

Assignment - 1

Q.1) What is Python?

→ Python is a high-level, general-purpose, and interpreted programming language used in various sectors including machine learning, artificial intelligence, data analysis, web development, and many more. Python is known for its ease of use, powerful standard library, and dynamic semantics.

Q.2) List what we can do in Python Programming

- i) System Programming.
- ii) GUI Programming.
- iii) Gaming.
- iv) Embed with HTML, XML.
- v) Component Integration.
- vi) Database Management.

Q.3) Write a basic syntax of Python Programming language

```
→ a = b
  b = 7
  if (a > b):
    print("a is greater than b");
  else:
    print("b is greater than a");
```

1. Introduction

Q.4) What are the numeric datatypes of Python?

→ There are three numeric datatypes of Python -

- i) Integers - It contains positive or negative whole numbers. Integers are analogous to natural numbers.
- ii) Float - It is a real number with a floating point representation. It is specified by decimal point. eg. (5.1).
- iii) Complex no. - It is specified as real part + imaginary part. eg. (2+5j).

Q.5) List the arithmetic operations in Python.

→ + - Addition Operator is used to sum up or add the values.

- - Subtraction Operator is used to subtract second operand value from first value.

* - Multiplication Operator is used to find the product of two values.

/ - Division Operator used to find the quotient.

% - Module Operator used to find remainder.

* Exponentiation Operator used to raise the power of first operand to the power of second.

11 - Floor division operator used to find the floor of the quotient.

Q.6) Explain the Python in details with Features, advantages and disadvantages.

→ Python is a high-level, interpreted, and general purpose dynamic programming language that focuses on code readability. It generally has small programs when compared to Java & C.

It was founded in 1991 by developer Guido van Rossum. Python ranks among the most popular and fastest-growing languages in the world. Python is a powerful, flexible and easy-to-use language. In addition, the python community is very active. It is used in many organizations as it supports multiple programming paradigms. It also performs automatic memory management.

Advantages -

- i) It is Open-Source language.
- ii) It is versatile, easy to learn and code.
- iii) User-friendly structures of data.
- iv) It is high-level language that abstracts low-level details.
- v) It supports both object-oriented and procedural programming.
- vi) It allows real-time code execution and testing.
- vii) It uses interpreted language which allows easy debugging and code development.

Disadvantages -

- It can consume a lot of memory, especially when working with large datasets or complex algorithms.
- It is dynamically typed language, which means that the types of variables can change at runtime.
- The Global Interpreter Lock (GIL) is a mechanism in python that prevents multiple threads from executing python code at once. It is implemented so that only one thread can run at a time.

(Q.7) Explain the basic data types in python programming

language. Explain Python floating, complex, string, list, tuple, dictionary, set, and file.

There are several data types that allow you to represent the different kinds of values -

i) Integers (int) - These represent positive or negative whole numbers without fractions or decimals. ex. $x = 5$

ii) Floating-Point Numbers (float) -

These are real numbers with a decimal point.

where in it. ex. $x = 3.14$

iii) Complex Numbers (complex) -

It is represented as (real part) + (imaginary)j

where j denotes the imaginary unit. ex. $x = 2 + 3j$

iv) Boolean (bool) -

This have only two possible values True or False

v) strings (str) → defining the print function ()

It is used to represent text or sequences of characters. It can be enclosed in single or double quotes. ex: message = "Hello, World!"

Q.8) Program to find area of triangle.

→ Code -

a = 5

b = 6 # defining the second argument mentioning Col. 1

c = 7

s = (a + b + c) / 2

calculate the area of the triangle using formula

area = (s * (s - a) * (s - b) * (s - c)) ** 0.5

print('The area of the triangle is : %.2f' % area)

Output - The area of the triangle is 14.70.

Q.9) Python program for swapping of two variables or numbers.

→ a) using 3rd variable -

x = 5

y = 10

temp = x

x = y

y = temp

print('The value of x after swapping : {}'.format(x))

print('The value of y after swapping : {}'.format(y))

b) without using 3rd variable - ~~3 steps~~ against 6

$x = 5$ in first swapping of swap 1st

$y = 7$ in 2nd swapping of swap 2nd

`print("Before swapping: ")` ~~x = 5~~ contains value

`print("Value of x: ", x, "and y: ", y)`

~~almost. An integer has 10 digits~~

$x, y = y, x$

`print("After swapping: ")`

`print("Value of x: ", x, "and y: ", y)`

a.10) Program to convert hours to minutes.

→ code -

```
hours = int(input("Enter Hours"))
minutes = hours * 60
```

`print(minutes, "Minutes")`

Output - ~~almost 7 hours~~ ~~7 hours~~ ~~7 hours~~

Enter Hours : 7

420 minutes.