

1. What is Comprehension in Python and use of it?

Comprehension in Python is a concise way to create sequences like lists, sets, or dictionaries. It enhances code readability and reduces the lines of code using a single line syntax.

2. What are the 4 types of comprehensions in Python?

The four types are: List Comprehension, Set Comprehension, Dictionary Comprehension, and Generator Expression.

3. What is List Comprehension in Python and its Advantages?

List comprehension is a concise way to create lists. Advantages include better readability, less code, and often better performance.

4. How do you use list comprehensions to filter elements?

By adding a conditional statement: `[x for x in iterable if condition]`.

5. How to Find the squares of numbers from 1 to 10?

```
[x**2 for x in range(1, 11)]
```

6. How to create new list that contains only the even numbers from the given list?

```
[x for x in given_list if x % 2 == 0]
```

7. Creating a list of the first alphabet of every word in an existing list.

```
[word[0] for word in word_list]
```

8. Generate a list of characters from a string

```
[char for char in 'string']
```

9. Create a list of lengths of words in a sentence

```
[len(word) for word in sentence.split()]
```

10. Generate a list of common multiples of 3 and 5 up to 100

```
[x for x in range(1, 101) if x % 3 == 0 and x % 5 == 0]
```

11. Create a list of first characters from a list of words

```
[word[0] for word in words]
```

12. Generate a list of numbers with their squares if the number is even

```
[(x, x**2) for x in range(1, 11) if x % 2 == 0]
```

13. What is Set comprehension in Python?

Set comprehension is similar to list comprehension but uses curly braces and generates a set.

14. How to filter even numbers from a list using set comprehensions?

```
{x for x in my_list if x % 2 == 0}
```

15. How to Find the squares of numbers from 1 to 10 using set comprehensions?

```
{x**2 for x in range(1, 11)}
```

16. How to create new set that contains only the even numbers from the given sequence?

```
{x for x in sequence if x % 2 == 0}
```

17. Generate a set of characters from a string using set comprehensions

```
{char for char in 'string'}
```

18. Generate a set of numbers with their squares if the number is even

```
{(x, x**2) for x in range(1, 11) if x % 2 == 0}
```

19. What is Dictionary comprehension in Python?

It is a concise way to create dictionaries using a single line of code.

20. Create a dictionary that contains keys from given sequence elements and values as square values

```
{x: x**2 for x in sequence}
```

21. How to Double each value in the dictionary using dictionary comprehensions?

```
double_dict = {k: v*2 for k, v in dict1.items()}
```

22. How to access all persons data whose age value less than 40?

```
[person for person in persons if person['age'] < 40]
```

23. What is Generator comprehension in Python?

It uses parentheses to return a generator object that yields items one by one.

24. How to filter even numbers from a sequence using generator comprehensions?

```
(x for x in sequence if x % 2 == 0)
```

25. How to create new generator object that contains only the even numbers?

```
even_gen = (x for x in given_sequence if x % 2 == 0)
```

26. What is the difference between a list comprehension and a generator expression?

List comprehension returns a full list in memory, while generator expressions return an iterator and are more memory efficient.