**:PYTHON Q & A – GUVI:**

**Q1: Differentiate between lists and Tuple:**

**Ans:** Lists and tuples are both data structure in python.

* Lists are mutable, meaning their elements can be changed.
* Tuples are immutable, meaning they cannot be changed once created.
* Lists are defined with “[ ]” square brackets.
* Tuples are defined with “( )” paranthesis.

**Q2: What are negative Indices?**

**Ans:** Negative indices are used to access elements from the end of a sequence.

**EX:** -1 refers to last element.

my\_list = [1, 2, 3, 4]

print(my\_list[-1])

o/p : [4]

**Q3: How long can an identifier be?**

**Ans:** Python identifier(variables) can be of any length.

**Q4: How would you convert a string into lower case?**

**Ans:**  By using function lower().

my\_string = 'SAGAR'

print(my\_string.lower())

o/p : sagar

**Q5: What is pass statement in python.**

**Ans:**  It is a null operator, it is used as placeholder in code where statement is syntactically required but you have nothing to write.

def my\_funtion():

    pass

**Q6: Explain the help() and dir() functions in python.**

**Ans:** help() : invokes built-in help system, which can be used to get documentation of module, class, funtionn & keywords.

Dir(): Returns a list of valid attribute of an obk=ject or the names in current page.

**Q7:How do you get list of all keys in dictionary?**

**Ans:**  by using “keys()’ method we can get all the lists of keys.

**EX:** my\_dict.keys()

**Q8: what is slicing?**

**Ans:** slicing is a way to extract a portion of sequence by specifying start, stop and/or step (index).

my\_list = [1, 2, 3, 5]

print(my\_list[0:4])

o/p : [1, 2, 3, 4]

index for above list = [0, 1, 2, 3]

but while retrieving data wee should write last index +1 to get the last record, because the operation is index – 1 while printing.

**Q9: How do you declare a comment in python?**

**Ans:**  by using “#”.

# this is how to add single line comment.

**Q10: How will you check if all the characters in string are alphanumeric?**

**Ans:**  by using “ isalnum() “.

my\_string = "sagar1234"

print(my\_string.isalnum())

o/p: **True**

**Q11: How would you capitalize first letter of a string?**

**Ans:** by using my\_string.captalize().

my\_string = "sagar"

print(my\_string.capitalize())

o/p: Sagar

**Q12: with python, how do you find out which directory you are currently in?**

**Ans:**  by using “ os.getcwd “.

**Q13: How to insert an object @ a given index in python?**

**Ans:** by using insert().

my\_list = [1, 2, 3, 4]

my\_list.insert(4, "apple")

print(my\_list)

o/p: [1, 2, 3, 4, 'apple']

**Q14: how do you reverse a list?**

**Ans:**  =we can reverse a list by using reverse method or by using slicing [::-1].

my\_list = [1, 2, 3, 4]

my\_lsit = my\_list.reverse()

print(my\_list)

o/p: [4, 3, 2, 1]

my\_list = [1, 2, 3, 4]

print(my\_list[::-1])

o/p: [4, 3, 2, 1]

**Q15: what is python interpreter prompt?**

**Ans:** The python intrperter prompt is “ >>> “

**Q16: How does a function return values?**

**Ans:**  By suing “ return “ statement.

def number(a, b):

    sum = a+b

    return sum

print(number(1, 2))

o/p: 3

**Q17: How do you define a block in pyhton?**

**Ans:**  In python a block of code is defined by indentation.

def number(a, b):

    sum = a+b

    return sum

print(number(1, 2))

**Q18: why do you need break and continue in python?**

**Ans:**  break: Terminated the loop.

Continue: Skips the rest of code inside the loop for the current iteration and moves to the next iteration

numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

for num in numbers:

    if num % 2 == 0:

        continue

    if num > 7:

        break

    print(num)

**Q19: In one line, show us how you’ll get the max alphabet character from a string.**

**Ans:** By using max().

my\_string = "mnbvcxz"

print(max(my\_string))

o/p: z

**Q20: Can you name 10 built-in functions in python and explain each in brief.**

**Ans:**

* Print() : outputs data to the console.
* Len() : Return the length of an object.
* Type() : Retuen the type of an object.
* Int() : Convert a values to an integer.
* Float() : Converts a value to a flaot.
* Str() : Converts a value to a string.
* List() : Creates a new list.
* Dict() : Creates a new dict.
* Set() : creates a set
* Tuple() : Creates a tuple.

**Q21: How will convert a list into a string.**

**Ans:** Using Join method.

mylist = [1, 2, 3, 4, 6]

to\_string = "".join(str(item) for item in mylist)

print(to\_string)

o/p: 12346

**Q22: how do you remove duplicate elements in a list?**

my\_list = [1, 2, 3, 2, 4, 1, 5]

unique\_list = list(set(my\_list))

print(unique\_list)

**o/p: [1, 2, 3, 4, 5]**

**Q23: What is dictionary in python?**

**Ans:** It is a data structure In python, which stores data in key : values pair.

**Q24: explain the //, %, \*\* operators in python**

print(2//2)

print(2%2)

print(2\*\*2)

**o/p : 1**

**0**

**4**

**Q25: What do you know about relational operators in python.**

**Ans:**

* == 🡪 Equals to
* != 🡪 Not equals to
* > 🡪 Greater than
* < 🡪 Less than
* >= 🡪 Greater than or equal to
* <= 🡪 less then or equals to

**Q26: What are the assignment operators in python.**

**Ans:**

* = 🡪 Assigning variable
* += 🡪 Adding to the given variable. Instead of writing ( x = x+1) we can write ( x+=1)
* -= 🡪
* \*= 🡪
* /= 🡪
* // 🡪
* %= 🡪 , \*\*= 🡪 , |= 🡪

**Q27: Explain logical operators in python.**

**Ans:**  They are used to combine two or more conditional statements.

Ex: and, or, not in

**Q28: Tell us about bitwise operator in python.**

**Ans:** Operates on individual bits of an integer

And(&) : This operator compares the bits of 2 numbers and return 1 if both bits are 1 or 0

Ex: 5 🡪 0101

3 🡪 0011

0001 🡪 1

Or(|) : This operator compares bits of 2 numbers and returns 1 if either or both bits are 1.

Ex: 5 🡪 0101

3 🡪 0011

0111 🡪7

Xor(^) : This operator compares the bits of 2 integers and returns 1 if either but not both bits are 1.

Ex: 5 🡪 0101

3 🡪 0011

0110 🡪6

Not(~) : This operator flips the bits of number changing all the 0 to 1 and 1 to 0

Ex: ~0101

1010 🡪 -6

Left shift (“<<”) : shifts the bits of number to the left specified number of position

Right shift (“ >>”) : shifts the number to right by the specified number of position.

**Q29: what datatypes does python supports?**

**Ans:** int, float, str, complex, bool, list, tuple, dict, frozenset, bytes, bytearray, memoryview.

**Q30: How does you convert int ot string in python?**

**Ans:**  using int() function.

num = 42

string = str(num)

print(type(string))

**Q31: How do you take input in python?**

**Ans:** using input() function.

a= input('sagar')

print(a)

o/p: sagar

**Q32: What is recursion?**

**Ans:**  when a function calls itself to solve a smaller instance of problem.

**Q33: What does zip() function does?**

**Ans:** Combines multiple iterable into a single iterator of tuples

**Q34: How do you calculate length of string?**

**Ans:** By using len() function.

my\_string = "sagar"

print(len(my\_string))

o/p: 5

**Q35: Explain python list comprehension?**

**Ans:** Python lsiut comprehension is a concise way to create lists based on exisiting sequence or iterables. Iy provides a compact syntax for generating lists, making the code move redeable and efficient compared to using traditional for loops.

**syntax: [expression for item in items if condition ]**

Ex: Creating a list of squares.

numbers = [1, 2, 3, 4]

squares = [x\*\*2 for x in numbers]

print(squares)

**o/p: [1, 4, 9, 16]**

Ex: using condition: filtering even number

numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9]

even\_num = [x for x in numbers if x % 2 == 0]

print(even\_num)

EX: extracting upper-case letters from a string.

my\_string = "I Am Sagar And I am Learning Python"

capital = [x for x in my\_string if x.isupper()]

print(capital)

o/p: ['I', 'A', 'S', 'A', 'I', 'L', 'P']

Ex: flattening nested list:

nested\_list = [[1, 2], [3, 4], [5, 6]]

flat\_list = [num for sublist in nested\_list for num in sublist]

print(flat\_list)

o/p: [1, 2, 3, 4, 5, 6]

Ex: condition expression list comprehension:

numbers = [1, 2, 3, 4, 5, 6, 7, 8]

filtered = [x if x % 2 == 0 else x for x in numbers]

print(filtered)

**Q36: how do you get all the values from a python dictonary?**

**Ans:**  Using values() function.

**Q37: what if you toggle case for a python string?**

**Ans:** use swapcase() function.

my\_String = 'Hello World'

print(my\_String.swapcase())

o/p: hELLO wORLD

**Q38: write a code to print everthing in a string except the spaces.**

**Ans:**

my\_String = 'Hello World'

no\_space = "".join(my\_String.split())

print(no\_space)

**o/p: HelloWorld**

**Q39: now print the above string 5 times a row?**

**Ans:**

print((no\_space +"\n") \* 5)

* **HelloWorld**
* **HelloWorld**
* **HelloWorld**
* **HelloWorld**
* **HelloWorld**

**Q40: what is purpose of bytes in python?>**

**Ans:**  Returns a new byte object, which is a ummutable sequence of bytes.

**Q41: What is control flow statement?**

**Ans:** Directs order of execution of a statement in a programm.

**Ex:** for, while, if

**Q42: create a new list to convert the following list of numbers string to a list of numbers.**

**Ans:** numbers = ["1", "2", "3"]

to\_int = [int(num) for num in numbers]

print(to\_int)

[1, 2, 3]

**Q43: given the first and last name of all employees in your firm, what data type will you use to store?**

**Ans:**  Tuples(). As the name of employee is most likely to be unchanged.

**Ex:** employee\_name = [(“sagar”, “k”), (“john”, “d”)]

**Q44: how do you work with numbers other than those in decimal number system?**

**Ans:** use bin(), oct(), hex() for binary, octal, hexadecimal.

**Q45: How many arguments can range() function takes?**

**Ans:** range() function can take up to 3 arguments.

**syntax:** range( start, stop, step)

n = 10

for i in range(0, n, 2):

    print(i)

* o/p: 0

2

4

6

8

**Q46: What is pep 8?**

**Ans:** Python environmental proposal (8), provides guidelines for writing clean and readable python code.

**Q47: What is the best code you can write to swap numbers?**

**Ans:** a, b = 0, 1

print(f"a is {a} and b is {b}")

a, b = b, a

print(f"a is {a} and b is {b}")

**o/p:**

a is 0 and b is 1

a is 1 and b is 0

**Q48: How can you declare multiple assignments in one statements?**

**Ans:** a, b, c = 1, 2, 3

**Q49: If you stuck in a infinite loop how will you break out of it?**

**Ans:** use “ ctrl +c “ or break statement in code block.

**Q50: What are the benefits of python?**

**Ans:**  Easy to learn, readable, has a large standard library, supports multiple paradigm (way of structuring and organizing code to solve problems.) and has strong community.

**Q51: What are python modules? Name some.**

**Ans:** files containing python code.

**Ex:** os, math, datetime, sys, random.

**Q52: Local variables and global variables in python.**

**Ans: local variable:** devclared within a function and accessible only within that function.

**Global variable:** declared outside function and can be accessed throughout the programm.

**Q53: What is a lambda function?**

**Ans:** is a small line function in python that can be defined without name.

**Ex:** sum\_number = lambda x, y : x+y

Print(sum(2,4))

**Q54: What is self in python?**

**Ans:** Refers to instance of the class in method definition.

**Q55: how does the break, continue and pass work?**

for i in range(1, 11):

    if i==5:

        break

    print(i)

1

2

3

4

for i in range(1, 11):

    if i % 2 == 0:

        continue

    print(i)

1

3

5

7

9

def my\_funbtion():

    pass

**Q56: What does [::-1] do?**

**Ans:**  Reverse the given sequence by iterating from the last index(-1)

**Q57: How can you generate random number in python?**

**Ans:** By using random module.

Random.randint(0, 10)

**Q58: What is difference between range() and xrange()?**

**Range(): 🡪**  returns list of numbers which can consume lot of memory for large ranges.

🡪Generates a entire sequence @ once and store them in a list.

**Xrange():** 🡪 returns xrange objects which generates on the flow as they are needed, making more memory efficient

**In python 3 , range() behaves like xrange() function.**

**Q59: How do you write comments in python?\**

**Ans:**

# this is single line comment

"""this is a

multiline comment"""

**Q60: how to add value in python?**

**Ans:** By using append() or extend()

**Q61: What are python libraries? Name few of them.**

**Ans:** Collection of modules.

Ex: numpy, scikit-learn, pandas, plotly etc

**Q62: How are classed created in python?**

**Ans:** by declaring a class.

**Ex:** **class my\_class():**

**Q63: What does a object do?**

**Ans:** returns a few featureless object.

**Q64: write a programm to return Fibonacci series.**

**Ans:**

def fibonnacii(n):

    a,b = 0, 1

    while a<n:

        print(a, end = " ")

        a,b = b, a+b

fibonnacii(10)

**0 1 1 2 3 5 8**

**Q65: write a python program to check if a sequence is palindrome.**

**Ans:**

def is\_palindrome(seq):

    return seq == seq[::-1]

print(is\_palindrome([1,1, 1, 1]))

**Q66: write a python code to check whether the number is prime.**

**Ans:**

def is\_prime(n):

    if n<1:

        return False

    for i in range(2, int(n\*\*0.5)+1):

        if n%1 == 0:

            return False

    return True

print(is\_prime(4))

**Q67: Write a one line that will cound number of capital letters in a line.**

**Ans:**

print(sum(1 for line in open("D:\\Copper modelling\\sample.txt") for char in line if char.isupper()))

**Q68: Write a sorting algorithim for numerical dataset.**

**Ans:**

def bubble\_sort(arr):

    n = len (arr)

    for i in range(n):

        for j in range(0, n-i-1):

            if arr[j] > arr[j+1]:

                arr[j], arr[j+1] = arr[j+1], arr[j]

**Q69: What is python path?**

**Ans:**  env variable which tells the python intrepeter where to locate the module files importer into programm.