## Assignment Part-1

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

-Python is the most preferred programming language and can be used to create variety of different programs. It isn’t specialized for any specific programs. It is also called high-level programming language because it is human readable and easy to understand.

Q2. Why is Python called a dynamically typed language?

* Python is both a strongly typed and a dynamically typed language. Strong typing means that variables do have a type and that the type matters when performing operations on a variable. Dynamic typing means that the type of the variable is determined only during runtime.

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

|  |  |
| --- | --- |
| Pros | Cons |
| It has large community | Slower that complied language |
| Extensive libraries | Work Environment |
| Other programs can be embedded into python | High Memory consumption |
| It is free, simple, easy to use. | Dynamically typed. |

Q4. In what all domains can we use Python?

-Python can be used in almost all domains from retail, finance, insurance, game development, etc.

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

* Variable is reference or pointer to an object. Once an object is assigned to variable, you can refer to that object using the variable name. eg :- tmp= ‘qwerty’, str=[1,2,3]

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

* We can take input in python using input() function.

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

* By default input() function takes input as a String.

Q8. What is type casting?

* Process where in we convert literal of one type into other. Eg:- string into int or float into int.

For typecasting, we can use inbuilt functions like int(), float(), str().

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

* We cannot use single input() function to take more than one input, we will need to use split() function or map() function or list comprehensions with it.

Eg:- var1,var2= input("Enter the values of your choice -").split()

print("Value of var1 is ",var1)

print("Value of var2 is ",var2)

* Also map() function is used to take multiple inputs.
* a, b = map (int, input("Enter the count of fruits you have: ").split())
* print(a)
* print(b)
* List() function:

a = [int(a) for a in input("Enter multiple value: ").split()]

print("The value entered by you are: ", a)

Q10. What are keywords?

-Key words are specific reserved words which hold special meaning.

Eg:-

* Value Keywords: True, False, None.
* Operator Keywords: and, or, not, in, is.
* Control Flow Keywords: if, elif, else.
* Iteration Keywords: for, while, break, continue, else.
* Structure Keywords: def, class, with, as, pass, lambda.
* Returning Keywords: return, yield.
* Import Keywords: import, from, as.

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

-We cannot use a keyword as a variable name, function name, or any other identifier. They are used to define the syntax and structure of the Python language.

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

-It refers to spacing at the beginning of code line. Indentation in python is important as it is an indication of block of code.

Q13. How can we throw some output in Python?

* Using print statement. Eg:- print()

Q14. What are operators in Python?

* They are used to perform operations on variables and its values.

Different type of operators’ python has is:

* Arithmetic operators
* Assignment operators
* Comparison operators
* Logical operators
* Identity operators
* Membership operators
* Bitwise operators

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

* / is a normal division which returns fraction result while // also called floor division returns quotient by trimming decimal part.

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

```

iNeuroniNeuroniNeuroniNeuron

```

Code:

string='iNeuron'

print(string\*4)

iNeuroniNeuroniNeuroniNeuron

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

Code:-

var1= int(input("Enter a number of your choice: "))

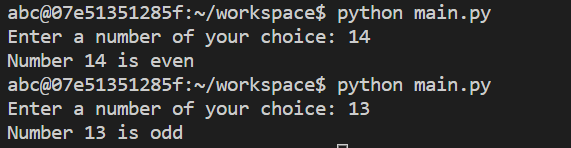
if var1%2 == 0:

    print("Number {} is even".format(var1))

else:

    print("Number {} is odd".format(var1))

output:



Q18. What are boolean operator?

-Boolean operators are those that result in Boolean values of True or False. They include AND,OR,NOT. They are most commonly used with arithmetic operators and logical operators.

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?

-Conditional statements are used to make decisions. There are 3 conditional statements in python:

1) IF statement

2) IF-ELSE statement

3) IF-ELIF-ELSE statement.

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

* If , elif and else keywords are used in conditional statements to make any decisions.

if keyword is used in conditional statement to execute a block of code when the condition is true. Similarly when we want to check multiple conditions, we use if-elif-else statement.

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".

Code:

age = int(input("Enter person's age:"))

print("Entered age is: ",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]

```

Code:

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

sum=0

for i in numbers:

    if i%2==0:

        sum+=i

print("sum of all 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.

Code:

a= float(input("Enter first number: "))

b= float(input("Enter second number: "))

c= float(input("Enter third number: "))

print("Entered numbers are ", a,b,c)

tmp=[a,b,c]

max=0

for i in tmp:

    if i > max:

        max=i

print("Greatest number is ",max)

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]

```

* Couldn’t get answer to it.

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

String is a sequence of characters. We can declare string using single quotes or double quotes.

Eg: str=’Hello’ ; str=”Hello”

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

* We can access string using slicing operator in string.

Eg: str[start:stop:step]

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

```

string = "Big Data iNeuron"

desired\_output = "iNeuron"

```

Code:

string = "Big Data iNeuron"

print(string[9:])

output:

[Running] python -u "/config/workspace/main.py"

iNeuron

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

```

string = "Big Data iNeuron"

desired\_output = "norueNi"

```

Code:

string = "Big Data iNeuron"

print(string[:8:-1])

output:

[Running] python -u "/config/workspace/main.py"

norueNi

Q30. Resverse the string given in the above question.

Code:

string = "Big Data iNeuron"

print(string[::-1])

output: norueNi ataD giB

Q31. How can you delete entire string at once?

* Using del keyword.

Syntax: del myString[]

Q32. What is escape sequence?

- Character combinations consisting of a backslash (\) followed by a letter or by a combination of digits are called "escape sequences."

Eg: txt = "We are the so-called \"Vikings\" from the north."

Q33. How can you print the below string?

```

'iNeuron's Big Data Course'

```

Code:

string= 'iNeuron''s Big Data Course'

print(string)

iNeuron's Big Data Course

Q34. What is a list in Python?

* Lists are collections. They are dynamically sized array separated by comma.

Q35. How can you create a list in Python?

* List can be created in 2 ways:

1. Define empty list. lst = []
2. Using list method. List()

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

-We can access elements in a list using index operator. Eg:- [start:stop:step].

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

```

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

```

Code:

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

print(lst[4][2])

Output:

[Running] python -u "/config/workspace/main.py"

iNeuron

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

Code:

lst= list(input("Enter values of your choice: "))

print("Entered values are ", lst)

print("Length of entered list is ",len(lst))

output:

Enter values of your choice: 1,4,5

Entered values are ['1', ',', '4', ',', '5']

Length of entered list is 5

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

```

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

```

Code:

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

lst.insert(2, "Big")

print(lst)

output:

[Running] python -u "/config/workspace/main.py"

['Welcome', 'to', 'Big', 'Data', 'course']

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

* Tuple is used to store multiple items in a single variable. It is one of the 4 built-in data-types in python to store collections of data. Tuples are ordered and unchangeable (immutable) while list is unordered and mutable.

Q41. How can you create a tuple in Python?

* We can create tuple using (). Also we can call tuple() function on input function.

Eg: 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.

t1=()

t1.append("Manali")

print(t1)

We cannot add elements to tuple after declaring. Since tuple are immutable objects, it does not allow any new elements to be added.

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

* We can combine two tuples to form a new tuple.
* t1=(1,2)
* t2=(3,4)
* t3 = t1 + t2
* print(t3)
* print(type(t3))
* [Running] python -u "/config/workspace/main.py"
* (1, 2, 3, 4)
* <class 'tuple'>

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

t= input("Enter tuple values: ")

t1= tuple(int(i) for i in t.split())

print(len(t1))

Output:

abc@d52566f2ea2d:~/workspace$ python main.py

Enter tuple values: 1 2 3 4

4

Q45. What are sets in Python?

* Sets are used to store multiple values and it is one of the 4 built-in collections of python. Iy only stores distinct values.

Q46. How can you create a set?

* Set can be created using set () method.
* Eg: s1= set()

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

s1=set()

s1.add("iNeuron")

print(s1)

[Running] python -u "/config/workspace/main.py"

{'iNeuron'}

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

s1=set()

s1.add("iNeuron's")

s1.add("Big")

s1.add("Data")

print(s1)

[Running] python -u "/config/workspace/main.py"

{"iNeuron's", 'Big', 'Data'}

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

* To add single value to a set we can use add(), while to add sequence of values to a set we can use update().
* s1=set()
* s1.add("iNeuron's")
* s1.add("Big")
* s1.add("Data")
* print(s1)
* tmp=[1,2,3,4]
* s1.update(tmp)
* print(s1)
* {'Big', "iNeuron's", 'Data'}
* {1, 2, 3, 4, 'Big', "iNeuron's", 'Data'}

Q50. What is clear() in sets?

* It will clear all elements of a set.

Q51. What is frozen set?

* Frozen set is just an immutable version of a [Python set](https://www.programiz.com/python-programming/set) object. We cannot add any elements to this set.
* v=('a','e','i','o')
* v1=frozenset(v)
* v1.add(u)
* print(v1)
* Traceback (most recent call last):
* File "/config/workspace/main.py", line 146, in <module>
* v1.add(u)
* AttributeError: 'frozenset' object has no attribute 'add'

Q52. How is frozen set different from set?

Frozen set is an immutable version of set. We can modify elements of set while we cannot modify elements of frozen set. They remain same after creation.

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

s1={1,2,3,4}

s2={3,4,5,6}

print(s1|s2)

[Running] python -u "/config/workspace/main.py"

{1, 2, 3, 4, 5, 6}

s1={1,2,3,4}

s2={3,4,5,6}

z=s1.union(s2)

print(z)

All the elements present in both sets will be returned excluding duplicates.

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

s1={1,2,3,4}

s2={3,4,5,6}

z=s1.intersection(s2)

print(z)

[Running] python -u "/config/workspace/main.py"

{3, 4}

Common elements present in both sets will be returned.

Q55. What is dictionary ibn Python?

* They are used to store data values in the form of key value pairs. Acts like a map data structure. It is ordered, changeable and do not allow duplicates.

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

* It stores data in the form of key value pair.
* Eg: d1={1:”apple”,2:”Pear”}

Q57. How can we delare a dictionary in Python?

Syntax: dict1 = {}

We can also create dictionary using dict() method.

Q58. What will the output of the following?

```

var = {}

print(type(var))

```

Output: <class 'dict'>

Returns type of variable which is dictionary in this case.

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

-Using update() method.

d1={1:"apple",2:"Pear"}

print(type(d1))

d1.update({3:"Banana"})

print(d1)

<class 'dict'>

{1: 'apple', 2: 'Pear', 3: 'Banana'}

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

d1={1:"apple",2:"Pear"}

d1.update({3:"Banana"})

d1.update({4:["plum","berry"]})

for v in d1.values():

    print(v)

[Running] python -u "/config/workspace/main.py"

apple

Pear

Banana

['plum', 'berry']

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

d1={1:"apple",2:"Pear"}

d1.update({3:"Banana"})

d1.update({4:["plum","berry"]})

for v in d1.values():

    for q in v:

        print(q)

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

* It returns the value of specific key.
* d1={1:"apple",2:"Pear"}
* d1.update({3:"Banana"})
* d1.update({4:["plum","berry"]})
* print(d1.get(2))
* [Running] python -u "/config/workspace/tempCodeRunnerFile.py"
* Pear

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

* It returns a list for all key value pairs.

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

-Removes the element with specific key.

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

-Removes last inserted key value pair from dictionary.

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

* Keys() functions are used in dictionary. It returns object that displays list of all keys in a dictionary in order of insertion.

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

* Returns a list of all values of dictionary.

Q68. What are loops in Python?

* Loops are used to iterate over a sequence ( i.e. list, tuple, set, dictionary, string)

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

* There are 3 loops in python. While, for, nested loops.

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

-For loop is used when number of iterations is known whereas while loop is used when number of iterations is not known, it iterates till the condition is true.

Q71. What is the use of continue statement?

-Continue statement is used to skip the rest of the code within the loop for current iteration only.

Loop does not terminate but continue with next iteration.

Q72. What is the use of break statement?

-Break statement terminates the loop containing it. Control flows immediately after the body of loop. Within nested loop, break statement will terminate innermost loop.

Q73. What is the use of pass statement?

* Used as a place holder for future code. When the pass statement is executed, nothing happens, but you avoid getting an error when empty code is not allowed. Empty code is not allowed in loops, function definitions, class definitions, or in if statements.

Eg: def func1():

pass

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.
* Used to iterate over a sequence of numbers.

Syntax: Range(start,stop,step)

Q75. How can you loop over a dictionary?

* We can use for loop over dictionary using two variables for key and value incrementing using dictionary’s items method.

Syntax: -

for k,v in dict1.items():

print (k," ",v)

### Coding problems

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

Code:

num= int(input("Enter Integer number -"))

def fact\_num(num):

    if num==0 or num==1:

        return 1

    else:

        return num\*fact\_num(num-1)

value=fact\_num(num)

print("Factorial of a number is", value)

output:

abc@14d159b8d117:~/workspace$ python main.py

Enter Integer number -4

Factorial of a number is 24

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

Code:

p=float(input("Enter principal amount "))

t= float(input("Enter time period "))

r= float(input("Enter rate of interest "))

S\_I=(p\*r\*t)/100

print("Simple Interest -",S\_I)

output:

Enter principal amount 10000

Enter time period 1.7

Enter rate of interest 4.7

Simple Interest - 799.0

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

Code:

p=float(input("Enter principal amount "))

t= float(input("Enter time period "))

r= float(input("Enter rate of interest "))

C\_I= p\*(1+r/100)\*\*t

print("Compound Interest -",C\_I)

output:

Enter principal amount 1200

Enter time period 9

Enter rate of interest 12

Compound Interest - 3327.694508940227

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

num=11

if num>1:

    for i in range(2,int(num/2)+1):

        if num%i==0:

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

            break

    else:

            print(num, "- number is a prime number")

else:

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

[Running] python -u "/config/workspace/main.py"

11 - number is a prime number

Q80. Write a Python program to check Armstrong Number.

sum=0

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

tmp=num

while tmp>0:

    digit= tmp%10

    sum+=digit\*\*3

    tmp//=10

if num== sum:

    print("number is armstrong")

else:

    print("number is not an armstrong")

OUTPUT:

abc@d52566f2ea2d:~/workspace$ python main.py

Enter number: 12

number is not an armstrong

abc@d52566f2ea2d:~/workspace$ python main.py

Enter number: 153

number is Armstrong

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

def fibonacci(n):

    if n<0:

        print("incorrect number")

    elif n==1 or n==2:

        return 1

    elif n==0:

        return 0

    else:

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

print(fibonacci(9))

[Running] python -u "/config/workspace/main.py"

34

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

num=[2,3,45,66,89]

def swapNum(num):

    num[0],num[-1]=num[-1],num[0]

    return num

print(swapNum(num))

[Running] python -u "/config/workspace/main.py"

[89, 3, 45, 66, 2]

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

t=2

q=3

t,q=q,t

print("value of t",t)

print("value of q",q)

[Running] python -u "/config/workspace/main.py"

value of t 3

value of q 2

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

n=int(input("Enter the number of largest element "))

l=[12,13,45,67,78,89]

l.sort()

print(l[-n:])

output:

abc@d52566f2ea2d:~/workspace$ python main.py

Enter the number of largest element 2

[78, 89]

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

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

s= input("Enter string of your choice- ")

def palinFunc(s):

    if s==s[::-1]:

        return "Palindrome",

    else:

        return "Not a palindrome"

print(palinFunc(s))

output:

abc@d52566f2ea2d:~/workspace$ python main.py

Enter string of your choice- python

Not a palindrome

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

def funct(str,i):

    a=str[ :i]

    b=str[i+1: ]

    return a+b

print(funct("BigData",5)

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

str="iNeuron big data course"

s="data"

if s in str:

    print("substring present")

else:

    print("substring not preesnt")

[Running] python -u "/config/workspace/main.py"

substring present

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

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

dict1={1:"abc",2:"qwe",3:"ben",2:"qwe"}

res = list(set(val for dic in dict1 for val in dict1.values()))

print(res)

[Running] python -u "/config/workspace/main.py"

['abc', 'ben', 'qwe']

Q91. Write a Python program to merge two dictionary.

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

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

dict2.update(dict1)

print(dict2)

[Running] python -u "/config/workspace/main.py"

{'d': 6, 'c': 4, 'a': 10, 'b': 8}

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}

```

t=[('Sachin', 10), ('MSD', 7), ('Kohli', 18), ('Rohit', 45)]

t1=dict(t)

print(t1)

[Running] python -u "/config/workspace/main.py"

{'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)]

```

t=[9, 5, 6]

result= [(i,i\*\*3)for i in t]

print(result)

[Running] python -u "/config/workspace/main.py"

[(9, 729), (5, 125), (6, 216)]

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\_tuple2 for b in test\_tuple1]

print(res)

[Running] python -u "/config/workspace/main.py"

[(7, 7), (7, 8), (2, 7), (2, 8), (7, 7), (7, 2), (8, 7), (8, 2)]

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)]

```

t=[('for', 24), ('Geeks', 8), ('Geeks', 30)]

def sortFunc(t):

    t.sort(key=lambda x: x[1])

    return t

print(sortFunc(t))

[Running] python -u "/config/workspace/main.py"

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

Q96. Write a python program to print below pattern.

```

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

```

Code:

num=5

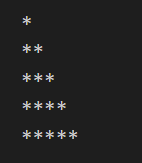
for i in range(0,num+1):

    for j in range(0,i):

        print("\*", end='')

    print('')

output:



Q97. Write a python program to print below pattern.

```

\*

\*\*

\*\*\*

\*\*\*\*

\*\*\*\*\*

```

n=5;i=0

while(i<=n):

  print(" " \* (n - i) +"\*" \* i)

  i+=1

Q98. Write a python program to print below pattern.

```

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

```

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(rows):

    for j in range(i+1):

        print(j+1, end=" ")

    print("\n")

[Running] python -u "/config/workspace/tempCodeRunnerFile.py"

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

Q100. Write a python program to print below pattern.

```

A

B B

C C C

D D D D

E E E E E

```

rows = 5

ascii\_value = 65

for i in range(rows):

    for j in range(i+1):

        alphabet = chr(ascii\_value)

        print(alphabet, end=" ")

    ascii\_value += 1

    print("\n")