# PYTHON INTERVIEW Q/A

**1. What is Python?**

Python is a high-level, interpreted programming language known for its readability and simplicity. It supports multiple programming paradigms like procedural, object-oriented, and functional programming.

**2. What are Python's key features?**

Python is easy to learn, has dynamic typing, automatic memory management, and a vast standard library. It also supports portability and extensibility with other languages.

**3. What is a Python variable?**

A variable in Python is a name that refers to a value stored in memory. It does not require explicit declaration and can hold data of any type.

**4. What are Python data types?**

Python has built-in data types like int, float, str, list, tuple, dict, and set to store different kinds of data. These types help organize and manipulate data efficiently.

**5. What is a list in Python?**

A list is an ordered, mutable collection of elements that can hold items of different types. Lists support indexing, slicing, and various methods for manipulation.

**6. What is a tuple?**

A tuple is an ordered, immutable collection of elements in Python. Once created, its elements cannot be modified.

**7. What is the difference between a list and a tuple?**

Lists are mutable and can be changed after creation, whereas tuples are immutable and cannot be modified. Tuples are faster and used when data should remain constant.

**8. What is a dictionary in Python?**

A dictionary is an unordered collection of key-value pairs. It allows fast retrieval, insertion, and deletion using unique keys.

**9. What are functions in Python?**

Functions are reusable blocks of code designed to perform a specific task. They help modularize code and can accept parameters and return values.

**10. What is the difference between Python 2 and Python 3?**

Python 3 is the latest version with improved features and syntax changes, while Python 2 is older and no longer officially supported. Python 3 emphasizes better Unicode support and cleaner syntax.

**11. What is a Python module?**

A module is a file containing Python definitions and statements. It allows code reuse by importing functions, classes, or variables into other scripts.

**12. What are *args and **kwargs in Python?**

*args allows a function to accept any number of positional arguments, while **kwargs lets it accept any number of keyword arguments. They provide flexibility in function calls.

**13. What is a Python class?**

A class is a blueprint for creating objects that bundle data and functionality. It supports object-oriented programming concepts like inheritance and encapsulation.

**14. How do you handle exceptions in Python?**

Exceptions are handled using try-except blocks. This prevents the program from crashing and allows graceful error handling.

**15. What is list comprehension?**

List comprehension is a concise way to create lists using a single line of code with a for-loop and optional condition. It improves code readability and efficiency.

**16. What is indentation in Python?**

Indentation is the whitespace at the beginning of a line that defines code blocks in Python. Proper indentation is mandatory and replaces braces used in other languages.

**17. What is a lambda function?**

A lambda function is an anonymous, small, inline function defined with the lambda keyword. It can have any number of arguments but only one expression.

**18. What is the difference between is and == in Python?**

is checks if two variables refer to the same object in memory, while == checks if their values are equal.

**19. How do you create a virtual environment in Python?**

You can create a virtual environment using python -m venv envname. It isolates project dependencies to avoid conflicts.

**20. What are Python decorators?**

Decorators are functions that modify the behavior of other functions or methods. They allow adding functionality dynamically without changing the original code.

**21. What is a Python iterator?**

An iterator is an object that implements the __iter__() and __next__() methods to traverse through all the elements of a container.

**22. What is the difference between append() and extend() in lists?**

append() adds a single element to the end of a list, while extend() adds all elements from another iterable to the list.

**23. How do you comment code in Python?**

Single-line comments start with #, and multi-line comments can be created using triple quotes ''' ... ''' or """ ... """.

**24. What is slicing in Python?**

Slicing extracts a portion of a list, tuple, or string using the syntax sequence[start:stop:step]. It returns a new subsequence without modifying the original.

**25. What is the difference between mutable and immutable objects?**

Mutable objects can be changed after creation (like lists), while immutable objects cannot be modified once created (like strings and tuples).