Assignment Part-1

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

Python is an Object Oriented , high level programming language. Object oriented means it falls around objects rather than functions and hugh-level since it's easy for humans to understand.

Q2. Why is Python called a dynamically typed language?

Python is called a dynamically typed language because the type of variable is determined only during runtime.

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

Pros:

- Object Oriented Programming-driven.
- Supports imperative and functional programming.
- Extensive library.
- Supports multiple platforms (Web and mobile computing).
- Python is easily extensible with *C*/*C*++/Java code.
- Open Source and large community support.
- Simple and easy-to-understand syntax.

Cons:

- Python is slow.
- Weak in mobile computing.
- Has limitations with database access.
- Despite being open source, there is no commercial support point.
- Since Python is dynamic, more errors show at run-time.

Q4. In what all domains can we use Python?

- Web development
- Machine learning
- Networking & Internet
- Scientific Computation

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

Variables are the basic unit of storage in a programming language, it always contains the type of variable and its name. Only if the variables are declared & initialized it could be used.

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

```
Username = input(“Enter username”)
print(“Username is” + username)
```

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

By default input returns as string. So the age & name will be stored as string.

Q8. What is type casting?

Type casting is when you assign value of one primitive data type to another.

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

Yes, using split() method. This function helps in getting multiple inputs from users. It breaks the given input by the specified separator. If a separator is not provided then any white space is a separator. Generally, users use a split() method to split a Python string but one can use it in taking multiple inputs.

```
x,y = input("Enter 2 values :").split()
```

Q10. What are keywords?

Python keywords are reserved words. They are used by python interpreters to understand the program. Keywords define the structure of programs.

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

We can’t use keywords to name program entities such as variables, classes, and functions. It’s because keywords have predefined meanings.

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

Python indentation refers to adding white space before a statement to a particular block of code. In another word, all the statements with the same space to the right, belong to the same code. Indentation is a very important concept of Python because without properly indenting the Python code, there will be Indentation-Error and the code will not get compiled.

Q13. How can we throw some output in Python?

By using the print() function.

Q14. What are operators in Python?

Operators are used to perform operations on variables and values.

Example of operators are +, -, *, /.

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

The ‘/’ operator is used for float or decimal division whereas the ‘//’ operator is used for integer division.

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

```
iNeuroniNeuroniNeuroniNeuron
```

```
print(“iNeuron” * 3)
```

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

```
x = int(input("Enter a number : "))

if x%2 == 0:

print("Number is even !!")

else:

print("Number is odd !!")
```

Q18. What are boolean operator?

The operators such as not, and, or that are used to perform logical operations in Python, with results of the operations involving them being returned in TRUE or FALSE.

Q19. What will the output of the following?

```
1 or 0 → True

0 and 0 → False

True and False and True → False

1 or 0 or 0 → True
```

Q20. What are conditional statements in Python?

Conditional statements are also called decision-making statements. We use those statements while we want to execute a block of code when the given condition is true or false.

Type of condition statement in Python:

- If statement.
- If Else statement.
- Elif statement.
- Nested if statement.
- Nested if else statement.

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

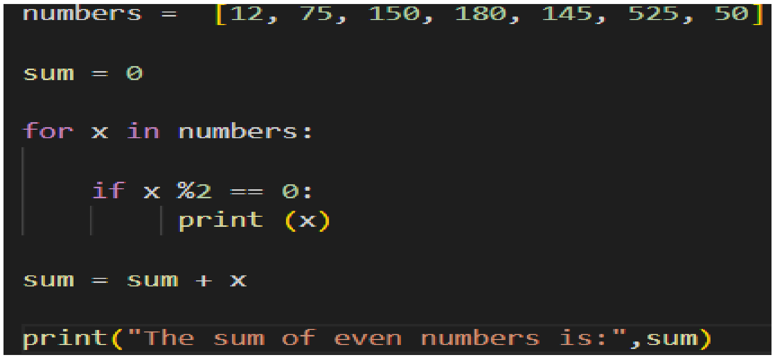
Python uses the ‘if’ keyword to implement decision control. Along with the ‘if’ statement, the ‘else’ condition can be optionally used to define an alternate block of statements to be executed if the boolean expression in the ‘if’ condition evaluates to False. The ‘elif’ condition is used to include multiple conditional expressions after the ‘if’ condition or between the ‘if’ and ‘else’ conditions.

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 your age:))
If age >= 18:
        print(“You can vote !!”)
Else:
        print(“you cannot 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]
```



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

sum = 0

for x in numbers:

    if x %2 == 0:
        print (x)

sum = sum + x

print("The sum of even numbers is:",sum)
```

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

```
num1 = float(input("Enter 1st number:"))
num2 = float(input("Enter 2nd number:"))
num3= float(input("Enter 3rd number:"))

if(num1>=num2) and (num1>=num2):
   largest=num1
elif(num2>=num1) and (num2>=num3):
   largest=num2
else:
   largest = num3

print("The largest number 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]

```

```
a =  [12, 75, 150, 180, 145, 525, 50]
b = []

for i in a:
    if i > 150:
        if i > 500:
            break
        continue
    if i % 5 == 0:
        b.append(i)

print(b)
```

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

A series of characters is called as a String, anything inside a double or single quote is a string in Python.

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

We can do this by referring to it's index number inside the square bracket.

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

```
string = "Big Data iNeuron"
desired_output = "iNeuron"
```

```
string =  "Big Data iNeuron"
print(string[9:16])
```

Q29. Write a code to get the desired output of the following
```
string = "Big Data iNeuron"
desired_output = "norueNi"
```
```
string =  "Big Data iNeuron"
print(string[9:16][::-1])
```

Q30. Resverse the string given in the above question.

```
        string =  "Big Data iNeuron"
print(string[::-1])
```

norueNi ataD giB

Q31. How can you delete entire string at once?

We can use replace() or re.sub() function to clean up text by removing strings.

Q32. What is escape sequence?

A sequence of characters that does not represent itself when used inside a character or string literal, but is translated into another

Q33. How can you print the below string?
```
'iNeuron's Big Data Course'
```
string = "iNeuron's Big Data Course"
print(string)

Q34. What is a list in Python?

A list is created by placing elements inside square brackets & separated by commas.

Q35. How can you create a list in Python?

A list is created by placing elements inside square brackets & separated by commas.

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

The syntax for accessing the elements of a list is the same as the syntax for accessing the characters of a string.

Q37. Write a code to access the word "iNeuron" from the given list.
```
lst = [1,2,3,"Hi",[45,54, "iNeuron"], "Big Data"]
```
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.

```
list=[]
n=int(input("Enter number of elements:"))

for i in range(0,n):
    ele=int(input())

    list.append(ele)
print(list)
```

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

~~~
```
lst = ["Welcome", "to", "Data", "course"]
```
lst = ["Welcome", "to", "Data", "course"]
lst.insert(3,"Big")

print(lst)
~~~

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

List are mutable but tuples are not mutable.

Q41. How can you create a tuple in Python?

Tuple in python can be created by enclosing all the comma-separated elements inside the parenthesis ()

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

```
tpl = (2,3,4)
tple_append = tpl + (5,6,7)
print(tple_append)
```

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

```
tpl1 = (2, 3, 4)
tpl2 = (5, 6, 7)
res = tpl1 + tpl2
print(res)
```

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

```
tpl = (2,3,2,5,6,2)
count = tpl.count((2))
print(count
```

Q45. What are sets in Python?

Set method is used to convert any of the iterables to sequence of iterable elements with with distinct elements.

Q46. How can you create a set?

A set is created by placing all the iterables in curly braces {} .

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

```
s = {'a' , 2}
s.add( "iNeuron")
print(s)
```

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

```
s = {'a' , 2}
b = [4,5,6]
s.update(b)
print(s)
```

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

add() is used to add a single element , update() is used to introduce other sets.

Q50. What is clear() in sets?

It removes all the elements in a set.

Q51. What is frozen set?

Frozen set is an immutable version of Python set object, we can modify the elements at any time , elements of set remains the same after creation.

Q52. How is frozen set different from set?

Elements of frozen set remains the same after creation.

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

```
set1 = {2,3,4,5}
set2 = {6,7,8,9}
set3 = {'a' , 'b'}

result = set1.union(set2,set3)
print(result)
```

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

The `intersection()` method returns a set that contains the similarity between two or more sets.

```
.x = {"a", "b", "c" , "d"}
```

```
y = {"c", "d", "e"}
z = {"f", "g", "c" , "d"}

result =  x.intersection(y,z)
print(result)
```

Q55. What is dictionary in Python?

A dictionary is a ordered, changeable & do not allow duplicates.

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

A dictionary has a set of keys and each key has a single associated value.

Q57. How can we delare a dictionary in Python?

A Dictionary in python is declared by enclosing a comma-separated list of key-value pairs using curly braces({}).

Q58. What will the output of the following?

```
var = {}
print(type(var))
```

<class 'dict'>

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

```
people = {"Avinash" : 25 , "Gayu" : 25}
print(people)

people.update([("Niks" , 26) , ("Rocky" , 27)])
print(people)

people.update({"Kumar" : 10})
print(people)
```

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

```
my_data = {
   "name" : "Avinash",
   "Age" : "25",
}
for values in my_data.values():
  print(values)
```

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

```
people = {1: {"Name" : "Avi" , "Age" : "25"},
         2: {"Name" : "Kumar" , "Age" : "26"}
         }

print(people)
```

Q62. What is the use of get() function?
The get() method returns the value of the item with the specified key.

Q63. What is the use of items() function?
The items() method returns a view object. The view object contains the key-value pairs of the dictionary, as tuples in a list.

Q64. What is the use of pop() function?\The pop() method returns the item present at the given index.
Q65. What is the use of popitems() function?
The popitem() method removes the item that was last inserted into the dictionary.

Q66. What is the use of keys() function?
The keys() method returns a view object. The view object contains the keys of the dictionary, as a list.

Q67. What is the use of values() function?
The values() method returns a view object. The view object contains the values of the dictionary, as a list.

Q68. What are loops in Python?
Looping means repeating something over and over until a particular condition is satisfied.

Q69. How many type of loop are there in Python?
There are two types of loops in Python, for and while.

Q70. What is the difference between for and while loops?
A for loop is a single-line command that will be executed repeatedly. While loops can be single-lined or contain multiple commands for a single condition.

Q71. What is the use of continue statement?
A continue statement ends the current iteration of a loop.

Q72. What is the use of break statement?
The break statement is frequently used to terminate the processing of a particular case within a switch statement.

Q73. What is the use of pass statement?
The pass statement is used as a placeholder for future code.

Q74. What is the use of range() function?
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?
You can loop through a dictionary by using a for loop.

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

```
num = 7
factorial = 1

if num < 0:
    print("NO factorial for negative value")

elif num == 0:
    print("Factorial is 1")

else:
    for i in range(1, num + 1):
        factorial= factorial*i
    print("The factorial of",num,"is",factorial)
```

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

```
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(8, 6, 8)
```

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

```
def compound_interest(principle, rate, time):

    Amount = principle * (pow((1 + rate / 100), time))
    CI = Amount - principle
    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.

```
from math import sqrt
n = 1

prime_flag = 0

if(n > 1):
        for i in range(2, int(sqrt(n)) + 1):
                if (n % i == 0):
                        prime_flag = 1
                        break
        if (prime_flag == 0):
                print("True")
        else:
                print("False")
else:
        print("False")
```

Q80. Write a Python program to check Armstrong Number.

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

sum = 0

temp = num
while temp > 0:
  digit = temp % 10
  sum += digit ** 3
  temp //= 10

if num == sum:
  print(num,"is an Armstrong number")
else:
  print(num,"is not an Armstrong number")
```

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

```
n = int(input("Enter the number:"))

def solve( n ):
   if n <= 2:
       return n - 1
   else:
        return solve(n - 1) + solve(n - 2)

print(solve(n))
```

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

```
def swapList(newList):

    newList[0] , newList[-1] = newList[-1] , newList[0]

    return newList

newList = [12 , 2 , 3, 24]
print(swapList(newList))
```

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

```
# Python3 program to swap elements
# at given positions

# Swap function
def swapPositions(list, pos1, pos2):

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

# Driver function
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.

```
l = [1000,298,3579,100,200,-45,900]
n = 4

l.sort()
print(l[-n:])
```

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

```
list = [1,2,3,4]
new_list = []

j = 0

for i in range(0,len(list)):
    j+=list[i]
    new_list.append(j)

print(new_list)
```

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

```
x = input("Enter the string:")

w = ""

for i in x:
    w = i + w

if(x == w):
    print("Yes")

else:
    print("No")
```

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

```
def remove_char(s, i):
    a = s[ : i]
    b = s[i + 1: ]

    return a+b

string = "Pythonisgood"
# Remove ith index element
i = 5
print(remove_char(string,i-1))
```

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

```
MyString1 = "A geek in need is a geek indeed"

if "need" in MyString1:
        print("Yes! it is present in the string")
else:
        print("No! it is not present")
```

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

```
sentence = "hello geeks for geeks is computer science portal"
length = 4
s=sentence.split()
print([a for i,a in enumerate(s) if len(a) > length])
```

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

```
test_dict = {'gfg': [5, 6, 7, 8],
                        'is': [10, 11, 7, 5],
                        'best': [6, 12, 10, 8],
                        'for': [1, 2, 5]}
```

```
print("The original dictionary is : " + str(test_dict))

res = list(sorted({ele for val in test_dict.values() for ele in val}))

print("The unique values list is : " + str(res))
```

Q91. Write a Python program to merge two dictionary.

```
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}
```

```
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)]
```

```
list = [9, 5, 6]

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

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)]
```

```
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_tuple1 for b in test_tuple2]

print(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)]
```

```
def Sort_Tuple(tup):


  tup.sort(key = lambda x: x[1])
  return tup


tup = [('rishav', 10), ('akash', 5), ('ram', 20), ('gaurav', 15)]

print(Sort_Tuple(tup))
```

Q96. Write a python program to print below pattern.

```
*
* *
* * *
* * * *
* * * * *
```

```
def pypart(n):
  myList = []
  for i in range(1,n+1):
     myList.append("*"*i)
  print("\n".join(myList))


n = 5
pypart(n)
```

Q97. Write a python program to print below pattern.

```
    *
   **
  ***
 ****
*****
```

Q98. Write a python program to print below pattern.

```
    *
   * *
  * * *
 * * * *
* * * * *
```

```
print("Print equilateral triangle Pyramid using asterisk symbol ")
size = 7
m = (2 * size) - 2
for i in range(0, size):
    for j in range(0, m):
        print(end=" ")
    m = m - 1
    for j in range(0, i + 1):
        print("* ", end=' ')
    print(" ")
```

Q99. Write a python program to print below pattern.

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

```
rows = 5
for i in range(1, rows + 1):
    for j in range(1, i + 1):
        print(j, end=' ')
    print('')
```

Q100. Write a python program to print below pattern.

```
A
B B
C C C
D D D D
E E E E E
```

```
print("Print equilateral triangle Pyramid with characters ")
s = 5
asciiValue = 65
m = (2 * s) - 2
for i in range(0, s):
    for j in range(0, m):
        print(end=" ")
    # Decreased the value of after each iteration
    m = m - 1
    for j in range(0, i + 1):
        alphabate = chr(asciiValue)
        print(alphabate, end=' ')
        # Increase the ASCII number after each iteration
        asciiValue += 1
    print()
```