**Mega Assignment Part-1**

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

Ans: Python is called as a high-level language due to it’s easy to understand syntax, functions and libraries. Humans can easily code in python and compile it to machine readable language.

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

Ans: Python is called a dynamically typed language as the variable type is checked at the runtime. It gives us freedom to assign the value of a different data type to a same variable .

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

Ans: Pros of python:

1. It is easy to understand.
2. It is free and open source.
3. It is Portable
4. It is a high level language.

Cons Of Python:

1) It is slow as compared to other high level languages as it uses interpreter which checks error line by line.

2) It has a very high memory consumption .

3) It gives more runtime errors.

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

Ans: 1) Artificial Intelligence and Machine learning

2)Web Development

3)Data Science

4)Gaming

5)Desktop GUI

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

Ans: Variable is the name given to a memory location. We can declare them by assigning the values.

Example: a=5

Here a is a variable containing value 5.

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

Ans: We can take input from the user by using input() function.

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

Ans: String Data Type

**Q8. What is type casting?**

Ans: Changing the data type of the variable is called as typecasting.

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

Ans: No, we cannot take more than one input from the user using single input() function because one input function takes only one input. If we want to take multiple inputs from the user then we can use input() function in different lines of the code.

Ex: a=input(“Enter your name:”)

b= input(“Enter your rollno:”)

**Q10. What are keywords?**

Ans: Keywords are the special reserved words in the python.

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

Ans: No, we cannot use keywords as a variable as they have predefined meaning. If we do so then it might break your program.

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

Ans: Indentation means the space at the beginning of the code line. In python, indentation is used to indicate a block of code.

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

Ans: We can get output in python using print() function.

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

Ans: In python, operators are special symbols that designate some sort of computation should be performed. The different operators in python are:

1. Assignment Operator
2. Numerical Operator
3. Logical Operator
4. Comparison Operator

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

Ans: ‘/ ‘operator is division, it divides the first number with second number and gives the result in whole number or decimal point whereas ‘//’ operator is floor division operator, it divides the first number with second and gives the nearest whole number to the result.

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

iNeuroniNeuroniNeuroniNeuron

Ans: a = ‘iNeuron’

Print(a\*4)

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

Ans: a=int(input(“Enter a number:”))

If ( a %2)==0:

print(“The given number is even”)

else:

print(“The given number is odd”)

**Q18. What are boolean operator?**

Ans: : Boolean Operators are the operators used to represent the truth value of the expression.

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

**1 or 0**

**0 and 0**

**True and False and True**

**1 or 0 or 0**

Ans: 1) 1

2) 0

3) False

4) 1

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

Ans: The conditional statements guide the program while making decision based on the conditions encountered by the program.

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

Ans: **If**: The if keyword is used to create conditional statements (if statements), and allows you to execute a block of code only if a condition is True.

**Elif** : Else of is used to execute the condition if it is true as well as false.

**Else**: The else keyword is used to create conditional statements (if statements), and allows you to execute a block of code only if a condition is False.

**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".**

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

if (a >= 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]**

Ans: num\_list= [12, 75, 150, 180, 145, 525, 50]

sum\_list =0

for num in num\_list:

sum\_list= sum\_list+ num

print("Total sum of the list is=",sum\_list)

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

Ans: a = int(input("Enter the first number"))

b = int(input("Enter the second number"))

c = int(input("Enter the third number"))

if (a >= b) and (a >= c):

print("a is largest")

elif (b >= a) and (b >= c):

print("b is largest")

else:

print("c is largest")

**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 greater than 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]**

Ans: num\_list = [12, 75, 150, 180, 145, 525, 50]

for num in num\_list:

if num > 500:

break

elif num > 150:

continue

elif num % 5 == 0:

print(num)

**\*\*\*Q26. What is a string? How can we declare string in Python?**

Ans: String is a data type in python which takes text type values. We can declare string with single quote or double quote.

**Q27. How can we access the string using its index?**

Ans: We can access the string using its index

Example : a=”Flower”

Print(a[0])

Output: F

**Q28. Write a code to get the desired output of the following**

**string = "Big Data iNeuron"**

**desired\_output = "iNeuron"**

Ans: string = "Big Data iNeuron"

# desired\_output = "iNeuron"

print(string[8]+string[9]+string[10]+string[11]+string[12]+string[13]+string[14]+string[15])

**Q29. Write a code to get the desired output of the following**

**string = "Big Data iNeuron"**

**desired\_output = "norueNi"**

Ans: string = "Big Data iNeuron"

# desired\_output = "norueNi"

print(string[-1]+string[-2]+string[-3]+string[-4]+string[-5]+string[- 6]+string[-7])

**Q30. Resverse the string given in the above question.**

**Ans:** string = "Big Data iNeuron"

print(string[-1::-1])

**Q31. How can you delete entire string at once?**

**Ans:**

**Q32. What is escape sequence?**

**Ans:** An escape character is a backslash \ followed by the character you want to insert.

**Q33. How can you print the below string?**

**'iNeuron's Big Data Course'**

**Ans:** print("'iNeuron's Big Data Course'")

**Q34. What is a list in Python?**

**Ans:** List is a sequence data type in python. It stores heterogeneous kind of data.

**Q35. How can you create a list in Python?**

**Ans:** We can create list using pair of [].

Example: L1 = [1, 2]

**Q36. How can we access the elements in a list?**

**Ans:** We can access the elements in a list using index.

Example: L1=[2,3]

print(L1[0])

**Q37. Write a code to access the word "iNeuron" from the given list.**

**lst = [1,2,3,"Hi",[45,54, "iNeuron"], "Big Data"]**

**Ans:** lst = [1,2,3,"Hi",[45,54, "iNeuron"], "Big Data"]

print(lst[4][2])

**Q38. Take a list as an input from the user and find the length of the list.**

**Ans:** lst = []

n = int(input("Enter number of elements : "))

for i in range(0, n):

ele = int(input())

lst.append(ele)

print(lst)

**Q39. Add the word "Big" in the 3rd index of the given list.**

**lst = ["Welcome", "to", "Data", "course"]**

**Ans: lst = ["Welcome", "to", "Data", "course"]**

**lst.insert(3,"Big")**

**print(lst)**

**Q40. What is a tuple? How is it different from list?**

**Ans:** Tuples are sequence data types in python. The difference between tuple and list is that Tuples are immutable objects and Lists are mutable objects.

**Q41. How can you create a tuple in Python?**

**Ans:** We can create tuple using pair of ().

Example: t1 =()

**Q42. Create a tuple and try to add your name in the tuple. Are you able to do it? Support your answer with reason.**

**Ans:** No , as tuples are immutable objects we cannot add or change anything. We must erase the tuple and create new one.

**Q43. Can two tuple be appended. If yes, write a code for it. If not, why?**

**Ans:** No tuples cannot be appended because they are immutable objects .

**Q44. Take a tuple as an input and print the count of elements in it.**

**Ans:** user\_input = input('Enter space-separated integers: ')

my\_tuple = tuple(int(item) for item in user\_input.split())

print(my\_tuple)

print(len(my\_tuple))

**Q45. What are sets in Python?**

**Ans:** Set is a data type in the python.

**Q46. How can you create a set?**

**Ans:** We can create a set using {}.

Example ={1,2,3,4,5}

**Q47. Create a set and add "iNeuron" in your set.**

**Ans:** a = set()

a.add("Company")

a.add("name")

a.add("is")

a.add("iNeuron")

print(a)

**Q48. Try to add multiple values using add() function.**

**Ans:** a = set()

a.add("Company")

a.add("name")

a.add("is")

a.add("iNeuron")

a.add(3)

a.add(4)

print(a)

**Q49. How is update() different from add()?**

**Ans:** update() updates the value in the existing set but add() adds the value to the set.

**Q50. What is clear() in sets?**

**Ans:** clear() in sets removes all items from the set.

**Q51. What is frozen set?**

**Ans:** Frozen sets are immutable sets.

**Q52. How is frozen set different from set?**

**Ans:** Sets are mutable objects while frozen sets are immutable objects.

**Q53. What is union() in sets? Explain via code.**

**Ans**: union() in sets joins the elements of two sets in a single set.

set\_a={1,2,3,4,5,6}

set\_b={3,6,8,9,10}

print(set\_a|set\_b)

Here output is {1, 2, 3, 4, 5, 6, 8, 9, 10} as union() combines the elements of both set\_a and set\_b.

**Q54. What is intersection() in sets? Explain via code.**

**Ans**: intersection() in sets takes out common elements from two sets and forms a new set.

set\_a={1,2,3,4,5,6}

set\_b={3,6,8,9,10}

print(set\_a & set\_b)

Here output is {3,6} as they are common elements in both sets.

**Q55. What is dictionary in Python?**

**Ans:** Dictionary is a mapping data type in python. A dictionary consists of a collection of key-value pairs. Each key-value pair maps the key to its associated value.

**Q56. How is dictionary different from all other data structures.**

**Ans:** The dictionary Data Structure in Python is an unordered collection of items. While other Data Structures use only one value as the element, the dictionary is a slightly more compound data structure. It makes use of two elements i.e. a pair of elements, namely, a key and a value.

**Q57. How can we declare a dictionary in Python?**

**Ans:** We can declare dictionary in python as dict={key:value}.

dict2={}

dict2[‘name’]=’Shreya’

**Q58. What will the output of the following?**

**var = {}**

**print(type(var))**

**Ans:** <class 'dict'>

**Q59. How can we add an element in a dictionary?**

**Ans:** dict={}

dict[‘Name’]=’Pradnya’

dict[‘Age’]=20

dict[‘Skills’]=[‘Python’,’Java’]

print(dict)

Output: {'Name': 'Pradnya', 'Age': 20, 'Skills': ['Python', 'Java']}

In this way we can add an element in a dictionary.

**Q60. Create a dictionary and access all the values in that dictionary.**

**Ans:** dict={}

dict[‘Name’]=’Pradnya’

dict[‘Age’]=20

dict[‘Skills’]=[‘Python’,’Java’]

print(dict[‘Name’])

print(dict[‘Age’])

print(dict[‘Skills’])

Output= ['Python', 'Java']

**Q61. Create a nested dictionary and access all the element in the inner dictionary.**

**Ans:** dict={}

dict[‘Name’]=’Pradnya’

dict[‘Age’]=20

dict[‘Skills’]=[‘Python’,’Java’,’C++’]

print(dict[‘Skills’][0])

print(dict[‘Skills’][1])

print(dict[‘Skills’][2])

Output= Python

Java

C++

**Q62. What is the use of get() function?**

**Ans:** The get() method returns the value of the item with the specified key.

**Q63. What is the use of items() function?**

**Ans:** In Python Dictionary, items() method is used to return the list with all dictionary keys with values.

**Q64. What is the use of pop() function?**

**Ans:** The pop() method removes the element at the specified position.

**Q65. What is the use of popitems() function?**

**Ans:** The popitem() method removes the item that was last inserted into the dictionary.

**Q66. What is the use of keys() function?**

**Ans:** The keys() method in Python Dictionary, displays a list of all the keys in the dictionary in order of insertion using Python.

**Q67. What is the use of values() function?**

**Ans:** The values() method in Python Dictionary, displays a list of all the values in the dictionary in order of insertion using Python.

**Q68. What are loops in Python?**

**Ans:** Looping means repeating something over and over until a particular condition is satisfied.

**Q69. How many type of loop are there in Python?**

**Ans:** There are two type of loops in python:

1) For Loop

2) While Loop

**Q70. What is the difference between for and while loops?**

**Ans:** For loop is used when the number of iterations is already known. While loop is used when the number of iterations is already Unknown.

**Q71. What is the use of continue statement?**

**Ans:** The continue keyword is used to end the current iteration in a for loop or a while loop, and continues to the next iteration.

**Q72. What is the use of break statement?**

**Ans**: The break statement can be used if you need to break out of a for or while loop and move onto the next section of code.

**Q73. What is the use of pass statement?**

**Ans**: The pass statement is used as a placeholder for future code. When the pass statement is executed, nothing happens, but you avoid getting an error when empty code is not allowed.

**Q74. What is the use of range() function?**

**Ans:** The range() function returns a sequence of numbers, starting from 0 by default, and increments by 1 (by default), and stops before a specified number.

**Q75. How can you loop over a dictionary?**

**Ans:** You can loop through a dictionary by using a for loop. When looping through a dictionary, the return value are the keys of the dictionary, but there are methods to return the values as well.

**Coding problems**

**Q76. Write a Python program to find the factorial of a given number.**

**Ans:** def factorial(n):

return 1 if (n==1 or n==0) else n \* factorial(n - 1);

num = 5;

print("Factorial of",num,"is",factorial(num))

**Q77. Write a Python program to calculate the simple interest. Formula to calculate simple interest is SI = (P*R*T)/100**

**Ans:** def simple\_interest(p,t,r):

print('The principal is', p)

print('The time period is', t)

print('The rate of interest is',r)

si = (p \* t \* r)/100

print('The Simple Interest is', si)

return si

simple\_interest(2, 4, 3)

**Q78. Write a Python program to calculate the compound interest. Formula of compound interest is A = P(1+ R/100)^t.**

**Ans:** def compound\_interest(principal, rate, time):

Amount = principal \* (pow((1 + rate / 100), time))

CI = Amount - principal

print("Compound interest is", CI)

compound\_interest(10000, 10.25, 5)

**Q79. Write a Python program to check if a number is prime or not.**

**Ans:** num = 11

if num > 1:

for i in range(2, int(num/2)+1):

if (num % i) == 0:

print(num, "is not a prime number")

break

else:

print(num, "is a prime number")

else:

print(num, "is not a prime number")

**Q80. Write a Python program to check Armstrong Number.**

**Ans:** def power(x, y):

if y == 0:

return 1

if y % 2 == 0:

return power(x, y // 2) \* power(x, y // 2)

return x \* power(x, y // 2) \* power(x, y // 2)

def order(x):

n = 0

while (x != 0):

n = n + 1

x = x // 10

return n

def isArmstrong(x):

n = order(x)

temp = x

sum1 = 0

while (temp != 0):

r = temp % 10

sum1 = sum1 + power(r, n)

temp = temp // 10

return (sum1 == x)

x = 153

print(isArmstrong(x))

x = 1253

print(isArmstrong(x))

**Q81. Write a Python program to find the n-th Fibonacci Number.**

**Ans:** def solve(n):

if n <= 2:

return n - 1

else:

return solve(n - 1) + solve(n - 2)

n = 8

print(solve(n))

**Q82. Write a Python program to interchange the first and last element in a list.**

**Ans:** def list\_swapping(my\_list):

size\_of\_list = len(my\_list)

temp = my\_list[0]

my\_list[0] = my\_list[size\_of\_list - 1]

my\_list[size\_of\_list - 1] = temp

return my\_list

my\_list = [34, 21, 56, 78, 93, 20, 11, 9]

print("The list is :")

print(my\_list)

print("The function to swap the first and last elements is swapped")

print(list\_swapping(my\_list))

**Q83. Write a Python program to swap two elements in a list.**

**Ans**: def swap\_pos(lst,a,b):

lst[a], lst[b] = lst[b], lst[a]

return lst

lst\_val = [20, 13, 41, 11, 10, 29]

print("The values inside the list are: ",lst\_val)

a, b = 2, 5

print("The list with swapped elements is: ",swap\_pos(lst\_val,a-1,b-1))

**Q84. Write a Python program to find N largest element from a list.**

**Ans:** def LargestFunc(list1, N):

new\_list = []

for i in range(0, N):

max1 = 0

for j in range(len(list1)):

if list1[j] > max1:

max1 = list1[j];

list1.remove(max1);

new\_list.append(max1)

print("Largest numbers = ",new\_list)

my\_list = [12, 61, 41, 85, 40, 13, 77, 65, 100]

N = 4

# Calling the function

LargestFunc(my\_list, N)

**Q85. Write a Python program to find cumulative sum of a list.**

**Ans:** def Cumulative\_sum(lists):

cum\_list = []

lenlength = len(lists)

cum\_list = [sum(lists[0:x:1]) for x in range(0, length+1)]

return cum\_list[1:]

lists = [10, 15, 20, 25, 30]

print (Cumulative\_sum(lists))

**Q86. Write a Python program to check if a string is palindrome or not.**

**Ans:** my\_string=input("Enter string:")

if(my\_string==my\_string[::-1]):

print("The string is a palindrome")

else:

print("The string isn't a palindrome")

**Q87. Write a Python program to remove i'th element from a string.**

**Ans:** def removechar(str1, n):

x = str1[ : n]

y = str1[n + 1: ]

return x + y

if \_\_name\_\_ == '\_\_main\_\_':

str1 = input("Enter a String =")

n = int(input("Enter the n-th index ="))

print("The new string =\n")

print(removechar(str1, n))

**Q88. Write a Python program to check if a substring is present in a given string.**

**Ans:** def check(str1, sstr):

if (str1.find(sstr) == -1):

print(sstr,"IS NOT PRESENT IN THE GIVEN STRING")

else:

print(sstr,"IS PRESENT IN THE GIVEN STRING")

str1 = input("Enter the string ::>")

sstr=input("Enter Substring ::>")

check(str1, sstr)

**Q89. Write a Python program to find words which are greater than given length k.**

**Ans:** def string\_check(string\_length, my\_string):

result\_string = []

words = my\_string.split(" ")

for x in words:

if len(x) > string\_length:

result\_string.append(x)

return result\_string

string\_length = 3

my\_string ="Python is always fun to learn"

print("The string is :")

print(my\_string)

print "\nThe words in the string with length greaterthan" , string\_length , "is :"

print(string\_check(string\_length, my\_string))

**Q90. Write a Python program to extract unquire dictionary values.**

**Ans:** my\_dict = {'hi' : [5,3,8, 0],

'there' : [22, 51, 63, 77],

'how' : [7, 0, 22],

'are' : [12, 11, 45],

'you' : [56, 31, 89, 90]}

print("The dictionary is : ")

print(my\_dict)

my\_result = list(sorted({elem for val in my\_dict.values() for elem in val}))

print("The unique values are : ")

print(my\_result)

**Q91. Write a Python program to merge two dictionary.**

**Ans:** d1 = {'a': 100, 'b': 200}

d2 = {'x': 300, 'y': 200}

d = d1.copy()

d.update(d2)

print(d)

**Q92. Write a Python program to convert a list of tuples into dictionary.**

**Input : [('Sachin', 10), ('MSD', 7), ('Kohli', 18), ('Rohit', 45)]**

**Output : {'Sachin': 10, 'MSD': 7, 'Kohli': 18, 'Rohit': 45}**

**Ans:** list\_tuple = [('Sachin', 10), ('MSD', 7), ('Kohli', 18), ('Rohit', 45)]

dict\_1 =dict(list\_tuple)

print(dict\_1)

**Q93. Write a Python program to create a list of tuples from given list having number and its cube in each tuple.**

**Input: list = [9, 5, 6]**

**Output: [(9, 729), (5, 125), (6, 216)]**

**Ans:** list1 = [9,5,6]

res = [(val, pow(val, 3)) for val in list1]

print(res)

**Q94. Write a Python program to get all combinations of 2 tuples.**

**Input : test\_tuple1 = (7, 2), test\_tuple2 = (7, 8)**

**Output : [(7, 7), (7, 8), (2, 7), (2, 8), (7, 7), (7, 2), (8, 7), (8, 2)]**

**Ans:** test\_tuple1 = (7, 2)

test\_tuple2 = (7, 8)

print("The original tuple 1 : " + str(test\_tuple1))

print("The original tuple 2 : " + str(test\_tuple2))

res = [(a, b) for a in test\_tuple1 for b in test\_tuple2]

res = res + [(a, b) for a in test\_tuple2 for b in test\_tuple1]

print("The filtered tuple : " + str(res))

**Q95. Write a Python program to sort a list of tuples by second item.**

**Input : [('for', 24), ('Geeks', 8), ('Geeks', 30)]**

**Output : [('Geeks', 8), ('for', 24), ('Geeks', 30)]**

**Ans:** def Sort\_Tuple(tup):

    lst = len(tup)

    for i in range(0, lst):

        for j in range(0, lst-i-1):

            if (tup[j][1] > tup[j + 1][1]):

                temp = tup[j]

                tup[j]= tup[j + 1]

                tup[j + 1]= temp

    return tup

tup =[('for', 24), ('Geeks', 8), ('Geeks', 30)]

print(Sort\_Tuple(tup))

**Q96. Write a python program to print below pattern.**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**Ans: def pypart(n):**

**for i in range(0, n):**

**for j in range(0, i+1):**

**print("\* ",end="")**

**print("\r")**

**n = 5**

**pypart(n)**

**Q97. Write a python program to print below pattern.**

**\***

**\*\***

**\*\*\***

**\*\*\*\***

**\*\*\*\*\***

**Ans:** def pypart2(n):

    k = 2\*n - 2

    for i in range(0, n):

        for j in range(0, k):

            print(end=" ")

        k = k - 2

        for j in range(0, i+1):

            print("\* ", end="")

        print("\r")

n = 5

pypart2(n)

**Q98. Write a python program to print below pattern.**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**Ans:** def triangle(n):

    k = n - 1

    for i in range(0, n):

        for j in range(0, k):

            print(end=" ")

        k = k - 1

        for j in range(0, i+1):

            print("\* ", end="")

        print("\r")

n = 5

triangle(n)

**Q99. Write a python program to print below pattern.**

**1**

**1 2**

**1 2 3**

**1 2 3 4**

**1 2 3 4 5**

**Ans:** def numpat(n):

    num = 1

    for i in range(0, n):

        num = 1

        for j in range(0, i+1):

            print(num, end=" ")

            num = num + 1

        print("\r")

n = 5

numpat(n)

**Q100. Write a python program to print below pattern.**

**A**

**B B**

**C C C**

**D D D D**

**E E E E E**

Ans: def alphapat(n):

    num = 65

    for i in range(0, n):

        for j in range(0, i+1):

            ch = chr(num)

            print(ch, end=" ")

        num = num + 1

        print("\r")

n = 5

alphapat(n)