**Assignment Part-1**

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**Q1. Why do we call Python as a general purpose and high-level programming language?**

A general-purpose programming language (GPL) is a programming language for building software in a wide variety of application domains. Python is an easily learn and write computer program and also it allowed domain specialists to easily create libraries suited to their own use cases. For these reasons, Python has been used across a wide range of domains such as Web Development(Frameworks like Django and Flask), Science and Academia (Scientific and data libraries, like SciPy and Pandas), Machine Learning (Libraries like scikit-learn and Tensorflow), web scraping programs, games, and other general softwares.

A high-level language (HLL) is a programming language that enables a programmer to write programs that are more or less independent of a particular type of computer. language with strong abstraction from the details of the computer.Python is a high-level programming language that is known for its ease of readability. Python’s syntax is designed to be easy to read and understand resulting in fewer coding steps for developers

**Q2. Why is Python called a dynamically typed language?**

Python interpreter does type checking only as code runs, and the type of a variable is allowed to change over it's lifetime.

**Q3. List some pros and cons of Python programming language?**

Pros-

-Easy to learn and use

- Interpreted Language : execute the code directly, one line after the other. Moreover, if there is any error, then rather than continuing with further execution, it instead reports back the error that occurred

- open-source license and is available for users for free

- Easily Portable : ‘write once, run anywhere’

- Massive Libraries

Cons-

- Low execution speed

- Inefficient Memory Consumption

- not suited for memory intensive programs and mobile applications

**Q4. In what all domains can we use Python?**

Python can be used for

* web development
* operating systems
* AI
* machine learning
* numerical computing
* mobile applications
* game development.

**Q5. What are variable and how can we declare them?**

A Python variable is a symbolic name that is a reference to an object. These are the reserved memory locations used to store values.

Declaration : variable\_name = value

Example: num = 10

Name = “Ankit”

**Q6. How can we take an input from the user in Python?**

**input()** : method is used to take input in Python

Syntax for input: input ( prompt )

Example: name = input(“Enter your name : ”)

print(“Your name is : “,name)

Output: Enter your name:

Ankit

Your name is : Ankit

Q7. **What is the default datatype of the value that has been taken as an input using input() function?**

- String

**Q8. What is type casting?**

Type casting is the method to convert the variable data type into a certain data type.

There are two types of TypeCasting:

1. Implicit Type Casting
2. Explicit Type Casting
3. **Implicit Type Casting**

In this method Python converts data from one type to another type automatically.

Example:

a = 7

print(type(a)) : int

b = 4.5

print(type(b)) : float

c = a + b

print(type(c)) : float

1. **Explicit Type Casting**

In this method Python need user involvement to convert data from one type to another type

* int() : function take float or string as an argument and return int type object.
  + Ex :

a = 2.5

b = int(a) :-> 2

* float() : function take int or string as an argument and return float type object.
  + Ex :

a = 2

b = int(a) :-> 2.0

* str() : function take int or float as an argument and return string type object.
  + Ex :

a = 2.5

b = str(a) :-> “2.5”

Example:

a = 7

print(type(a)) : int

b = 4.5

print(type(b)) : float

c = a + b

print(type(c)) : float

**Q9. Can we take more than one input from the user using single input() function? If yes, how? If no, why?**

Yes, We can take more than one input from the user using single input() function.

* **Using split() method**
  + Syntax : input().split(separator, maxsplit)
  + Example :

x, y = input(“Enter two values : ”).split()

print(“First value : ”,x)

print(“Second value : ”,y)

* **Using List Comprehension**
  + Example :

# Taking two input at a time

x, y = [int(x) for x in input(“Enter two values : ”).split()]

print(“First value : ”,x)

print(“Second value : ”,y)

#Taking multiple inputs at a time

z = [int(x) for x in input(“Enter two values : ”).split()]

print(“Numbers list is : ”,z)

**Q10. What are keywords?**

Keywords are special reserved words that have specific meaning and purposes and can’t be used for anything but those specific purposes.

Example of some Python keywords are: if, elif, else, True, False, and, or, not, while, for, return, as lambda, is, in, import, await, break, continue, etc..

**Q11. Can we use keywords as a variable? Support your answer with reason.**

No We can’t use keywords as a variable. If we try to do so, we will get a SyntaxError from the compiler.

**Q12. What is indentation? What's the use of indentation in Python?**

Indentation is the leading whitespace before any statement in Python.

It is a way of telling a Python interpreter that the group of statements belongs to a particular block of code.

**Q13. How can we throw some output in Python?**

We can print output in python using **print()** method.

Example: print(“This is a example of Output”)

**Q14. What are operators in Python?**

Operators are used to perform operations on variables and values.

In Python, operators are divided into following types:

1. Arithmetic operators

* Used with numeric values to perform mathematical operations
* Ex: +, -, \*, /, %, \*\*, //

1. Assignment operators

* Used to assign values to variables
* Ex: =, +=, -+, \*=, /=, %=, //=, \*\*=, &=, |=, ^=, >>=, <<=

1. Comparison operators

* Used to compare two values
* Ex: ++, !=, >, <, >=, <=

1. Logical operators

* Used to combine conditional statements
* Ex: and, or, not

1. Identity operators

* Used to compare the objects, not if they are equal, but if they are actually the same object, with the same memory location.
* Example: is, is not

1. Membership operators
   * + Used to test if a sequence is presented in an object
     + Ex: in, not in
2. Bitwise operators

* Used to compare binary numbers
* Ex: &, |, ^, ~, <<, >>

**Q15. What is difference between / and // operators?**

1. / : Float Division

* Ex: 5/2 = 2.5

1. // : Floor Division

* Here the result is the quotient in which the digits after the decimal point are removed.
  + Ex: 5//2 = 2
* If one of the operands is negative, the result is rounded away from zero.
  + Ex: -11/3 = -4

**Q16. Write a code that gives following as an output.**

**```**

**iNeuroniNeuroniNeuroniNeuron**

**```**

print(“iNeuroniNeuroniNeuroniNeuron”)

**Q17. Write a code to take a number as an input from the user and check if the number is odd or even.**

num = int(input("Enter a number : "))

if(num % 2 == 0):

print("Even Number")

else:

print("Odd Number")

**Q18. What are boolean operators?**

Boolean operators in Python are : and, or, not

**Q19. What will the output of the following?**

1 or 0 : 1

0 and 0 : 0

True and False and True : False

1 or 0 or 0 : 1

**Q20. What are conditional statements in Python?**

The different types of conditional statements in Python are :

If, if-else(elif), nested if, nested if-else

**Q21. What is use of 'if', 'elif' and 'else' keywords?**

***‘if’ :***

* It makes a decision based on whether the condition is true or false.
* If the condition is true it executes the indented expression.
  + Syntax:

If condition:

expression

* Ex:

a = 2

if a%2 == 0:

print(“Even”)

***‘elif’ :***

* Used when there are several conditions to check
  + Syntax:

if condition:

expression

elif condition:

expression

elif condition:

expression

else:

expression

* Ex:

a = 2

if a%2 == 0:

print(“Divisible by 2”)

elif a%3 == 0:

print(“Divisible by 3”)

else:

print(“Neither Divisible by 2 or 3”)

***‘else’ :***

* When the if condition is False, then the else part of the expression gets executed.
  + Syntax:

If condition:

expression

else:

expression

* Ex:

a = 2

if a%2 == 0:

print(“Even”)

else:

print(“Odd”)

**Q22. Write a code to take the age of person as an input and if age >= 18 display "I can vote". If age is < 18 display "I can't vote".**

age = int(input("Enter age : "))

if(age >= 18):

print("I can Vote")

else:

print("I can't Vote")

**Q23. Write a code that displays the sum of all the even numbers from the given list.**

**```**

**numbers = [12, 75, 150, 180, 145, 525, 50]**

**```**

0s

numbers·=·[12,·75,·150,·180,·145,·525,·50]

sum·=·0

for·num·in·numbers:

··if(num·%·2·==·0):

····sum·+=·num

print("Sum·of·all·even·numbers·is·:·",·sum)

Sum of all even numbers is : 392

**Q24. Write a code to take 3 numbers as an input from the user and display the greatest no as output.**

num1, num2, num3 = [int(x) for x in input("Enter 3 numbers : ").split()]

if(num1 > num2 and num1 > num3):

print("Greatest number is ",num1)

elif(num2 > num3):

print("Greatest number is ",num2)

else:

··print("Greatest·number·is·",num3)

Enter 3 numbers : 1 3 2

Greatest number is 3

**Q25. Write a program to display only those numbers from a list that satisfy the following conditions**

**- The number must be divisible by five**

**- If the number is equals to 150, then skip it and move to the next number**

**- If the number is greater than 500, then stop the loop**

**```**

**numbers = [12, 75, 150, 180, 145, 525, 50]**

**```**

numbers = [12, 75, 150, 180, 145, 525, 50]

for num in numbers:

if num % 5 ==0:

if num == 150:

continue

elif num>500:

break

print(num)

75

180

145