Assignment Part-1

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

Ans Python is a high-level programming language that makes it easy to learn. Python does not require to understand the details of the computer in order to develop programs efficiently. It is called general purpose language as it is used in various domains Web applications, Testing, Data science, machine learning and AI etc.

Q2. Why is Python called a dynamically typed language?

Ans We don't have to declare the type of a variable or manage the memory while assigning a value to a variable in Python. Python also take cares of the memory management which is crucial in programming.

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

Ans Pros- Beginner friendly, Flexible and extensible, Highly scalable.

Cons- Slower than compiled languages, High memory consumption, Complex multi-threading.

Q4. In what all domains can we use Python?

Ans It is used in various domains Web applications, Testing, Data science, machine learning and AI etc.

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

Ans Python Variable is containers which store values. Python is not “statically typed”. We do not need to declare variables before using them or declare their type. A variable is created the moment we first assign a value to it. A Python variable is a name given to a memory location. It is the basic unit of storage in a program.

Var= 19

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

Ans By using input() function.

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

Ans String

Q8. What is type casting?

Ans Type Casting is the method to convert the variable data type into a certain data type in order to the operation required to be performed by users.

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

Ans Yes. input().split(,)

Q10. What are keywords?

Ans Keywords in Python are reserved words that cannot be used as a variable name, function name, or any other identifier.

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

Ans Yes, we can but we shouldn’t as it will override the properties of the keyword.

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

Ans Python indentation refers to adding white space before a statement to a particular block of code.

Q13. How can we throw some output in Python?

Ans Using print()

Q14. What are operators in Python?

Ans Symbols or keywords used to perform certain operations on values or variable are known as operators. There are different types of operators like

- Arithmetic operators

- Comparison Operators

- Logical Operators

- Bitwise Operators

- Assignment Operators

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

Ans / is used for float division and // is used of floor (integer) division.

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

```

iNeuroniNeuroniNeuroniNeuron

```

Ans 1.

x= "iNeuron"\*3

print(x)

2.

x= "iNeuroniNeuroniNeuroniNeuron"

print(x)

Output is same for both.

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

Ans 1.

x=6

if (x%2) == 0:

    print("number is even",x)

else:

    print("number is odd",x)

Output- number is even 6

2.

x=6

if (x%2) == 0:

    print("number is even")

else:

    print("number is odd")

Output- number is even

Q18. What are boolean operator?

Ans Python has three Boolean operators that are typed out as plain English words: and; or; not; These operators connect Boolean expressions (and objects) to create compound Boolean expressions.

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

0

False

1

Q20. What are conditional statements in Python?

Ans A conditional statement in python, also called a condition constructs, is a statement that accommodates a condition inside itself. This condition is constructed using the bitwise, boolean, and comparison operators in Python.

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

Ans if is the first condition check for the condition.

if "if" is False then elif's condition is checked.

else is checked when all the upper condition fails.

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 age = 19

if age >= 18:

    print("I can vote")

else:

    print("I can't vote")

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

sum= 0

for num in numbers :

    if num%2 == 0 :

      sum=sum+num

    else:

        continue

print(sum)

Output 392

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

Ans

x=5

y=17

z=8

if x>y and x>z:

    print("x is greatest",x )

elif y>z:

    print("y is greatest",y )

else:

    print("z is greatest",z )

Output y is greatest 17

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

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

list = []

for num in numbers:

    if num > 150:

        if num > 500:

            break

    elif num%5==0:

        list.append(num)

print(list)

Output [75,150,145]

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

Ans A string is a data structure in Python that represents a sequence of characters.

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

Ans Square brackets can used to access the elements of the string.

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

```

string = "Big Data iNeuron"

desired\_output = "iNeuron"

```

Ans

str = "Big Data iNeuron"

print (str[9:16])

Output iNeuron

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

```

string = "Big Data iNeuron"

desired\_output = "norueNi"

```

Ans

str = "Big Data iNeuron"

print (str[15:8:-1])

Output norueNi

Q30. Reverse the string given in the above question.

Ans

Str[::-1]

Q31. How can you delete entire string at once?

Ans

str = "Big Data iNeuron"

del (str)

Q32. What is escape sequence?

Ans The "backslash (\)" character as an escape character. In other words, it has a special meaning when we use it inside the strings. As the name suggests, the escape character escapes the characters in a string for a brief moment to introduce unique inclusion.

Q33. How can you print the below string?

```

'iNeuron's Big Data Course'

```

Ans

str = "iNeuron's Big Data Course"

print(str)

Q34. What is a list in Python?

Ans Python list are dynamically sized array, declared in languages like C++ and Java. A list is a collection of things, enclosed in [ ] and separated by commas.

Q35. How can you create a list in Python?

Ans By using []

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

Ans Using indexing.

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])

Output iNeuron

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

Ans

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

print(len(lst))

Output- 6

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 (2,"Big")

print(lst)

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

Ans A tuple is similar to a list in terms of indexing, nested objects, and repetition but a tuple is immutable, unlike lists which are mutable.

Q41. How can you create a tuple in Python?

Ans Using ()

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 it is immutable.

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

Ans Yes

tup1= "Sumit"

tup2= "Singh"

tup = tup1 +" " +tup2

print(tup)

Output Sumit Singh

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

Ans

tup1= "Sumit"

tup2= "Singh"

tup = tup1 +" " +tup2

print(len(tup))

Output 11

Q45. What are sets in Python?

Ans A set is an unordered collection of data types that is iterable, mutable and has no duplicate elements. The order of elements in a set is undefined though it may consist of various elements.

Q46. How can you create a set?

Ans Using {}

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

Ans

set= {"ineuron"}

print(set)

Output {‘ineuron’}

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

Ans

set1=set()

set1.add("Sumit")

set1.add("Saklani")

print(set1)

Output {‘Sumit’, ‘Saklani’}

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

Ans We can add more than one element in a single go using update(), but using add() it's not possible.

set1=set()

tmp= [1,2,3,4]

set1.update(tmp)

print(set1)

Q50. What is clear() in sets?

Ans To remove all the elements from the set, clear() function is used.

Q51. What is frozen set?

Ans Frozen sets in Python are immutable objects that only support methods and operators that produce a result without affecting the frozen set or sets to which they are applied. While elements of a set can be modified at any time, elements of the frozen set remain the same after creation.

Q52. How is frozen set different from set?

Ans - Frozen sets are immutable where as sets are mutable.

- Sets can't be used as keys in dictionary where as frozen sets can be used.

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

Ans **Union() Method** returns a new set which contains all the items from the original set.

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

set\_b = {4,5,6,7,8}

print(set\_a|set\_b)

Output {1,2,3,4,5,6,7,8}

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

Ans **Python set intersection() method returns** a new set with an element that is common to all set

The intersection of two given sets is the largest set, which contains all the elements that are **common** to both sets.

set1 = {2, 4, 5, 6}

set2 = {4, 6, 7, 8}

set3 = {4, 6, 8}

print("set1 intersection set2 : ", set1.intersection(set2))

print("set1 intersection set2 intersection set3 :", set1.intersection(set2, set3))

Output {4, 6}

{4, 6}

Q55. What is dictionary in Python?

Ans Dictionary in Python is a collection of keys values, used to store data values like a map, which, unlike other data types which hold only a single value as an element.

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

Ans Dictionary is having key and value pair whereas all other data structures have only values in them.

Q57. How can we declare a dictionary in Python?

Ans Using {}

Q58. What will the output of the following?

```

var = {}

print(type(var))

```

Ans

var = {}

print(type(var))

Output <class ‘dict’>

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

Ans

dict = {}

dict['Name']= 'Sumit'

dict['Age']= '30'

print(dict)

Output- {'Name': 'Sumit', 'Age': '30'}

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

Ans

Dict = {"Name": "Vishal", "Experience": 3, "Organisation":"iNeuron"}

for i, j in Dict.items():

  print(f"Key is {i} and value is {j}")

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

Ans

Dict = {"Name": {"f\_name":"Vishal", "l\_name":"Singh"}, "Experience": 3, "Organisation":"iNeuron"}

for i, j in Dict["Name"].items():

  print(f"Key is {i} and value is {j}")

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

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

Syntax dictionary .get ( keyname, value )

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 **Python list *pop()***is an inbuilt function in Python that removes and returns the last value from the list or the given index value.

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

Ans **Python dictionary popitem() method** removes the last inserted key-value pair from the dictionary and returns it as a tuple.

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

Ans keys() method returns a view object that displays a list of all the keys in the dictionary.

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

Ans values() is an inbuilt method in Python programming language that returns a view object. The view object contains the values of the dictionary, as a list.

Q68. What are loops in Python?

Ans Loops are used the iterate over a block of statement multiple times.

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

Ans For and while loop.

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

Ans When we know the exact number of iterations, we can use for loop. When we want them to run till a certain condition is true we can use while loop.

Q71. What is the use of continue statement?

Ans Continue Statement skips the execution of the program block from after the continue statement and forces the control to start the next iteration.

Q72. What is the use of break statement?

Ans break statement in Python is used to bring the control out of the loop when some external condition is triggered. break statement is put inside the loop body.

Q73. What is the use of pass statement?

Ans The pass statement is a null statement. But the difference between pass and comment is that comment is ignored by the interpreter whereas pass is not ignored.

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

Ans range() function returns a sequence of numbers, in a given range. The most common use of it is to iterate sequence on a sequence of numbers.

Q75. How can you loop over a dictionary?

Ans using an in-build. keys() method which helps us to print all the keys in the dictionary.

statesAndCapitals = {

    'Gujarat': 'Gandhinagar',

    'Maharashtra': 'Mumbai',

    'Rajasthan': 'Jaipur',

    'Bihar': 'Patna'

}

for state in statesAndCapitals:

    print(state)

### Coding problems

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

Ans

def factorial(n):

  if n < 0:

    return 0

  elif n == 0 or n == 1:

    return 1

  else:

    fact = 1

    while(n>1):

      fact \*= n

      n -= 1

    return fact

n=5

print(f"Factorial of {n} is {factorial(n)}")

Factorial of 5 is 120

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

Ans

def SI(p,r,t):

  si = (p\*r\*t)/100

  print (f"Simple interest is {si}")

SI (4000,2,5)

Simple interest is 400.0

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

Ans

def CI(p, r, t):

  amount = p\*(1+r/100)\*\*t

  ci = amount - p

  print(f"Compound interest is {ci}")

  return ci

CI(1000, 10, 3)

Compound in interest is 331.00000045

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

Ans

def isPrime(n):

    if n <= 1:

        return False

    for i in range(2, n):

        if n % i == 0:

            return False

    return True

print("true") if isPrime(11) else print("false")

print("true") if isPrime(14) else print("false")

Q80. Write a Python program to check Armstrong Number.

Ans

def check\_armstrong(n):

  s = n

  b = len(str(n))

  sum1 = 0

  while n != 0:

      r = n % 10

      sum1 = sum1+(r\*\*b)

      n = n//10

  if s == sum1:

      print(f"The given number {s} is armstrong number")

  else:

      print(f"The given number {s} is not armstrong number")

check\_armstrong(153)

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

Ans

def Fibonacci(n):

    if n<= 0:

        print("Incorrect input")

    elif n == 1:

        return 0

    elif n == 2:

        return 1

    else:

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

print(Fibonacci(5))

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

Ans

def swapList(newList):

    newList[0], newList[4] = newList[4], newList[0]

    return newList

newList = [12, 35, 9, 56, 24]

print(swapList(newList))

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

Ans

def swapPositions(list, pos1, pos2):

    list[pos1], list[pos2] = list[pos2], list[pos1]

    return list

List = [23, 65, 19, 90]

pos1, pos2  = 1, 3

print(swapPositions(List, pos1-1, pos2-1))

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

Ans

def Nmaxelements(list1, N):

    final\_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)

        final\_list.append(max1)

    print(final\_list)

list1 = [2, 6, 41, 85, 0, 3, 7, 6, 10]

N = 2

Nmaxelements(list1, N)

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

Ans

def cumulative\_sum(lists):

    cu\_list = []

    length = len(lists)

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

    return cu\_list[1:]

lists = [10, 20, 30, 40, 50]

print(f"Cumulative sum of the list is {cumulative\_sum(lists)}")

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

Ans

def isPalindrome(s):

  if s == s[::-1]:

      return f"{s} is palindrome"

  return f"{s} is not palindrome"

s = "dad"

print(isPalindrome(s))

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

Ans

def remove\_ith\_element(i):

  str1 = "Big Data Bootcamp"

  str2 = ""

  for n in range(len(str1)):

    if n == i:

      continue

    else:

      str2 = str2 + str1[n]

  return str2

remove\_ith\_element(5)

print(remove\_ith\_element(5))

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

Ans

def check\_substring(s2, s1):

  if (s2.count(s1) > 0):

    print(f'"{s1}" is a substring of "{s2}"')

  else:

    print(f'"{s1}" is not a substring of "{s2}"')

s2 = "Welcome to iNeuron Big Data Bootcamp"

s1 = "iNeuron"

check\_substring(s2, s1)

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

Ans

def string\_greater\_than\_k(k, str):

  string = []

  text = str.split(" ")

  for x in text:

    if len(x) > k:

      string.append(x)

  return string

k = 3

str ="Big Data Bootcamp"

print(string\_greater\_than\_k(k, str))

Q90. Write a Python program to extract unique dictionary values.

Ans Doubt

Q91. Write a Python program to merge two dictionary.

Ans

def Merge(dict1, dict2):

  return(dict2.update(dict1))

dict1 = {'a': 10, 'b': 8}

dict2 = {'d': 6, 'c': 4}

print(Merge(dict1, dict2))

print(dict2)

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

print (dict([('Sachin', 10), ('MSD', 7), ('Kohli', 18), ('Rohit', 45)]))

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]

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

print(result)

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)

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 Doubt

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 inverse\_pattern():

  n=5;i=0

  while(i<=n):

    print(" " \* (n - i) +"\*" \* i)

    i+=1

inverse\_pattern()

Q98. Write a python program to print below pattern.

```

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

```

Ans

Doubt

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

Doubt