***Python Interview Questions***

1. D/B list and Tuple in python?

Ans :- List: A list is a mutable, ordered collection of elements.

* It is Mutable, defined with []

Tuple: A **tuple** is an **immutable**, ordered collection of elements.

* You cannot modify a tuple after it is created

1. How do set helps in removing duplicates from the list?

Ans :- A set only stores **unique values**. When you convert a list to a set, duplicates are **automatically removed**.

Ex :- list1 = [1, 2, 2, 3]

unique = set(list1) # {1, 2, 3}

1. Why are dictionaries faster than lists for lookups?

Ans :- Dictionaries use a **hash table** for key access (O(1)), whereas lists use **sequential search** (O(n)).

1. How are python strings immutable if they allow operations like replace() ?

Ans :- replace() returns a new string. Original string is not changed.

1. How do you merge two dictionaries in python latest version?

Ans :- Use ( | ) operator (Python 3.9+). It means Combines two sets and removes duplicates OR It compares bits of two numbers and returns 1 if either bit is 1.

1. Explain dictionary comprehension with example?

Ans :- Compact way to create dictionaries using a loop.

Ex :- squares = {x: x\*x for x in range(5)} # {0:0, 1:1, 2:4, 3:9, 4:16} .

1. what are nested dictionaries and how do they you access inner values?

Ans :- A dictionary within another dictionary.

Ex: data = {'emp1': {'name': 'Alice', 'age': 30}}

print(data['emp1']['name']) # Alice .

1. how can you convert the list of tuples in to a dictionary?

Ans:- Use dict() constructor.

Ex: pairs = [('a', 1), ('b', 2)]

d = dict(pairs) # {'a': 1, 'b': 2} .

1. how would you handle missing Key in a dictionary ?

Ans:- Use .get() or defaultdict.

Ex: d = {'x': 10}

print(d.get('y', 0)) # Returns 0 if 'y' not found .

1. can we use a list as a key in a dictionary? why and why not?

Ans:- **No**, lists are mutable and unhashable. Only **immutable types** (like tuples) can be keys. Ex: # d = {[1, 2]: "value"} # Error .

1. what happens if you try add a mutable object to set?

Ans:- Raises TypeError because set elements must be hashable .

Ex: # s = set([[1, 2]]) # Error: list is mutable .

1. write a code to find common elements in two lists using set operations?

Ans :- a = [1, 2, 3]

b = [2, 3, 4]

common = list(set(a) & set(b)) # [2, 3] .

1. what is the difference between is and ==for string ? what is the syntax?

Ans :- == compares values, is compares identity .

Ex: a = "hello"

b = "hello"

print(a == b) # True

print(a is b) # Might be True due to interning .

1. How does slicing works in tuple and string? what are the syntax?

Ans :- Syntax: [start:stop:step]

Ex: s = "abcdef"

print(s[1:4]) # 'bcd'

t = (1, 2, 3, 4)

print(t[::-1]) # (4, 3, 2, 1) .

1. How can you reserve a string or list in python using slicing?

Ans:- Use [::-1] it means

| **Part** | **Meaning** |
| --- | --- |
| : | take the full sequence |
| : | up to the end |
| -1 | step backward (reverse order) |

Ex:

s = "python"

print(s[::-1]) # 'nohtyp'

l = [1, 2, 3]

print(l[::-1]) # [3, 2, 1] .