Python Interview Questions and Answers

✅ 1. Compress String (Run-Length Encoding) – Variation

Input: aaabbca
Output: 3a2b1c1a

```
s = "aaabbca"

result = ""

count = 1

for i in range(len(s)):

    if i < len(s)-1 and s[i] == s[i+1]:

        count += 1

    else:

        result += str(count) + s[i]

        count = 1

print(result)
```

✅ 2. Reverse each word in a sentence

Input: "hello world"
Output: "olleh dlrow"

```
s = "hello world"

words = s. split ()

result = " ".join(word[::-1] for word in words)

print(result)
```

✅ 3. Find first non-repeating character

Input: "aabbcddde"
Output: c

```
s = "aabbcddde"

for ch in s:

    if s.count(ch) == 1:
        print(ch)

        break
```

✅ 4. Count vowels in a string

Input: "engineering"
Output: e=3, i=2

```
s = "engineering"

vowels = "aeiou"

freq = {}


for ch in s:

    if ch in vowels:

        freq[ch] = freq.get(ch, 0) + 1


print(freq)
```

✅ 5. Remove duplicates but keep order

Input: "banana"
Output: "ban"

```
s = "banana"

result = ""

for ch in s:

    if ch not in result:

        result += ch

print(result)
```

✅ 6. Check if two strings are anagrams

Input: "silent", "listen"
Output: True

```
s1 = "silent"
```

```
s2 = "listen"

print(sorted(s1) == sorted(s2))
```

✅ 7. Frequency of each character

Input: "malayalam"
Output: {'m':2,'a':4,'l':2,'y':1}

```
s = "malayalam"
freq = {}

for ch in s:
    freq[ch] = freq.get(ch, 0) + 1

print(freq)
```

✅ 8. Find max occurring character

Input: "success"
Output: s

```
s = "success"
freq = {}

for ch in s:
    freq[ch] = freq.get(ch, 0) + 1

print(max(freq, key=freq.get))
```

✅ 9. Swap two numbers without third variable

```
a = 5
b = 10
```

```
a, b = b, a
print(a, b)
```

✅ 10. Reverse a string using loop (interview favourite)

```
s = "suresh"
rev = ""

for ch in s:
    rev = ch + rev

print(rev)
```

✅ 11. Palindrome check (string)

Input: "radar" — **Output:** True

```
s = "radar"
print(s == s[::-1])
```

✅ 12. Check if number is prime

Input: 29 — **Output:** True

```
n = 29
if n <= 1:
    print(False)
else:
    for i in range(2, int(n**0.5)+1):
        if n % i == 0:
            print(False)
            break
    else:
        print(True)
```

✅ 13. Fibonacci (n-th) using iteration

Input: n=7 — **Output:** 13 (sequence: 0,1,1,2,3,5,8,13)

```
n = 7
a, b = 0, 1
for _ in range(n):
    a, b = b, a + b
print(a)
```

✅ 14. Remove duplicates from list (preserve order)

Input: [1,2,2,3,1,4] — **Output:** [1,2,3,4]

```
lst = [1,2,2,3,1,4]
seen = set()
res = []
for x in lst:
    if x not in seen:
        seen.add(x)
        res.append(x)
print(res)
```

✅ 15. Two-sum (indices) — O(n)

Input: nums=[2,7,11,15], target=9 — **Output:** [0,1]

```
nums = [2,7,11,15]; target = 9
d = {}
for i, v in enumerate(nums):
    if target - v in d:
        print([d[target-v], i]); break
    d[v] = i
```

✅ 16. Merge two sorted lists (like merge step)

Input: [1,3,5], [2,4,6] — **Output:** [1,2,3,4,5,6]

```
a, b = [1,3,5], [2,4,6]
i=j=0; out=[]
while i<len(a) and j<len(b):
    if a[i] < b[j]:
        out.append(a[i]); i+=1
    else:
        out.append(b[j]); j+=1
out.extend(a[i:]); out.extend(b[j:])
print(out)
```

✅ 17. Check balanced parentheses

Input: "([ ])" — **Output:** True

```
s = "([ ])".replace(" ", "")
pairs = {'(':')','[':']','{':'}'}
stack = []
for ch in s:
    if ch in pairs:
        stack.append(ch)
    else:
        if not stack or pairs[stack.pop()] != ch:
            print(False); break
else:
    print(not stack)
```

✅ 18. Flatten nested list (single level)

Input: [[1,2],[3,4],5] — **Output:** [1,2,3,4,5]

```
nested = [[1,2],[3,4],5]
flat = []
for item in nested:
    if isinstance(item, list):
        flat.extend(item)
    else:
        flat.append(item)
print(flat)
```

✅ 19. Count words in sentence

Input: "hello hello world" — **Output:** {'hello':2,'world':1}

```
s = "hello hello world"
freq = {}
for w in s.split():
    freq[w] = freq.get(w,0) + 1
print(freq)
```

✅ 20. Check if list is palindrome

Input: [1,2,3,2,1] — **Output:** True

```
lst = [1,2,3,2,1]
print(lst == lst[::-1])
```

✅ 21. Find kth largest (using heapq)

Input: nums=[3,2,1,5,6,4], k=2 — **Output:** 5

```
import heapq
nums=[3,2,1,5,6,4]; k=2
print(heapq.nlargest(k, nums)[-1])
```

✅ 22. Generate primes up to n (Sieve of Eratosthenes)

Input: n=15 — **Output:** [2,3,5,7,11,13]

```
n = 15
is_prime = [True]*(n+1)
is_prime[0]=is_prime[1]=False
p=2
while p*p<=n:
    if is_prime[p]:
        for i in range(p*p, n+1, p):
            is_prime[i]=False
    p+=1
print([i for i,v in enumerate(is_prime) if v])
```

✅ 23. Rotate string by k (left rotate)

Input: s="abcdef", k=2 — **Output:** "cdefab"

```
s = "abcdef"; k = 2
k %= len(s)
print(s[k:] + s[:k])
```

✅ 24. Singleton pattern (simple OOP interview Q)

Output: Demonstrates single instance

```
class Singleton:
    _instance = None
    def __new__(cls, *args, **kwargs):
        if not cls._instance:
            cls._instance = super().__new__(cls)
        return cls._instance

a = Singleton(); b = Singleton()
print(a is b)  # True
```

✅ 25. Generator: infinite Fibonacci (yield)

Usage: print first 8 numbers — **Output:** 0 1 1 2 3 5 8 13

```
def fib_gen():
    a, b = 0, 1
    while True:
        yield a
        a, b = b, a + b

g = fib_gen()
for _ in range(8):
    print(next(g), end=" ")
```

✅ 26. Count Frequency of Elements in a List Using a Dictionary

data = ['apple', 'banana', 'apple', 'orange', 'banana', 'apple']

Ans. # Create an empty dictionary

```
frequency = {}
# Loop through each element in the list
for item in data:
    if item in frequency:
        frequency[item] += 1   # Increase count if item exists
    else:
        frequency[item] = 1    # Initialize count if new item
print(frequency)
```

✅ Output:

```
{'apple': 3, 'banana': 2, 'orange': 1}
```

✅ 27. Variable = ‘suresh’ reverse a string with out using reverse and use for loop

Ans.

```
variable = 'suresh'
reversed_string = ''
for char in variable:
    reversed_string = char + reversed_string # add each char in front
print(reversed_string)
```

✅ 28. num = [15, 50, 5, 9, 20] find the 3rd largest number

```
num = [15, 50, 5, 9, 20]
third_largest = sorted(num, reverse=True)[2]
print("3rd largest number:", third_largest)
```

OR

```
def third_larg(nums):
    nums = sorted (nums, reverse = True)
    return nums[2]
num = [15,50,5,9,20]
print("third largest number is ::",third_larg(nums))
```

✅ 29. Find the 3rd Largest Number in a List

```
numbers = [15, 50, 5, 9, 20]

numbers.sort(reverse=True)

print("3rd largest:", numbers[2])

# Output: 3rd largest: 15
```

✅ 30. Reverse a String Using a Loop

```
text = "suresh"

reversed_text = ''

for ch in text:

    reversed_text = ch + reversed_text

print(reversed_text)

# Output: hserus
```

🧩 ✅ 31. Find Duplicatess Elements in a List

```
data = [1, 2, 3, 4, 2, 3, 5, 1]

duplicates = []

for i in data:

    if data.count(i) > 1 and i not in duplicates:

        duplicates.append(i)

print("Duplicates:", duplicates)

# Output: Duplicates: [1, 2, 3]
```

✅ 32. Altrimatik --list=[1, 2, [3, 4], 5, [6, 7, 8]] - single list

O/P = lst = [1,2,3,4,5,6,7,8]

```
--data = [1, 2, [3, 4], 5, [6, 7, 8]]

result = []


for item in data:

    if isinstance (item, list):
        result.extend(item)
    else:
        result.append(item)
print(result)
```

Explanation:-

if isinstance(item, list):

isinstance(item, list) returns True if item is a list

It returns False if the item is not a list.

Item	**Is it a list?**	**Result**
1	❌ No	else block
2	❌ No	else block
[3, 4]	✅ Yes	extend block
5	❌ No	else block
[6, 7, 8]	✅ Yes	extend block

If it is a list → add its elements to result

```
result.extend(item)
```

- extend() adds **each element** of the list individually.

Example:
result.extend([3,4]) → adds 3 and 4 into result, not the whole list.

---

6 If it is NOT a list → add it normally

```
else:
    result.append(item)
```

append() adds the value as a **single element**

Senario :Altrimatik (Company) :-

✅ **33.write a Python program to conduct match one country with other countries**

list= ['USA','India','Australia','Pakistan','South frica']

Ans . countries = ['USA', 'India', 'Australia', 'Pakistan', 'South Africa']

```
for i in range(len(countries)):
    for j in range(len(countries)):
        if i != j:     # avoid matching the same country with itself
            print(countries[i], "matches with", countries[j])
```

OR

```
countries = ['USA', 'India', 'Australia', 'Pakistan', 'South Africa']
for i in range(len(countries)):
    for j in range(i+1, len(countries)):
        print(countries[i], "matches with", countries[j])
```

✅ 34. Altrimatik (Company) :-

Q. Sorting a list of dictionaries in Python:

```
students = [
   {"name": "Alice", "age": 20, "grade": "A"},
   {"name": "Bob", "age": 22, "grade": "C"},
   {"name": "Charlie", "age": 19, "grade": "B"},
   {"name": "David", "age": 20, "grade": "A+"},
   {"name": "Eve", "age": 21, "grade": "B-"},
]
# --- Sorting by 'age' (ascending order) –
```

Ans .

```
sorted_students = sorted(students, key=lambda x: x['age'])
print(sorted_students)
```

✅ 35. Check if a String is a Palindrome

```
word = "madam"
if word == word[::-1]:
    print("Palindrome")
else:
    print("Not Palindrome")
# Output: Palindrome
```

🧩 ✅ 36. Count Vowels in a String

```
text = "hello world"
vowels = "aeiou"
count = 0
for ch in text:
    if ch in vowels:
        count += 1
print ("Vowel count:", count)
# Output: Vowel count: 3
```

🧩 ✅ 37. Find Even and Odd Numbers in a List

```
numbers = [1, 2, 3, 4, 5, 6]
even = [n for n in numbers if n % 2 == 0]
odd = [n for n in numbers if n % 2 != 0]
print("Even:", even)
print("Odd:", odd)
# Output: Even: [2, 4, 6], Odd: [1, 3, 5]
```

🧩 ✅ 38. Remove Duplicates from a List

```
data = [1, 2, 3, 2, 4, 3, 5]
unique = list(set(data))
print(unique)
# Output: [1, 2, 3, 4, 5]
```

🧩 ✅ 39. Swap Two Variables Without a Temp Variable

```
a, b = 10, 20
a, b = b, a
print(a, b)
# Output: 20 10
```

🧩 ✅ 40. Find Maximum and Minimum in a List

```
data = [12, 45, 2, 10, 34, 22]

print("Max:", max(data))

print("Min:", min(data))

# Output: Max: 45, Min: 2
```

🧩 ✅ 41. Find Common Elements Between Two Lists

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

list2 = [3, 4, 5, 6]

common = list(set(list1) & set(list2))

print("Common elements:", common)

# Output: [3, 4]
```

🧩 ✅ 42: Print Fibonacci Sequence

```
n = 10

a, b = 0, 1

for _ in range(n):

    print(a, end=" ")

    a, b = b, a + b

# Output: 0 1 1 2 3 5 8 13 21 34
```

🧩 ✅ 43: Find Factorial of a Number

```
num = 5

fact = 1

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

    fact *= i

print("Factorial:", fact)

# Output: 120
```

🧩 ✅ 44: Count Occurrence of Each Character in a String

```
text = "banana"

count = {}

for ch in text:

    count[ch] = count.get(ch, 0) + 1

print(count)

# Output: {'b': 1, 'a': 3, 'n': 2}
```

🧩 ✅ 45: Merge Two Dictionaries

```
dict1 = {'a': 10, 'b': 20}

dict2 = {'c': 30, 'd': 40}

merged = {**dict1, **dict2}

print(merged)

# Output: {'a': 10, 'b': 20, 'c': 30, 'd': 40}
```

🧩 ✅ 46.Count Words in a Sentence

```
sentence = "Python is fun and Python is powerful"

words = sentence.split()

count = {}

for w in words:

    count[w] = count.get(w, 0) + 1

print(count)

# Output: {'Python': 2, 'is': 2, 'fun': 1, 'and': 1, 'powerful': 1}
```

🧩

✅ 47: Find the Second Highest Number in a List

```
data = [10, 35, 50, 20, 35]

unique = list(set(data))

unique.sort()
```

```
print("2nd highest:", unique[-2])

# Output: 35
```

✅ 48. Sort Dictionary by Its Values

```
data = {'apple': 3, 'banana': 1, 'orange': 2}

sorted_data = dict(sorted(data.items(), key=lambda x: x[1]))

print(sorted_data)

# Output: {'banana': 1, 'orange': 2, 'apple': 3}
```

✅ 49. Merge Two Lists into a Dictionary

```
keys = ['name', 'age', 'city']

values = ['John', 25, 'Hyderabad']

merged = dict(zip(keys, values))

print(merged)

# Output: {'name': 'John', 'age': 25, 'city': 'Hyderabad'}
```

✅ 50. Find All Prime Numbers Between 1 and 50

```
for num in range(2, 51):

    for i in range(2, num):

        if num % i == 0:

            break

    else:

        print(num, end=" ")

# Output: 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47
```

✅ 51.: Find Common Keys in Two Dictionaries

```
d1 = {'a': 1, 'b': 2, 'c': 3}

d2 = {'b': 5, 'c': 7, 'd': 9}

common_keys = list(d1.keys() & d2.keys())
```

```
print(common_keys)

# Output: ['b', 'c']
```

✅ 52: Remove Punctuation from a String

```
import string

text = "Hello, how are you?"

clean = ".join(ch for ch in text if ch not in string.punctuation)

print(clean)

# Output: Hello how are you
```

✅ 53: Find Numbers Divisible by Both 3 and 5

```
nums = [i for i in range(1, 51) if i % 3 == 0 and i % 5 == 0]

print(nums)

# Output: [15, 30, 45]
```

✅ 54: Find Maximum Occurring Character in a String

```
text = "mississippi"

freq = {}

for ch in text:

    freq[ch] = freq.get(ch, 0) + 1

max_char = max(freq, key=freq.get)

print("Max occurring character:", max_char)

# Output: i
```

-
- ✅✅ **55: Flatten a Nested List**

```
nested = [[1, 2], [3, 4, 5], [6]]

flat = [x for sublist in nested for x in sublist]

print(flat)

# Output: [1, 2, 3, 4, 5, 6]
```

✅ 56:: Find Missing Numbers from a Sequence

```
nums = [1, 2, 4, 6, 7, 9]

missing = [i for i in range(min(nums), max(nums)) if i not in nums]

print("Missing numbers:", missing)

# Output: [3, 5, 8]
```

🧩 ✅ 57: Calculate the Sum of Digits of a Number

```
num = 12345

total = sum(int(d) for d in str(num))

print("Sum of digits:", total)

# Output: 15
```

🧩 ✅ 58: Count Uppercase and Lowercase Letters

```
text = "HelloWorld"

upper = sum (1 for ch in text if ch.isupper())

lower = sum (1 for ch in text if ch.islower())

print("Uppercase:", upper, "Lowercase:", lower)

# Output: Uppercase: 2 Lowercase: 8
```

🧩 ✅ 59:Find Intersection of Two Sets

```
set1 = {1, 2, 3, 4}

set2 = {3, 4, 5, 6}

print("Intersection:", set1 & set2)

# Output: {3, 4}
```

🧩 ✅ 60:Find the Longest Word in a Sentence

```
sentence = "Python makes coding enjoyable and powerful"

words = sentence.split()
```

```
longest = max(words, key=len)

print("Longest word:", longest)

# Output: enjoyable
```

Advanced Python Scenario Programs

🧩 ✅ 61: Read a File and Count Number of Lines

```
# Suppose "sample.txt" has some text lines

with open("sample.txt", "r") as file:

    lines = file.readlines()

print("Total lines:", len(lines))
```

✅ *Use case:* Count records in a log file.

🧩 ✅ 62: Write a List of Strings to a File

```
lines = ["apple\n", "banana\n", "orange\n"]

with open("fruits.txt", "w") as file:

    file.writelines(lines)

print("File written successfully!")
```

✅ *Use case:* Write processed data to a report file.

🧩 ✅ 63: Read JSON Data from a File

```
import json


json_data = '{"name": "John", "age": 30, "city": "Hyderabad"}'

data = json.loads(json_data)

print(data["city"])

# Output: Hyderabad
```

✅ *Use case:* Reading configuration or API response data.

🧩 ✅ 64: Sort List of Dictionaries by a Key

```
employees = [
    {"name": "Ravi", "age": 28},
    {"name": "Anil", "age": 22},
    {"name": "Kiran", "age": 35}
]

sorted_employees = sorted(employees, key=lambda x: x["age"])
print(sorted_employees)
```

✅ *Use case:* Sorting employee or transaction data.

🧩 ✅ 65: Filter Records Using lambda and filter()

```
numbers = [10, 25, 30, 45, 50, 60]
divisible_by_10 = list(filter(lambda x: x % 10 == 0, numbers))
print(divisible_by_10)
# Output: [10, 30, 50, 60]
```

✅ *Use case:* Filtering data from datasets.

🧩 ✅ 66: Handle File Not Found Exception

```
try:
    with open("unknown.txt", "r") as file:
        print(file.read())
except FileNotFoundError:
    print("File not found. Please check the filename.")
```

✅ *Use case:* Robust file reading with safe handling.

🧩 ✅ 67: Count Each Word’s Frequency in a File

```
from collections import Counter
```

```
with open("text.txt", "r") as file:
    words = file.read().split()
word_count = Counter(words)
print(word_count)
```

✅ *Use case:* Word count in logs or reports (like wc in Linux).

🧩 ✅ 68: Remove Empty Strings from a List

```
data = ["apple", "", "banana", "", "orange"]
cleaned = list(filter(None, data))
print(cleaned)
# Output: ['apple', 'banana', 'orange']
```

✅ *Use case:* Cleaning invalid data entries.

🧩 ✅ 69: Find Employee with Highest Salary

```
employees = [
    {"name": "Ravi", "salary": 45000},
    {"name": "Kiran", "salary": 52000},
    {"name": "Anil", "salary": 48000}
]

highest = max(employees, key=lambda x: x["salary"])
print("Highest Paid:", highest["name"])
# Output: Kiran
```

✅ *Use case:* Ranking records by numeric value.

🧩 ✅ 70: Convert CSV Data into Dictionary

```
import csv

with open("employees.csv", "r") as file:
    reader = csv.DictReader(file)
    for row in reader:
        print(row)
```

✅ *Use case:* Reading structured data files into Python objects.

🧩 ✅ 71: Find Unique Words from a Sentence

```
sentence = "Python is powerful and Python is easy"
unique_words = set(sentence.lower().split())
print(unique_words)
# Output: {'and', 'python', 'is', 'easy', 'powerful'}
```

✅ *Use case:* Removing duplicates in text or logs.

🧩 ✅ 72: Create a Dictionary from Two Lists (Only Even Numbers)

```
keys = [1, 2, 3, 4]
values = [10, 20, 30, 40]
even_dict = {k: v for k, v in zip(keys, values) if k % 2 == 0}
print(even_dict)
# Output: {2: 20, 4: 40}
```

✅ *Use case:* Conditional mapping in data pipelines.

🧩 ✅ 73 Handle Division by Zero Error

```
try:
    result = 10 / 0
except ZeroDivisionErrors:
    result = None
    print("Cannot divide by zero.")
```

✅ *Use case:* Safe numeric operations in calculations.

🧩 ✅ 74: Calculate Average Value from a Dictionary

```
marks = {"Math": 80, "Science": 90, "English": 70}

avg = sum(marks.values()) / len(marks)

print("Average marks:", avg)

# Output: 80.0
```

✅ *Use case:* Aggregating key-value pairs.

🧩 ✅ 75:Find Top N Elements from a List

```
nums = [10, 50, 20, 80, 30, 90]

N = 3

top_n = sorted(nums, reverse=True) [: N]

print("Top 3 elements:", top_n)

# Output: [90, 80, 50]
```

🧩 ✅ 76. What is the difference between list, tuple, and set?

Type	Ordered	Mutable	Allows Duplicates
List	✅ Yes	✅ Yes	✅ Yes
Tuple	✅ Yes	❌ No	✅ Yes
Set	❌ No	✅ Yes	❌ No

🧩 ✅ 77. What is the difference between == and is?

Answer:

- == → compares values
- is → compares object identity (memory location)

🧩 ✅ 78.What is the difference between shallow and deep copy?

Answer:

- **Shallow copy** → copies only top-level structure.
- **Deep copy** → copies entire structure recursively.

🧩 ✅ 79. What are generators?

Answer:
Generators are functions that yield items one at a time using yield, allowing lazy evaluation.

```
def gen():
    for i in range(3):
        yield i
```

You can iterate over it:

```
for i in gen():
    print(i)
```

🧩 ✅ 80.What is the difference between mutable and immutable objects?

Mutable can change (list, dict, set); immutable cannot (tuple, str, int)

Small Programs

🧩 ✅ 81. Reverse a String

```
s = "hello"

print(s[::-1])
```

👉 Output: olleh

Alternate:

```
rev = ""

for ch in s:

    rev = ch + rev

print(rev)
```

🔹 🧩 ✅ 82. Check Palindrome

```
s = "madam"

if s == s[::-1]:

    print("Palindrome")

else:

    print("Not Palindrome")
```

🧩 ✅ 83. Reverse an Integer

```
num = 12345
```

```
rev = 0
while num > 0:
    rev = rev * 10 + num % 10
    num //= 10
print(rev)
```

🧩 ✅ 84.Count Vowels in a String

```
s = "interview"
vowels = "aeiouAEIOU"
count = sum(1 for ch in s if ch in vowels)
print("Vowel count:", count)
```

🧩 ✅ 85.Find Factorial of a Number

```
n = 5
fact = 1
for i in range(1, n + 1):
    fact *= i
print(fact)
```

Or using recursion:

```
def fact(n):
    return 1 if n == 0 else n * fact(n - 1)
```

🧩 ✅ 87. Fibonacci Series

```
a, b = 0, 1
for _ in range(10):
    print(a, end=" ")
    a, b = b, a + b
```

🧩 ✅ 88. Check Prime Number

```
n = 13
if n > 1:
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            print("Not Prime")
            break
    else:
        print("Prime")
else:
    print("Not Prime")
```

🧩 ✅ 89 .Find Largest Element in a List

```
nums = [10, 25, 5, 80, 50]
print(max(nums))
```

🧩 ✅ 89.Count Occurrences of Each Character

```
s = "banana"
freq = {}
for ch in s:
    freq[ch] = freq.get(ch, 0) + 1
print(freq)
```

🧩 ✅ 90. Check Armstrong Number

(Armstrong = sum of cubes of digits = number itself)

```
n = 153
sum_ = sum(int(d) ** 3 for d in str(n))
print("Armstrong" if sum_ == n else "Not Armstrong")
```

🧩 ✅ 91.Swap Two Numbers Without Temp

```
a, b = 5, 10

a, b = b, a

print(a, b)
```

🧩 ✅ 92.Find Second Largest in a List

```
nums = [10, 40, 30, 20]

nums.sort()

print("Second largest:", nums[-2])
```

🧩 ✅ 93.Check Anagram

```
s1 = "listen"

s2 = "silent"

print(sorted(s1) == sorted(s2))
```

🧩 ✅ 94.Find Missing Number in a List

```
nums = [1, 2, 3, 5]

n = len(nums) + 1

missing = n * (n + 1) // 2 - sum(nums)

print("Missing number:", missing)
```

🧩 ✅ 95. Count Words in a String

```
s = "Python interview practice"

print(len(s.split()))
```

🧩 ✅ 96. Find Even and Odd Numbers in a List

```
nums = [1, 2, 3, 4, 5, 6]

even = [x for x in nums if x % 2 == 0]

odd = [x for x in nums if x % 2 != 0]

print("Even:", even)
print("Odd:", odd)
```

🧩 ✅ 97.Sum of Digits of a Number

```
n = 1234
print(sum(int(d) for d in str(n)))
```

🧩 ✅ 98.Check String is Numeric

```
s = "12345"
print(s.isdigit())
```

🧩 ✅ 99.Print Pattern (Star Pyramid)

```
rows = 5
for i in range(1, rows + 1):
    print("*" * i)
```

🧩 ✅ 100.Remove Duplicates from List

```
nums = [1, 2, 2, 3, 4, 4, 5]
print(list(set(nums)))
```

🧩 ✅ 101.Find the Largest of Three Numbers

```
a, b, c = 10, 25, 15
print(max(a, b, c))
```

🧩 ✅ 102.Sort a List Without Using sort()

```
nums = [5, 2, 9, 1, 3]
for i in range(len(nums)):
    for j in range(i + 1, len(nums)):
        if nums[i] > nums[j]:
            nums[i], nums[j] = nums[j], nums[i]
```

```
print(nums)
```

🔹 🧩 ✅ 103.Count Frequency of Words in a Sentence

```
s = "this is a test this is only a test"
words = s.split()
freq = {}
for w in words:
    freq[w] = freq.get(w, 0) + 1
print(freq)
```

🧩 ✅ 104.Check if String is Pangram (contains all alphabets)

```
import string
s = "The quick brown fox jumps over the lazy dog"
print(set(string.ascii_lowercase).issubset(s.lower()))
```

🔹 25. Find All Prime Numbers up to N

```
n = 20
for i in range(2, n + 1):
    for j in range(2, int(i ** 0.5) + 1):
        if i % j == 0:
            break
    else:
        print(i, end=" ")
```

🔹 🧩 ✅ 105.Find Common Elements in Two Lists

```
a = [1, 2, 3, 4, 5]
b = [4, 5, 6, 7]
print(list(set(a) & set(b)))
```

🧩 ✅ 106. Find the Sum of All Even Numbers in a List

```
nums = [1, 2, 3, 4, 5, 6]

print(sum(x for x in nums if x % 2 == 0))
```

🧩 ✅ **107.**Check if Two Strings are Rotation of Each Other

```
s1 = "abcde"

s2 = "deabc"

print(len(s1) == len(s2) and s2 in s1 + s1)
```

🧩 ✅ 108.Print Duplicate Elements from a List

```
nums = [1, 2, 3, 2, 4, 1, 5]

dups = [x for x in set(nums) if nums.count(x) > 1]

print(dups)
```

🧩 ✅ 109.Check if a Number is Perfect

(A perfect number = sum of its divisors = number itself)

```
n = 28

sum_ = sum(i for i in range(1, n) if n % i == 0)

print("Perfect" if sum_ == n else "Not Perfect")
```

🧩 ✅ 110.Find GCD (Greatest Common Divisor)

```
import math

print(math.gcd(12, 18))
```

Or manually:

```
a, b = 12, 18

while b:

    a, b = b, a % b

print(a)
```

🧩 ✅ 111.Find LCM (Least Common Multiple)

```
import math

a, b = 12, 18

print(a * b // math.gcd(a, b))
```

🧩 ✅ 112.Remove Special Characters from a String

```
import re

s = "Hello@World#2025!"

print(re.sub (r'[^A-Za-z0-9 ]+', '', s))
```

🧩 ✅ 113.Check if Number is Power of 2

```
n = 16

print(n > 0 and (n & (n - 1)) == 0)
```

🧩 ✅ 114. Find All Substrings of a String

```
s = "abc"

for i in range(len(s)):

    for j in range(i + 1, len(s) + 1):

        print(s[i:j])
```

🧩 ✅115. Find Second Minimum Number in List

```
nums = [10, 5, 8, 20, 3]

nums = list(set(nums))

nums.sort()

print("Second smallest:", nums[1])
```

🧩 ✅ 116. Merge Two Dictionaries

```
d1 = {'a': 1, 'b': 2}

d2 = {'c': 3, 'd': 4}
```

```
merged = {**d1, **d2}

print(merged)
```

🧩 ✅ 117. Find First Non-Repeating Character

```
s = "aabbcde"

for ch in s:

    if s.count(ch) == 1:

        print(ch)

        break
```

🧩 ✅ 118. Check Leap Year

```
year = 2024

if (year % 400 == 0) or (year % 100 != 0 and year % 4 == 0):

    print("Leap year")

else:

    print("Not leap year")
```

🧩 ✅ 119. Flatten a Nested List

```
nested = [[1, 2], [3, 4], [5, 6]]

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

print(flat)
```

🧩 ✅ 120 . Count uppercase, lowercase, digits, special characters

Input: "HeLLo123@"
Output: Upper=3 Lower=2 Digits=3 Special=1

```
s = "HeLLo123@"

upper = lower = digit = special = 0


for ch in s:

    if ch.isupper():
        upper += 1
    elif ch.islower():
        lower += 1
    elif ch.isdigit():
        digit += 1
    else:
        special += 1
```

✅ 121. Find second largest number

Input: [10, 20, 5, 30, 25]
Output: 25

```
nums = [10, 20, 5, 30, 25]
unique = list(set(nums))
unique.sort()
print(unique[-2])
```

✅ 123. Move all zeros to end

Input: [0,1,0,3,12]
Output: [1,3,12,0,0]

```
arr = [0,1,0,3,12]
result = [x for x in arr if x != 0] + [0]*arr.count(0)
print(result)
```

✅ 124. Print characters that appear more than once

Input: "programming"
Output: r, g, m

```
s = "programming"
for ch in set(s):
    if s.count(ch) > 1:
        print(ch, end=" ")
```

✅ 125. Longest word in a sentence

Input: "Python is super powerful"
Output: powerful

```
s = "Python is super powerful"

print(max(s.split(), key=len))
```

✅126. Sum of digits in a number

Input: n = 987
Output: 24

```
n = 987

print(sum(int(d) for d in str(n)))
```

✅ 127. Remove all vowels from string

Input: "beautiful"
Output: "btfl"

```
s = "beautiful"

vowels = "aeiouAEIOU"

print("".join(ch for ch in s if ch not in vowels))
```

✅ 128. Find common elements in two lists

Input: [1,2,3,4] and [3,4,5,6]
Output: [3,4]

```
a = [1,2,3,4]

b = [3,4,5,6]

print(list(set(a) & set(b)))
```

✅ 129. Remove specific character

Input: "banana", remove "a"
Output: "bnn"

```
s = "banana"

remove = "a"

print(s.replace(remove, ""))
```

✅ 130. Check if substring exists

Input: "hello", "ell"
Output: True

```
s = "hello"

sub = "ell"

print(sub in s)
```

✅ 131. Convert list of strings to integers

Input: ["1","2","3"]
Output: [1,2,3]

```
lst = ["1","2","3"]

print(list(map(int, lst)))
```

✅ 132. Calculate factorial (loop)

Input: 5
Output: 120

```
n = 5

fact = 1

for i in range(1, n+1):

    fact *= i

print(fact)
```

✅ 133. Check if list is sorted

Input: [1,2,3,4]
Output: True

```
lst = [1,2,3,4]

print(lst == sorted(lst))
```

✅ 134. Convert list to comma-separated string

Input: ['a', 'b', 'c']
Output: "a,b,c"

```
lst = ['a','b','c']

print(",".join(lst))
```

✅ 135. Find index of element (manual search)

Input: [10,20,30], target=20
Output: 1

```
arr = [10,20,30]

target = 20


for i, v in enumerate(arr):

    if v == target:

        print(i)

        break
```

✅ 136. Reverse words but keep order

Input: "I love Python"
Output: "I evol nohtyP"

```
s = "I love Python"

print(" ".join(word[::-1] for word in s.split()))
```

✅ 137. Find character with highest frequency

Input: "mississippi"
Output: i

```
s = "mississippi"

freq = {}

for ch in s:

    freq[ch] = freq.get(ch, 0) + 1

print(max(freq, key=freq.get))
```

✅ 138. Remove all duplicates characters

Input: "engineering"
Output: "enginr"

```
s = "engineering"

res = ""

for ch in s:

    if ch not in res:

        res += ch

print(res)
```

✅ 139. Replace spaces with hyphens

Input: "a b c d"
Output: "a-b-c-d"

```
s = "a b c d"

print(s.replace(" ", "-"))
```

✅ 140. Print unique elements from list

Input: [1,2,2,3,4,4,5]
Output: [1,3,5]

```
lst = [1,2,2,3,4,4,5]

print([x for x in lst if lst.count(x) == 1])
```

✅ 141.Sum only even numbers

Input: [1,2,3,4,5]
Output: 6

```
lst = [1,2,3,4,5]

print(sum(x for x in lst if x % 2 == 0))
```

✅ 142. Count frequency of each word (case insensitive)

Input: "Hello hello HELLO world"
Output: {'hello': 3, 'world':1}

```
s = "Hello hello HELLO world".lower()

freq = {}
```

```
for w in s.split():
    freq[w] = freq.get(w,0) + 1
print(freq)
```

✅ 143. Remove punctuation from string

Input: "hi!!! hello??"
Output: "hi hello"

```
import string
s = "hi!!! hello??"
for p in string.punctuation:
    s = s.replace(p, "")
print(s)
```

✅ 144. Get common characters between two strings

Input: "apple", "grapes"
Output: ['a','p','e']

```
s1 = "apple"
s2 = "grapes"
print(list(set(s1) & set(s2)))
```

✅ 145. Check if number is Armstrong

Input: 153
Output: True

```
n = 153
digits = list(map(int, str(n)))
print(sum(d**len(digits) for d in digits) == n)
```

✅ 146. Merge dictionaries (add values if keys repeat)

Input: {"a":5,"b":2}, {"a":3,"c":4}
Output: {"a":8,"b":2,"c":4}

```
d1 = {"a":5,"b":2}
```

```
d2 = {"a":3,"c":4}

out = d1.copy()


for k,v in d2.items():

    out[k] = out.get(k, 0) + v

print(out)
```

✅ 146. Print only digits from a string

Input: "ab12cd34"
Output: 1234

```
s = "ab12cd34"

print("".join(ch for ch in s if ch.isdigit()))
```

✅ 147. Sort dictionary by values

Input: {"a":3,"b":1,"c":2}
Output: [('b',1), ('c',2), ('a',3)]

```
d = {"a":3,"b":1,"c":2}

print(sorted(d.items(), key=lambda x: x[1]))
```

✅ 148. Find missing number in list (1 to n)

Input: [1,2,4,5]
Output: 3

```
lst = [1,2,4,5]

n = len(lst) + 1

print(n*(n+1)//2 – sum(lst))
```

✅ 149. Remove None values from list

Input: [1,None,2,None,3]
Output: [1,2,3]

```
lst = [1,None,2,None,3]

print([x for x in lst if x is not None])
```

✅ 150. Reverse integer

Input: 1234
Output: 4321

```
n = 1234

print(int(str(n)[::-1]))
```

✅ 151. Check if two lists are identical (order matters)

Input: [1,2,3] and [1,2,3]
Output: True

```
a = [1,2,3]

b = [1,2,3]

print(a == b)
```

✅ 152. Print duplicate numbers

Input: [4,5,6,4,7,5]
Output: 4 5

```
lst = [4,5,6,4,7,5]

print([x for x in set(lst) if lst.count(x) > 1])
```

✅ 153.. Get max & min without built-in functions

Input: [3,1,4,2]
Output: Max=4 Min=1

```
lst = [3,1,4,2]

mx = mn = lst[0]


for x in lst:

    if x > mx: mx = x

    if x < mn: mn = x


print(mx, mn)
```

✅ 154. Count words that start with vowel

Input: "apple is an awesome fruit"
Output: 3s

```
s = "apple is an awesome fruit"

vowels = "aeiou"

print(sum(1 for w in s.split() if w[0].lower() in vowels))
```

Big Query Interview Questions and Answers

✅✅ 1: rank each order by amount with in the same country using rankdency rank, row number

Customers

customer_id	first_name	last_name	age	country
1	John	Doe	31	USA
2	Robert	Luna	22	USA
3	David	Robinson	22	UK
4	John	Reinhardt	25	UK
5	Betty	Doe	28	UAE

Orders

order_id	item	amount	customer_id
1	Keyboard	400	4
2	Mouse	300	4
3	Monitor	12000	3
4	Keyboard	400	1
5	Mousepad	250	2

```
Ans . select c.country,
o.order_id,
o_items,
o.amount,
c.first_name ,
rank() over( partition by c.country order by o.amount desc ) as amount_rank from
order O
 join Customersc
ON o.customer_id = c.customer_id 4order by c.country
amount_rank
```

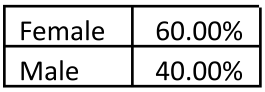
✅✅ 2: each order show the previous and the next order amount

```
select
c.country,
o.order_id,
o.item,
o.amount,
lead(o.amount) over( partition by c.country order by o.amount ) as next_order_amount
from Orders o
join Customers c
on o.customer_id = c.customer_id
order by c.country,
o.amount
```

✅✅ 3: Questions:-

ID	NAME	GENDER
1	Alice	Female
2	Bob	Male
3	Carol	Female
4	David	Male
5	Eve	Female

Output :-



Female	60.00%
Male	40.00%

<u>Query</u>

```
select gender,round((count(*) * 100.0 /

 select count(*) from emp )), 2) as percentage

 from emp

group by gender
```