Python

Introduction of python:

Assignment

1. What are the types of Applications?

ANS: Web Applications → Django, Flask.

Desktop Applications → Tkinter, PyQt.

Mobile Applications → Kivy, BeeWare.

Game Applications → Pygame.

Data Science / AI / ML Applications → NumPy, Pandas, TensorFlow, PyTorch.

Automation / Scripting Applications → Task automation, bots, etc.

1. What is programing?

ANS: Programming is the process of writing instructions (code) for a computer to perform specific tasks.

1. What is python?

ANS: Python is an interpreted, object oriented, high level programing language with dynamic semantics.

1. Write a python program to check if a number is positive, negative or zero.

ANS: x = int(input(“Enter a number:”))

if x>0:

print(“positive”)

elif x<0:

print(“negative”)

else:

print(“zero”)

1. Write a python program to get factorial number of given numbers.

ANS: import math

X = int(input(“Enter a number:”)

Print(“factorial of”,x,”is”,math.factorial(x))

1. Write a python program to get Fibonacci series of given range.

ANS: def Fibonacci(n):

  list1 = []

  x = 0

  y = 1

  for i in range(n):

    list1.append(x)

    x , y = y, x+y

  return list1

1. How memory is managed in python?

ANS: Python uses automatic memory management, it has a private heap where all object and data structured are stored.

1. What is the purpose of continuing statement in python?

ANS: it skips the current interation and jump to next interation of the loop.

1. Write python program that swap two number with temp variable and without temp variable.

ANS: # With temp variable

a = 10

b = 20

print("Before swap: a =", a, "b =", b)

temp = a

a = b

b = temp

print("After swap (with temp): a =", a, "b =", b)

# Without temp variable

x = 5

y = 15

print("\nBefore swap: x =", x, "y =", y)

x, y = y, x

print("After swap (without temp): x =", x, "y =", y)

1. Write a python program to find whether a given number is even or odd, print out an appropriate message to the user.

ANS:

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

if x%2 == 0:

  print("even number")

else:

  print("odd number")

1. Write a Python program to test whether a passed letter is a vowel or not.

ANS:

x = input("Enter a letter:- ").lower()

if x in['a','e','i','o','u']:

    print("Vowel")

else:

  print("consonants")

1. Write a Python program to sum of three given integers. However, if two values are equal sum will be zero.

ANS:

def sum\_three(a,b,c):

if a==b or b==c or a==c:

return 0

return a+b+c

1. Write a Python program that will return true if the two given integer values are equal or their sum or difference is 5.

ANS: def myfun(x,y)

If x==y or a+b == 5 or abs(a-b == 5):

return True

else:

return False

1. Write a python program to sum of the first n positive integers.

ANS: def myfun(n):

Return n\*(n+1)//2

1. Write a python program to calculate the length of a string.

ANS:

X = (10,12,14,15)

Print(len(X))

1. Write a Python program to count the number of characters (character frequency) in a string.

ANS:

1. What are negative indexes and why are they used?

ANS: in pyhton, negative indexes allows you to access elements from the end of a list or string.

-1 refers to the last element

-2 to the second last element, and so on.

18. Write a Python program to count occurrences of a substring in a string.

ANS: string = input("Enter a string: ")

substring = input("Enter a substring to count: ")

count = string.count(substring)

print(f"The substring '{substring}' occurs {count} times in the given string.")

1. Write a Python program to count the occurrences of each word in a given sentence.

ANS: x = input(“Enter a sentence: ”)

words = x.lower().split()

word\_count = “{}

for word in words:

word = word.strip(“.,!?;:”)

word\_count[word] = word\_count.get(word,0)+1

print (“\nword occurrences:”)

for word, count in word \_count.items():

print(f”{word}: {count}”)

1. Write a Python program to get a single string from two given strings, separated by a space and swap the first two characters of each string.

ANS: def myfun(str1, str2):  
 new\_str1 = str2[:2]+str1[:2]

New\_str2 = str1[:2]+str2[:2]

return new\_str1 + “ “ + new\_str2

print(myfun(“abc”,”xyz”))

1. Write a Python program to add 'in' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'ly' instead if the string length of the given string is less than 3, leave it unchanged.

ANS: def myfun(x):

If len(x)<3:

Print(x)

elif X.endswith(“ing”):

print(X + “ly”)

else:

print(X + “ing”)

1. Write a Python function to reverses a string if its length is a multiple of 4.

ANS: def myfun(x):

if x%4==0:

print(x[::-1])

else:

print(x)

1. Write a Python program to get a string made of the first 2 and the last 2 chars from a given a string. If the string length is less than 2, return instead of the empty string.

ANS: def first\_last\_two(s):

if len(s) < 2:

return ""

return s[:2] + s[-2:]

1. Write a Python function to insert a string in the middle of a string.

ANS:

def myfun(original, insert):

x = len(original)//2

return original[:x] + insert + original[x:]

1. What is List? How will you reverse a list?

ANS: A list is mutable means we can change in list.

For reverse a list :

list1 = [10,20,30,40,50]

list1.reverse()

print(list1)

1. How will you remove last object from a list?

ANS : For remove last object I use POP method.

1. Suppose list1 is [2, 33, 222, 14, and 25], what is list1 [- 1]?

ANS : [-1] is 25.

1. Differentiate between append () and extend () methods?

ANS: append and extend add new value in list that we want to add in but append add entire element as a single item to the list and extend add each element of the inerbale individually to the list.

For example:

list1 = [1,2,3,4]

list1.append(5,6)

print(list1)

out put is [1,2,3,4,[5,6]]

For example(extend):

list1 = [1,2,3,4]

list1.extend(5,6)

print(list1)

out put is [1,2,3,4,5,6]

1. Write a Python function to get the largest number, smallest num and sum of all from a list.

ANS:

list1 = [20,40,60,80]

print(“largest: ”, max(list1))

print(“smallest: ”, min(list1))

print(“Total of list1: ”, sum(list1))

1. How will you compare two lists?

ANS: I compare two lists using ‘==’.

For example:

List1 = [1,2,3,4]

List2 = [1,2,3,4]

Print(list1 == list2)

Output is ‘True’

1. ) Write a Python program to count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings.

ANS:

def match\_words(words):

count 0

for w in words:

if len(w) >= 2 and w[0] == w[-1]:

count += 1

return count

words = ['abc', 'xyz', 'aba', '1221']

print(match\_words(words))

Output: 2 (because 'aba' and '1221')

1. Write a Python program to remove duplicates from a list.

ANS :

list1 = [10,20,30,20,30]

print(“set:”, set(list1)

output is [10,20,30]

1. Write a Python program to check a list is empty or not.

ANS: list1 = []

If len(list1) == 0:

print(“list is empty”)

else:

print(“list is not empty”)

1. Write a Python function that takes two lists and returns true if they have at least one

common member.

ANS: def common\_member(list1, list2):

For x in list1:

If x in list2:

Return true

Return fasle

1. Write a Python program to generate and print a list of first and last 5 elements where the values are square of numbers between 1 and 30.

ANS:

List1 = [x\*\*2 for x in range(31)]

Print(list1[:5])

print(list1[:-5]

1. Write a Python function that takes a list and returns a new list with unique elements of the first list.

ANS: list1 = [10,20,20,30,30,30,40]

print(set.(list1)

1. Write a Python program to convert a list of characters into a string.

ANS: str = (p,y,t,h,o,n)

Str1 = ‘’.join(str)

Print(str1)

1. Write a Python program to select an item randomly from a list.

ANS: import random

list1 = [1,2,3,4,5]

print(random.choice(list1))

1. Write a Python program to find the second smallest number in a list.

ANS :

list1 = [10,30,90,40]

list1.sort()

print(list1[1])

1. Write a Python program to get unique values from a list.

ANS: list1 = [1,2,2,3,4,4,5]

Unique\_value = list(set(list1))

Print(unique\_value)

1. Write a Python program to check whether a list contains a sub list.

ANS:

def is\_sublist(main\_list, sub\_list):

    n, m = len(main\_list), len(sub\_list)

    for i in range(n - m + 1):

        if main\_list[i:i+m] == sub\_list:

            return True

    return False

main = [1, 2, 3, 4, 5, 6]

sub = [3, 4, 5]

print(is\_sublist(main, sub))   # True

print(is\_sublist(main, [2, 5]))  # False

1. Write a Python program to split a list into different variables.

ANS: list1 = [10,20,30]

a, b, c = [10,20,30]

print(a)

print(b)

print(c)

1. What is tuple? Difference between list and tuple

ANS: Tuple an ordered collection of items, like a list, but immutable.

Here is main difference between list and tuple is immutable means we can’t change in tuple and list is mutable means we can change in list.

1. Write a Python program to create a tuple with different data types.

ANS: tuple = (78,“darshan”,True, “solanki”)

print(tuple)

1. Write a Python program to unzip a list of tuples into individual lists.

ANS: list and tuple = [(1=“a”), (2=“b”), (3=“c”]

Number , letters = zip(\*list\_of\_tuples)

Print(list(number))

Print(list(letter))

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

ANS: list\_of\_tuple = [(“a”=1), (“b”=2), (“c”=3)]

dict = dict(list\_of\_tuple)

print(dict)

1. How will you create a dictionary using tuples in python?

ANS: x = {(“darshan”=1),(“solanki”=2)}

d = dict(x)

print(d)

1. Write a Python script to sort (ascending and descending) a dictionary by value.

ANS: my\_dict = {“a”:1,}

1. Write a Python script to concatenate following dictionaries to create a new one.

ANS: d1 = {1: "A", 2: "B"}

d2 = {3: "C", 4: "D"}

d3 = {5: "E"}

result = {\*\*d1, \*\*d2, \*\*d3}

print(result)

1. Write a Python script to check if a given key already exists in a dictionary.

ANS : dict = {“a”, “b”, “c”}

Key = “b”

If key in dict:

Print(“key exists”)

Else:

Print(“key does not exists”)

1. How Do You Traverse Through a Dictionary Object in Python?

ANS: dict = {‘a’:1, ‘b’:2, ‘c’:3}

for x in dict:

print(“key:”,k, “value:”, d[k]

for x, y in dict.items():

print(x, “=>”, y)

1. How Do You Check the Presence of a Key in A Dictionary?

ANS: dict = {“a”:1, “b”:2}

Print(“a” in d) # True

Print(“z” in d) #false

1. Write a Python script to print a dictionary where the keys are numbers between 1 and 15.

ANS: dict = { x for x in range(1,16) }

Print(dict)

1. Write a Python program to check multiple keys exists in a dictionary .

ANS: dict = {“a”, “b”, “c”, “d”}

Keys = {“a”, “b”}

If all(x in dict for x in keys):

Print(“all keys exists”)

Else:

Print(“some keys are missing”)

1. Write a Python script to merge two Python dictionaries

ANS: dict1 : {“a”: 10, “b”: 20}

dict2 : {“c”:30, “d”: 40}

merged = {\*\*dict1, \*\*dict2}

print(merged)

1. Write a Python program to map two lists into a dictionary Sample output: Counter ({'a': 400, 'b': 400,’d’: 400, 'c': 300}).

ANS: x = {“a”, “b”, “c”, “d”}

Y = {400, 400, 300, 400}

mapped = dict(zip(x, y))

Print(mapped)

1. Write a Python program to find the highest 3 values in a dictionary

ANS: dict1 = {"a": 300, "b": 200, "c": 500, "d": 900, "e": 700}

top3 = sorted(dict1.items(), key=lambda x: x[1], reverse=True)[:3]

print("Top 3 values:", top3)

1. Write a Python program to combine values in python list of dictionaries. Sample data: [{'item': 'item1', 'amount': 400}, {'item': 'item2', 'amount': 300}, o {'item': 'item1', 'amount': 750}] Expected Output: • Counter ({'item1': 1150, 'item2': 300})

ANS: from collections import Counter

data = [{'item': 'item1', 'amount': 400},

{'item': 'item2', 'amount': 300},

{'item': 'item1', 'amount': 750}]

result = Counter()

for d in data:

result[d['item']] += d['amount']

print(result)

1. Write a Python program to create a dictionary from a string. Note: Track the count of the letters from the string.

ANS: sample\_string = 'w3resource'

result = {}

for char in sample\_string:

result[char] = result.get(char, 0) + 1

print(result)

1. Sample string: 'w3resource' Expected output: • {'3': 1,’s’: 1, 'r': 2, 'u': 1, 'w': 1, 'c': 1, 'e': 2, 'o': 1}

ANS: As per above

1. Write a Python function to calculate the factorial of a number (a nonnegative integer)

ANS: import math

Print(math.factorial(8))

1. Write a Python function to check whether a number is in a given range.

ANS: def in\_range(num, start, end)

Return start <= num <= end

1. Write a Python function to check whether a number is perfect or not.

ANS: def is\_perfect(n):

If n < 2:

Return false

X = [i for I in range (1, n) if n%i == 0]

Return sum(x) == n

Print(is\_perfect(8)) #true

1. Write a Python function that checks whether a passed string is palindrome or not.

ANS: def is\_palindrome(s):

return s == s[::-1]

print(is\_palindrome("radar")) # True

print(is\_palindrome("hello")) # False

1. How Many Basic Types of Functions Are Available in Python?

ANS: Inbuilt function(len , if, etc…)

user define function(lambda, defining function)

1. How can you pick a random item from a list or tuple?

ANS : import random

List1 = [1,2,3,4,5]

Print(random.choice(list1))

1. How can you pick a random item from a range?

ANS: import random

Print(random.choice(range(10)))

1. How can you get a random number in python?

ANS: import random

Print(random.randint(1,20))

1. How will you set the starting value in generating random numbers?

ANS: import random

random.seed(10)

print(random.randint(1,20))

1. How will you randomize the items of a list in place?

ANS: list1 = [1,2,3,4,5]

Random.shuffle(list1)

Print(list1)

1. What is File function in python? What are keywords to create and write file.

ANS: in python, the open() function is used to work with files.

* Keywords to create and write file

‘r’ read , ‘w’ write , ‘a’ append, ‘x’ files and other.

1. Write a Python program to read an entire text file.

ANS: with open(“sample.text”, “r”) as f:

x = f.read()

print(x)

1. Write a Python program to append text to a file and display the text.

ANS: with open(“sample.txt”, “a”) as f:

f.write(“\nThis is new line.”)

with open(“sample.txt”, “r”) as f:

print(f.read())

1. Write a Python program to read first n lines of a file.

ANS: n = 3

With open(“sample.txt”, “r”) as f:

for I in range(n)

Print(f.readline().strip())

1. Write a Python program to read last n lines of a file.

ANS: n = 3

With open(“sample.txt”, “r”) as f:

lines = f.readlines()

print(lines[-n:])

1. Write a Python program to read a file line by line and store it into a list.

ANS: with open(“sample.txt”, “r”) as f:

Lines = f.readlines()

Print(lines)

1. Write a Python program to read a file line by line store it into a variable.

ANS: with open(“sample.txt”, “r”) as f:

Content = f.read()

Print(content)

1. Write a python program to find the longest words.

ANS: with open(“sample.txt”, “r”)as f:

Word = f.read().split()

longest\_word = max(words = key,len)

Print(“longest word:”, longest\_word)

1. Write a Python program to count the number of lines in a text file.

ANS: with open(“sample.txt”, “r”)as f:

line\_count = sum(1 for line in f)

print(line\_count)

1. Write a Python program to count the frequency of words in a file.

ANS: with open(“sample.txt”, “r”) as f:

Word = f.read().split()

Word\_freq = counter(words)

Print(word\_freq)

1. Write a Python program to write a list to a file .

ANS: list = [“banana”, “apple”, “cherry”]

With open(“list.txt”, “w”)as f:

For i in list:

f.write(i + “\n”)

1. Write a Python program to copy the contents of a file to another file.

ANS: with open("sample.txt", "r") as f1, open("copy.txt", "w") as f2:

f2.write(f1.read())

1. Explain Exception handling? What is an Error in Python?

ANS: exception handling in python is very similar to java.

But whereas in java exception are caught by catch clauses, we have statement introduced by an “except” keyword in pyhton.

Eg : n = int(input("Please enter a number: "))

Please enter a number: 23.50 Exception occurs like

ValueError: invalid literal for int() with base 10: '23.5'.

1. How many except statements can a try-except block have? Name Some built-in exception classes:

ANS: example of built in exceptions:

Zerodivisioerror, valueeroor, typerror, filenotfounderror, indexerror, keyerror

1. When will the else part of try-except-else be executed?

ANS: The else block executes only if no exception occurs in the try block.

1. Can one block of except statements handle multiple exception?

ANS: try:

Num = int(“abc”)

Except(valueerror, typerror)as e:

Print(“Error occurred:”, e)

1. When is the finally block executed?

ANS: The finally block executes always, whether an exception occurs or not.

1. What happens when „1‟== 1 is executed?

ANS: it returns false , because one is a string ans the other is an integer.

1. How Do You Handle Exceptions with Try/Except/Finally in Python? Explain with coding snippets.

ANS:

try:

num = int(input(“Enter a number: ”))

print(“100/num =”, 100/num)

except valueError:

print(“invalid input, enter a number”)

except zerodivisionError:

print("can not divide by zero”)

finally:

print("execution completed”)

1. Write python program that user to enter only odd numbers, else will raise an exception.

ANS: try:

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

    if num % 2 == 0:

        raise ValueError("Even number entered! Only odd numbers allowed.")

    print("You entered an odd number:", num)

except ValueError as e:

    print("Error:", e)