Assignment-2 21/6/2020
Python 3218103019
A' sec 2nd year
CSE

1] what are the datatypes in python? Explain.

There are 5 datatypes in Python

* i] Numbers: A numeric value is any representation of data which has a numeric value. Python or negative or positive whole numbers.

ii] Integer: Positive or negative whole numbers.

iii] Float: Any real number with a floating point representation in which a fractional component is denoted by a decimal symbol or scientific notation.

iv] Complex number: A number with a real and imaginary component represented as $x+yj$.

v] Boolean: Data with one of two built-in values true or false.

* Sequence type: A sequence is an ordered collection of similar or different datatype Python has following built-in-sequence datatype.

- String - A string value is an order collection of one or more characters put in single, double or triple quotes.
- List - A list object is an order collection of one or more data items, not necessary of the same type, put in sequence blackets [].

- Tuple - A tuple object is an order collection of one or more data items, not necessary of the same type, put in parenthesis.
- Dictionary - object is an unordered collection of data in a key value pair form. A collection of such pairs is enclosed in curly brakets { }.

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

2] Briefly explain history of python.

Python is a widely used general-purpose, high-level programming language. It was initially designed by Guido Van Rossum in 1991 & developed by Python Software foundation.

- Guido Van Rossum began doing in application based work in December of 1989 by at Centrum Wiskund & Information (CWI) which is situated in Netherland.
- The programming language which python is said to have succeeded is ABC programming language.

3] Explain all operators in python.

i] Arithamatic operators:

These are used to perform mathematical operations like addition, subtraction, multiplication, division, etc.

operator +, -, *, /, %, **, //, %.

ex:-
```
x=15
y=5
print(x+y)
print(x-y)
```

print(x*y)
print(x/y)
print(x//y)

ii] comparison operator:
These are used to compare values. It returns either True or False.
operators >, <, ==, !=, >=, <=

ex:- x=10
y=20
print('x>y is', x>y)
o/p:- False
print('x<y is', x<y)
o/p:- True
print('x==y is', x==y)
o/p:- False
print('x!=y is', x!=y)
o/p:- True
print('x>=y is', x>=y)
o/p:- False
print('x<=y is', x<=y)
o/p:- True

iii] Logical operator:
These are and, or, not operators
and: True if both the operands are true
or: True if either of operand is true
not: True if operand is false

ex:- x = True
y = False
print('x and y is', x and y)
print('x or y is', x or y)
print('not x is', not x)

iv] Bitwise operator:

These act on operands as if they were strings of binary digits. They operate bit by bit, hence the name.

Operator	
Bitwise AND (&)	ex:- x & y = 0 0000 0000
Bitwise OR (|)	ex:- x | y = 14 0000 1110
Bitwise NOT (~)	ex:- ~x = -11 1111 0101
Bitwise XOR (^)	ex:- x ^ y = 14 0000 1110
Bitwise right shift (>>)	ex:- x >> 2 = 2 0000 0010
Bitwise left shift (<<)	ex:- x << 2 = 40 0010 1000

v] Assignment operator:

These are used in python to assign values to variables.

ex:- a = 5 ⇒ assigns the value [5] on right to the variable [a] on left.

vi] Special operator:

(*) Identity operator - [is] and [is not] are the identity operators in python is true if the operands are identical

ex:- x is true

is not True if operands are not identical

ex:- x is not True.

ex:
```
x1 = 5
y1 = 5
x2 = 'Hello'
y2 = 'Hello'
print (x1 is not y1)  # False
print (x2 is y2)      # True
```

4] Explain the features of python.

> Easy-to code - Python is high-level programming language.
It is easy to learn language as compared to other language like C, C++, java, etc.
It is also developer friendly language.

> Free & open source - Python language is freely available at official website,
It is open-source, this means that source code is available to public

> object-oriented language - one of the key feature of python is object-oriented programming language & concepts of class, object encapsulation, etc are supported in python.

> High-level language - Python is high-level language when we write program in python, we do not need to remember the system architecture, nor do we need to manage the memory.

> Python is Integrated language
Python is also an integrated language bez we can easily integrate python with other languages like C, C++, etc.

> Dynamically typed language - means the type for a variable is decided at runtime not in advance because of this feature we don't need to specify the type of variable.

5] Justify why Python is interactive interpreted language.

- Unlike C, C++, etc. python is an interpreted object-oriented programming language. each time a program is run, the interpreter checks through the code for errors & then interpretes the instructions into machine readable byte code.
- If any error is encountered it stops the translation until the error is filled.