1. **What is Python and what are its key features?**  
   Python is an interpreted, high-level, general-purpose programming language known for its simplicity and readability. Key features include:

* Easy to learn and use
* Open source and free to use
* Supports multiple programming paradigms like procedural, object-oriented, and functional
* Extensive standard library and third-party modules
* Dynamically typed and garbage collected

1. **What are the main data types in Python?**  
   The main data types in Python are:

* Numbers (int, float, complex)
* Strings
* Lists
* Tuples
* Dictionaries
* Sets

1. **What is the difference between a list and a tuple in Python?**

* Lists are mutable while tuples are immutable
* Lists use square brackets [], tuples use parentheses ()
* Lists can be modified after creation, tuples cannot

1. **What is a lambda function in Python?**  
   A lambda function is an anonymous function defined without a name. It is a small, one-line function that can take any number of arguments but can only have one expression. Syntax: lambda arguments : expression
2. **What is NumPy and what are its key features?**  
   NumPy is a fundamental library for scientific computing in Python. Key features include:

* Support for large, multi-dimensional arrays and matrices
* Variety of functions for working with arrays
* Tools for integrating C/C++ and Fortran code
* Useful linear algebra, Fourier transform, and random number capabilities

1. **What is Pandas and what are its key features?**  
   Pandas is a popular open-source Python library for data manipulation and analysis. Key features include:

* Powerful data structures (Series and DataFrame)
* Ability to handle missing data
* Reshaping and pivoting of data sets
* Merging and joining data sets
* Time series functionality

1. **What is the difference between a Series and DataFrame in Pandas?**

* Series is 1-dimensional labeled array, DataFrame is 2-dimensional labeled data structure
* Series can hold data of any data type, DataFrame can hold different data types in each column
* Series is like a column in a table, DataFrame is like a whole table

1. **What is the purpose of the \_\_init\_\_ method in Python?**  
   The \_\_init\_\_ method is a constructor method in Python classes. It is automatically called when a new object/instance of the class is created. It is used to initialize the attributes of the class.
2. **What is the difference between append() and extend() methods in Python lists?**

* append() adds a single element to the end of the list
* extend() adds multiple elements to the end of the list

1. **What is the purpose of the pass statement in Python?**  
   The pass statement is a null statement in Python. It is used as a placeholder when a statement is required syntactically but no action is to be taken, such as in an empty loop or function body.
2. **What is the difference between == and is operators in Python?**

* == checks if two operands have equal values
* is checks if two operands refer to the same object in memory

1. **What is the purpose of the \_\_str\_\_ and \_\_repr\_\_ methods in Python classes?**

* \_\_str\_\_ is used to return a user-friendly string representation of an object
* \_\_repr\_\_ is used to return an official string representation of an object, which is often used for debugging

1. **What is the purpose of the try-except block in Python?**  
   The try-except block is used for exception handling in Python. It allows you to test a block of code for errors and handle the exceptions if any occur.
2. **What is the purpose of the map() function in Python?**  
   The map() function applies a given function to each item of an iterable (list, tuple etc.) and returns a map object with the results.
3. **What is the purpose of the filter() function in Python?**  
   The filter() function creates a new iterable (list, tuple etc.) with all the elements from the provided iterable for which the given function returns true.
4. **What is the purpose of the reduce() function in Python?**  
   The reduce() function applies a rolling computation to sequential pairs of values in a list. It is defined in the functools module.
5. **What is the purpose of the zip() function in Python?**  
   The zip() function takes iterables (can be zero or more), aggregates them in a tuple, and returns it.
6. **What is the purpose of the enumerate() function in Python?**  
   The enumerate() function adds a counter to an iterable (like a list, string etc.). It returns an enumerate object with the elements of the sequence as its attributes.
7. **What is the purpose of the collections module in Python?**  
   The collections module in Python provides specialized container data types. It includes namedtuple(), deque, ChainMap, Counter, OrderedDict, defaultdict, UserDict, UserList, and UserString.
8. **What is the purpose of the itertools module in Python?**  
   The itertools module in Python provides a set of functions for efficient looping. It includes count(), cycle(), repeat(), accumulate(), chain(), compress(), dropwhile(), filterfalse(), groupby(), islice(), starmap(), takewhile(), tee(), and zip\_longest().