//y = 3
x**y = 50625
```

)Comparision operators in Python :- Comparision operators are used to compare values. It either return True or False according to the condition.

op	Meaning	Exp
>	Greater that -True if left operand is greater than the right	x>y
<	Less that - True is left operand is less than the right	x<y
>=	Greater than or equal to True if leftoperand is greater than or equal to the right.	x>=y
<=	True if left operand is less than or equal tothe right	x<=y
==	Equal to-True if both operands are equal.	x==y
!=	Not equal to-True if operan-ds are not equal	x!=y

3) Logical operators :- Logical operators are the and, or, not operators.

op	Meaning	Exp
and	True if both the operands are true	x andy
or	True if either of the operands is true	x or y
not	True if operand is false	not x

4. **Assignment Operators**:- Assignment operators are used to assign values to variables.

Operators	Example	Equivalent to
=	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

5. **Identity Operators**:- is and is not are the identity operators. They 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.

Op	Meaning	Exp.
is	True if the operands are identical	x is True
is not	True if the operands are not identical	x is not True.

6. **Membership Operators** :- in and not in are the membership operators. They are used to test whether a value or variable is found in a sequence.

Op	Meaning	Exp
in	True if value/variable is found in the sequence	5 in x
not in	True if value/variable is not found in the sequence	5 not in x.

7) **Bitwise Operators** :- Bitwis operators act on operands as if they were string of binary digits. It operats bit by bit, hen ce the name.

Ex:- 2 is 10 in binary and 7 is 111.

Let x = 10[0000 1010 in binary] and y= 4[0000 0100]

Op	Meaning	Exp
^	Bitwise XOR	x^y=14[0000 1110]
>>	Bitwise Right shift	x>>2=2[0000 0010]
|	Bitwise OR	x|y =14[0000 1110]
–	Bitwise Not	~x=-11[1111 0101]
<<	Bitwise left shift	x<<2=40[0010 1000]
&	Bitwise AND	x&y = 0[0000 0000]

4. Explain Features of Python?

Ans) 1. Easy to Learn and use.

2. Expressive Language

3. Cross-platform Language

4. Free and open source.

5. Object oriented Language.

6. GUI programming support.

7. Integrated

8. Extensible.

9. Unique styles.

5. Justify why python is interactive interpreted language?

Ans) An interpreter is a translator in computer's language which translates the given code line by line in machine readable byte codes. Python is an interporeted object oriented programming language. By interpreted it is meant that each time a program run the interpreter checks through the code for errors and then interprets the instructions into machine readable code.