# ***Python Mega Assignment***

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

Python is a general-purpose language, which means it's designed to be used in a range of applications, including data science,including data science, software and web development,automation, and generally getting stuff done.

Python is called a high level programming language because it is easy to use,runs on any platform,supports various libraries like Numpy,pandas,Matplotlib,scikit etc. Python also supports Artificial Intelligence and Machine Learning .

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

Python doesn't have any problem even if we don't declare the type of variable. It states the kind of variable in the runtime of the program.So, Python is a dynamically typed language

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

Pros of using python : python is easy to understand and easy to use as well.python is widely applicable and has a lot of libraries and it is object oriented.

Cons of using python : python has poor memory efficiency this can be problematic if you want to develop apps where you need to optimise memory use

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

Data science

AI & Machine learning

Automation

**Q5) What are variables and how can we declare them?**

Variable is a name given to a specific memory location . python has no command for declaring a variable

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

To receive information through the keyboard, Python uses the **input()** function**.**

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

By default, input returns a string. So the name and age will be stored as strings

**Q8) What is type casting?**

The conversion of one data type into another data type is called type casting.

**Q9. Can we take more than one input from the user using a single input() function? If yes, how? If not, why?**

Yes we can take multiple inputs from user with the help of split() method.lets look at small program to understand how to take multiple inputs

x, y, z = input("Enter three values: ").split()

print("Total number of students: ", x)

print("Number of passed student : ", y)

print("Number of failed student : ", z)

print()

**Q10) What are keywords?**

Python has a set of keywords that are reserved words that cannot be used as variable names, function names, or any other identifiers

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

Keywords are some predefined and reserved words in python that have special meanings. Keywords are used to define the syntax of the coding. The keyword cannot be used as an identifier, function, and variable name. All the keywords in python are written in lower case except True and False.

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

Indentation is the leading whitespace (spaces or/and tabs) before any statement in Python.

The reason why indentation is important in python is that the indentation serves another purpose other than code readability. Python treats the statements with the same indentation level (statements with an equal number of whitespaces before them) as a single code block.

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

The basic way to do output is the print statement. **print()**

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

Operators are use to perform various operations on operands or input given by user.There are several types of operators in python they are as follows:

Arithmetic operator : - (to perform arithmetic operation)

logical operator : - (to perform logical operation)

Relational operator : -(to perform comparison operation)

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

/ = (float division) is use to perform float division

/ = (integer division) is use to perform integer division

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

**iNeuroniNeuroniNeuroniNeuron**

print("iNeuron"\*4)

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

n=int(input())

if n%2==0 :

print("number is even")

else:

print("number is odd")

**Q18. What are boolean operators?**

Boolean Operators are simple words (AND, OR, NOT or AND NOT) used as conjunctions to combine or exclude keywords in a search, resulting in more focused and productive results.

AND = both condition should be true to get result as true

OR = one of the condition should be true to get output as true

NOT = to negate the result

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

**1 or 0**

**0 and 0**

**True and False and True**

**1 or 0 or 0**

**OUTPUT :- 1 (one)**

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

The if statement is a conditional statement in python means the condition defined in if block to be true it will execute code block that is there

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

**If : -**The if statement is a conditional statement in python means the condition defined in if block to be true it will execute code block that is there otherwise it won't execute that code block.

**Elif :-** The elif is short for else if. It allows us to check for multiple expressions.

**Else :-** else is used with if statement.If the condition inside the **if** is false then the else block will get executed.

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

age=int(input())

if age >= 18:

print("I can vote")

else:

print("I can't vote")

**Output :-** 4

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]**

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

sum\_ = sum(numbers)

print(sum\_)

**Output :- 1137**

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

x, y, z = input("Enter three values: ").split()

print("value of X : ",x)

print("value of Y :" ,y)

print("value of Z:" ,z)

if x>y and y>z :

print('x is greatest number')

elif y>x and y>z:

print('y is greatest number')

else:

print('z is greatest number')

**Output :- Enter three values: 1 2 3**

**value of X : 1**

**value of Y : 2**

**value of Z: 3**

**z is greatest number**

**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]**

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

for i in numbers:

if i%5==0 and i>500:

print(i)

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

String is a sequence of characters enclosed within single quotes,double quotes,triple quotes.strings are immutable means we can not update string.

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

You can access the characters in a string by referring to its index number inside square brackets []

The following example wiil show how to access 1 character of string

string ="HI HOW ARE YOU"

String[0]

Output :- 'H'

**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:])

Output :- iNeuron

**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[:8:-1])

**Output :- norueNi**

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

string ="Big Data iNeuron"

print(string[: :-1])

Output :- norueNi ataD giB

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

We can delete entire string by using del() function.let us understand by example

string ="Big Data iNeuron"

del(string)

print(string)

Output :- name 'string' is not defined

**Q32. What is an escape sequence?**

To insert characters that are illegal in a string, use an escape character.

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

There are various escape sequence available in python like Single Quote,Backslash,new line,carriage return etc

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

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

string = "iNeuron's Big Data Course"

print(string)

Output :- iNeuron's Big Data Course

We have to use double quotes if single quotes are already present in the string and vice versa

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

An ordered collection of elements enclosed within [ ] square braces.

Lists are mutable means they can be modified and lists can have all types of data in it

i.e. int , float,string,boolean etc.

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

We can create list by enclosing the elements within [ ] square braces

For example

list= ['hi', 'I am blacko',5,7.6]

print(type(list))

Output :- <class 'list'>

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

List items are indexed and you can access them by referring to the index number  
We will understand it by an example

list= ['hi', 'I am blacko','I am a cat',0.6]

print(list[:2])

Output :- ['hi', 'I am blacko']

Here we accessed two elements from the list named list

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

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

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

print(list[4][2])

Output :- iNeuron

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

list = []

l1=input()

list.append(l1)

print(list)

Output :- 1,2,3,4

['1,2,3,4']

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

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

lst.insert(2,"big")

print(lst)

Output :- ['Welcome', 'to', 'big', 'Data', 'course']

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

Tuple is an ordered collection of elements enclosed within round braces ().

Tuples are immutable means they can not be modified.

The primary difference between tuples and lists is that **tuples are immutable as opposed to lists which are mutable**. Therefore, it is possible to change a list but not a tuple.

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

A tuple in Python can be created by enclosing all the comma-separated elements inside the parenthesis ()

Tup\_1 = (1,2,3,2.4)

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

Tup\_1 = (1,2,3,2.4)

Tup\_1 [2] = 'sanket'

Tup\_1

**TypeError** : 'tuple' object does not support item assignment

Because tuples are immutable we can not add another element into the current tuple.

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

Yes two tuples can be appended

t1 = (1,2,3,2.4)

t2 = ('sanket','hello')

print( t1 + t2)

Output :- (1, 2, 3, 2.4, 'sanket', 'hello')

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

my\_tuple = tuple(input('Enter space-separated words: ').split())

print(my\_tuple)

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

Set is an unordered and unindexed collection of elements enclosed within {} curly braces because set is unordered indexing is not there in set.

Duplicates are not allowed in sets.

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

A set is created by placing all the items (elements) inside curly braces {} , separated by comma, or by using the built-in set() function.

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

set1 = set()

set1.add('iNeuron')

print(set1)

Output :- {'iNeuron'}

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

my\_set = {1, 3}

my\_set.update([2, 3, 4,5,6,7,8,9,90)

print(my\_set)

**Output :- {1, 2, 3, 4, 5, 6, 7, 8, 9, 90}**

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

Use add() function to add a single element. Whereas use update() function to add multiple elements to the set.

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

Clear removes all the elements of the set.after using the clear() function we will get an empty set.

**Q51. What is a frozen set?**

The frozenset() function returns an immutable frozenset object initialized with elements from the given iterable.Frozen set is just an immutable version of a python set object. While elements of a set can be modified at any time, elements of the frozen set remain the same after creation.

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

A frozenset is an unordered and unindexed collection of unique elements. It is immutable and it is hashable. It is also called an immutable set. Since the elements are fixed, unlike sets you can't add or remove elements from the set.

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

The union() method returns a new set with elements from the set and all other sets (passed as an argument).

A = {2, 3, 5}

B = {1, 3, 5}

print('A U B = ', A.union(B))

**Output :- A U B = {1, 2, 3, 5}**

Here in this code union acts like concatenate it joins two set

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

Intersection basically use to get common values or elements from the two sets.

A = {2, 3, 5,4,9}

B = {1, 3, 5,7,2}

print('A intersection B = ', A & B)

**Output :- A intersection B = {2, 3, 5}**

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

Dictionary is an unordered collection of key-value pairs enclosed within {} curly braces.

Dictionary is mutable means it can be modified.Because dictionary is an unordered collection of key-value pairs indexing is not there in dictionary**.**

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

A dictionary consists of a collection of key-value pairs. Each key-value pair maps the key to its associated value whereas list,tuple,set collection of individual values.

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

The first way is by using a set of curly braces, {} , and the second way is by using the built-in dict() function.

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

var = {}

print(type(var))

**Output :- <class 'dict'>**

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

f = {'Apple':10 , 'Banana': 20}

f ['Mango'] = 40

print(f)

**Output :- {'Apple': 10, 'Banana': 20, 'Mango': 40}**

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

f={'Apple': 10, 'Banana': 20, 'Mango': 40}

f.values()

**Output :- dict\_values([10, 20, 40])**

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

x={'Apple': 10, 'Banana': 20, 'Mango': 40}

print(x.items())

**Output :- dict\_items([('Apple', 10), ('Banana', 20), ('Mango', 40)])**

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

people = {1: {'name': 'John', 'age': '27', 'sex': 'Male'},

2: {'name': 'Marie', 'age': '22', 'sex': 'Female'}}

print(people)

**Output :- {1: {'name': 'John', 'age': '27', 'sex': 'Male'}, 2: {'name': 'Marie', 'age': '22', 'sex': 'Female'}}**

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

The get() method returns the value of the item with the specified key.if key is not present in the dictionary itself it will return output as none.

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

.items() is used to get key value pairs from the dictionary as tuples in a list.

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

It is used to remove key value pairs from a dictionary.

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

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?**

The keys() method returns a view object. The view object contains the keys of the dictionary, as a list. The view object will reflect any changes done to the dictionary

**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. The view object will reflect any changes done to the dictionary

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

Looping means repeating something over and over until a particular condition is satisfied. A for loop in Python is a control flow statement that is used to repeatedly execute a group of statements as long as the condition is satisfied. Such a type of statement is also known as an iterative statement.

There are two loops in python For loop and while loop.

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

There are two types of loop present in python For loop and While loop.

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

While loop repeats a statement or group of statements while a given condition is TRUE if condition is true then it executes the code block if condition gets then it will come out of that loop. It tests the condition before executing the loop body.

The for loop in Python is used to iterate over a sequence (list,tuple,string) or other iterable objects

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

Continue statement :- This command skips the current iteration of the loop. The statements following the continue statement are not executed once the Python interpreter reaches the continue statement.

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

This command terminates the loop's execution and transfers the program's control to the statement next to the loop.

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

The pass statement is used when a statement is syntactically necessary, but no code is to be executed.

**Q74. What is the use of the 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. When looping through a dictionary, the return values are the keys of the dictionary, but there are methods to return the values as well.

info = { ' name ' : ' John ' , ' age ': ' 27 ' , ' sex ': ' Male ' }

for x, y in info.items():

print(x, y)

**Output :- name John**

**age 27**

**sex Male**

***CODING PROBLEMS***

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

import math

def factorial(n):

return(math.factorial(n))

num = int(input())

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

factorial(num))

**Input**  **:-**  5

**Output :-** 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**

print("Enter the Principle Amount: ")

p = int(input())

print("Enter Rate of Interest (%): ")

r = float(input())

print("Enter Time Period: ")

t = float(input())

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

print("\nSimple Interest Amount: ")

print(si)

**Input**  **:-**Enter the Principle Amount:

34444

Enter Rate of Interest (%):

4

Enter Time Period:

5

**Output :-**Simple Interest Amount:

6888.8

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

p= 1710

t= 2

r= 3.4

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

ci=a-p

print ( ' compound Interest : ' , ci )

**Output :-** compound Interest : 118.25675999999999

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

n = int( input() )

if n % 2 == 0:

print('Number is prime')

else:

print('Not Prime')

**Input**  **:-** 9

**Output :-** Not Prime

**Input**  **:-** 8

**Output :-** Number is prime

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

Tried but was not able to solve it.

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

Tried but was not able to solve it.

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

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

temp = newList [ 0 ]

newList [ 0 ] = newList [4]

newList [ 4 ] = temp

print( newList )

**Output : -** [24, 35, 9, 56, 12]

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

def Swap\_List(sl,p1,p2):

sl[p1], sl[p2] = sl[p2], sl[p1]

return sl

List = [9, 11, 5, 3, 6, 27, 4]

p1, p2= 3,5

print(List)

print("Swapped List is:- ",Swap\_List(List,p1-1,p2-1))

**Output : - [9, 11, 5, 3, 6, 27, 4]**

**Swapped List is :- [9, 11, 6, 3, 5, 27, 4]**

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

n=int(input())

list1 = [20,80,40,30,55,56,11]

list1.sort()

print(list1)

l2=list1[-n:]

l2.reverse()

print(l2)

**Output : - 2**

**[11, 20, 30, 40, 55, 56, 80]**

**[80, 56]**

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

list1 = [ ]

for i in range(1,11):

list1.append(i)

print(list1)

sum(list1)

**Output : - [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]**

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

str\_original = 'kayak'

s2=list(s1)

s2.reverse()

str\_final="".join(s2)

if str\_final == str\_original :

print('palindrome')

else :

print('Not palindrome')

**Output : - palindrome**

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

Tried but was not able to solve it.

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

word = 'I am blacko'

x=word.find('l')

print(x)

**Output : - 6**

**If output is -1 then the word we are trying to find is not present in the string.**

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

word = 'I am blacko'

length = 3

print( [x for x in word.split() if len(x) > length ] )

**Output : - ['blacko']**

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

Tried but was not able to solve it.

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

d1 = {'Apple' : 10 , 'Banana' :30}

d2 = {'Mango':70 , 'Blueberry':120}

d1.update(d2)

print(d1)

**Output : - {'Apple': 10, 'Banana': 30, 'Mango': 70, 'Blueberry': 120}**

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

tuples = [('Key 1', 1), ('Key 2', 2), ('Key 3', 3), ('Key 4', 4), ('Key 5', 5)]

result = dict(tuples)

print(result)

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

Tried but was not able to solve it.

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

Tried but was not able to solve it.

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

Tried but was not able to solve it.

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

n=int(input())

i=1

while i<=n:

j=1

while j <= i :

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

j=j+1

print()

i=i+1

**Output : - \***

**\*\***

**\*\*\***

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

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

rows = int(input("Enter number of rows: "))

for i in range(rows):

for j in range(i+1):

print(j+1, end=" ")

print("\n")

**Output : -**

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

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

rows = int(input("Enter number of rows: "))

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")

**Output : -**

**A**

**B B**

**C C C**

**D D D D**

**E E E E E**