125+ Most Asked

Python

Interview Questions

& Answers

Python Interview Questions for Freshers

1. What is Python?

Python is a general-purpose computer programming language based on object-oriented programming. The programs in Python can run equally on every operating system. It is the primary language used in modern technologies like AI, data science, and ML.

2. Python was developed in which year?

It was developed in 1991.

3. What are the primary uses of Python?

Here is the list of some areas where Python programming language is used:

- Data Analysis
- Software testing
- Web development
- Software and application development
- Game development
- Automation and scripting
- Machine Learning
- Artificial Intelligence
- Data science and data visualization
- Desktop GUI
- Blockchain
- Image processing and graphic applications
- Creating operating systems
- Prototyping
- Everyday tasks like downloading audio and video files, updating the lists, converting files, filling information, renaming and arranging large batches, setting notifications, and many more.

4. Who uses Python?

Most of the big names in the industry are using Python language for their operations. Brands like IBM, NASA, Pixer, Facebook, Spotify, Intel, YouTube, Instagram, Pinterest, Reddit, etc., use Python as one of the primary languages.

5. What are the benefits of using Python?

Python has various benefits, and some of them are:

- Easy to read and write
- Interpreted language
- Vast library functions
- Portable across various operating systems
- Efficiency
- Presence of third party modules
- Various data analysis tools.

- Object-oriented programming base
- Open-source library
- Rich frameworks
- Testing instruments

6. How to write a program in Python?

Before writing a program in Python, there should be an interpreter like PyCharm installed on the system.

- Create a new project
- Select a location or storage space where files will be stored
- Click on the create button and select the new file
- Name the file
- Type a simple program
- Run the program from the run option in the Menu
- The output will be at the bottom of the screen

7. Where to run Python code?

You can run a Python code from the run option in the menu in an interpreter. A Python code can also run in command prompt code. It will run the program after entering the correct path of the file.

8. What is a function in Python with example?

A function in Python is a code block that runs when it is called in a program. Data can be passed into the function with the help of this, and it is known as a parameter. The function can also return data as results.

9. How many functions are there in Python?

There are basically three types of functions in Python:

- **Built-in functions:** These functions come defined with the Python language. Here are some of the built-in functions in Python:
  - ➔ print() function
  - ➔ len() function
  - ➔ sum() function
  - ➔ sorted() function
  - ➔ dir() function
  - ➔ max() function

- **User-defined functions:** These functions are defined by the user to perform a task in the program. These are defined with the def keyword at the start. These functions are written like this:
  - ➔ def add_numbers()
  - ➔ def entry()

- **Anonymous functions:** These are the functions that are defined without a name. These are also called lambda functions. These are used when a user needs a function for a little time in function. It is written as— lambda()

10. Where is a Python function defined?

A function in Python is called with the help of the def keyword. A function block starts with this keyword, and then function name and parentheses(()) take place. Arguments are placed between this, and parameters can also be defined inside of this.

11. Is Python code compiled or interpreted?

Python code is interpreted. A Python code is converted into bytecode that is executed by a virtual machine in Python. A Python program is not needed to build like code for other languages where it is compiled, and it works on an interpreter only.

12. What is a dynamically typed language?

Type checking takes place at execution in a dynamically typed language. The variables are checked against types only when the code is executing. Programming languages like Python, JavaScript, PHP, Lisp, etc., come under this type.

The exact same variable can be used multiple times in a program in a dynamically typed language like Python.

13. What are Python literals?

The raw data that is assigned to constants and variables are defined as literals in Python. Basically, these are used to represent a fixed value in the source code. It can be either a string type, a numeric type, a boolean type, etc.

14. What is an Interpreted language?

When the implementation of the programs is done directly without compilation of the program into machine language, the language is called interpreted language. These languages are slower than the compiled languages.

All the debugging occurs at run time in this language. Python, JavaScript, Perl, etc., are some of the examples of interpreted languages.

15. What is Python virtualenv?

The isolated environment for development and debugging Python is called virtualenv. It runs multiple applications with the help of pip. It is also used to isolate a Python interpreter with settings and libraries.

It is a tool that is used for storing copies of Python and pip that are installed from the projects. With the help of this, a user can work on multiple projects on the same machine at the exact same time.

16. What do you think of the future of Python?

Most future technologies are mostly dependent on Python, and that is what makes it one of the most used languages.

Python is very popular, and it is used as it is less complex than other languages. The future is of Artificial Intelligence (AI) and Machine Learning (ML). Because the majority of programming in ML and AI is done with Python, the future of the language contains more opportunities.

17. How to reverse a list in Python?

The function that is used to reverse a list in Python is list.reserve()

18. What is the role of map() function in Python?

The Python map() function processes and transforms the iterable like tuples and lists without using for loop.

19. What is a Try block in Python?

It is a block that is preceded with the help of the try keyword.

20. What is the shortest method to open a text file and display content?

Using the 'with' command is the shortest way to open a text file and display the content in it.

21. Can you write a Python program to add two integers that are greater than zero without using the plus operator?

Yes, I can do it with the help of a bitwise operator.

22. What will be the output of this program? A[2]=[1,3,4,5,8,9,11,56]

The indexing starts from zero, and the element at the second index is 4. The output will be 4.

23. What is the Python dictionary?

A dictionary in Python is a collection of items that are written in curly brackets with keys and values. The items are in no particular order and are used to retrieve the value for keys that are known.

24. Differentiate between new and override modifiers in Python.

If there are two methods with the exact same name to perform different tasks and provide different functionality, the concept of overriding is used.

The new modifiers hide the original method, which provides different functionality. The original method can also be accessed by the base class.

25. What is pass in Python?

Pass is a statement in Python that is used as a placeholder for upcoming codes. At execution, it does not show any error, but it is not allowed in loops, class definitions, if statements, or function definitions.

Basically, it is a null statement, and when it is executed, it will result in no operation.

26. What is recursion in Python?

When the functions call themselves in a program, the process is known as recursion. It has two parts, the base case and the recursive case.

The base case is used to stop the recursion, and the recursive base is where the function calls itself.

27. What are the basic applications of Python?

The basic applications of Python include:

- Web and web framework applications
- Image processing applications
- GUI based desktop applications
- Prototyping
- Game development
- Data processing

28. Tell me the names of some Python built-in modules?

- OS module
- Random module
- Sys module
- JSON
- Math module
- Collective module

29. How does closure occur in Python?

When a nested function defines a value in an enclosing scope, the closure occurs in the program. It remembers the values.

30. Tell me something about SciPy.

All the numerical code is stored in SciPy. It contains a better version of the linear algebra modules with more features. There are more algebra modules in SciPy as well.

31. What is the enumerate() function in Python?

Enumerate() is a function that is used to iterate through a sequence. It keeps track of both elements and the index. It takes the collection and returns it as an enumerated object.

32. How does Python do Compile-time and Run-time code checking?

Python does not perform compile-time code checking except when the code is syntactically invalid. If the code is following the syntax rules, it will compile without even checking it.

Python run time code checking is done dynamically. All the parts of the program are checked at runtime.

33. What are the common built-in data types in Python?

- Binary type
- Boolean type
- Set type
- Mapping type
- Sequence type
- Numeric types
- Text type

34. What is the basic difference between .py and .pyc files?

.py files have the source code of a program, while the .pyc files have the bytecode of a Python program. Python compiles the .py files and saves them as .pyc files.

35. What are comments in Python? What are different types of comments?

Comments are text with the information in Python. These are used when two or more programmers are working on a project. The use of Python comments is to analyze, debug, and provide feedback.

Comments are of two types:

- Single line comment
- Multiple line comment

36. What are global, private, and protected attributes in Python?

- Global variables are defined in the global scope. Global keyword is used for using it in global scope in a function.
- Private attributes have double underscores as prefixes to their identifiers. They can not be accessed from outside directly, which results in AttributeError.
- Protected attributes have an underscore as a prefix to their prefix. It can also be accessed from outside the class.

37. How to remove duplicate elements from a list in Python?

Duplicate elements can be removed from the list by turning them into the set. The set (list) function is used for it.

38. What is Python Tkinter?

Tkinter in Python is a library and toolkit for GUI development. It has attributes like dimensions, fonts, colors, etc. It also gives support for various GUI applications.

39. What is Pyramid in Python?

A Python pyramid is made for larger applications. We can select a database, URL structure, templating style, database, etc., with the help of a pyramid. It provides flexibility as it is a heavy configuration program.

40. Is tuple comprehension possible in Python?

No, it is not possible because it will end up in a generator instead of a tuple comprehension.

41. What is the work of # in Python?

It is used to comment out everything that comes after on the line in Python.

42. What is the minimum and maximum length of an identifier in Python?

Identifiers can be of any length. There are no limitations on length in Python.

43. What are modules and packages in Python?

A package holds sub-packages and modules, and the file __init__.py is used in the package for holding user-interpreted codes.

A module is a file that has Python code. It also modifies the code to get executed in run time. It consists of the unit namespace, which also has extracted variables.

The modules prevent collision between global variable names, and packages do the same between module names. The packages are also reusable, and that is why they are preferred.

44. What is Scope in Python?

In Python, the location where we can find a variable and can access it when it is required is called scope. This is of two types: global and local.

Global variables are the ones that can be used by any part of the program and can be declared outside of any function.

Python Interview Questions for Experienced Professionals

1. Which is the best Python code to Java code converter?

Jython is mostly used for using Python codes on the Java platform. It is an open-source implementation of Python code integrated with Java.

The code is compiled to Java bytecode and runs on any Java virtual machine. It gives access to all the Java libraries.

2. What are some Python code best practices?

Here are some of the best Python code practices that a developer should follow:

- Creating a code repository for Python and implementing version control
- Creating readable documentation
- Following style guidelines in Python
- Fixing broken codes instantly
- Using virtual environments
- Using Python package indexes
- Writing easy and readable codes
- Using the correct data structures
- Using codes that are object-oriented

3. In Python 3 and later, what is the use of a nonlocal statement?

It is used to assign values to a variable in an outer scope. It causes listed identifiers to refer to the previous variable in the nearest enclosing scopes.

4. If you installed a module with the pip, but it doesn't import in your IDLE, what are the possible reasons?

There can be two possible issues in this process:

- If the system has Python 2. Since NumPy is installed for Python 3.6 and the latest versions, this will show an error.
- Check if there is an issue with the configuration of the anaconda with IDLE. If the system is using default Python in place of anaconda, NumPy can not be installed.

5. What is os.walk() function?

The os.walk() is a function that generates the file names in the directory tree. It is done by walking the tree either bottom-up or top-down. It yields a 3-tuple for each directory, which are dirpath, dirnames, and filenames.

6. How is staticmethod different from classmethod?

Both the methods are used to define a class method that is installed without instantiating the object in a class. The signature in both methods is different.

7. .What is the use of the PYTHONSTARTUP environment variable in the Python program?

The PYTHONSTARTUP environment variable is used to specify the particular location of the path to a file in Python. It can also be used in setting colors and preloading modules. This script will run before the interpreter.

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8. What is the use of the PYTHONCASEOK environment variable in the Python program?

It is used to find the first case-sensitive matches in the import statements. It is used to ignore all import statements while calling the interpreter in Python.

9. What is PEP 8, and tell me about its importance?

PEP 8 is a document that guides the users with best practices on a Python program. The document was written by Guido van Rossum, Barry Warsaw, and Nick Coghlan in 2001.

With the primary focus on improving the readability and consistency of Python code, Python Enhancement Proposal or PEP is also used for improving the design and style of a program.

10. What are decorators in Python?

Decorators in Python are used to add functionality to a class or a function. It can change the behaviour of a class without permanent modification in it.

11. What is the dogpile effect? What would you do to prevent this effect?

When the cache expires, and the client requests multiple times for the website at the same time, the dogpile effect occurs.

I will use the semaphore lock to prevent this effect. Because when the value expires, it will acquire the lock and generate a new value.

12. What is multithreading in Python?

When several programs are running concurrently by invoking multiple threads, the process is called multithreading. The Thread class in Python is a predefined class. It is defined in the threading module.

It is a lightweight process. Several threads refer to the data space with the main thread and share information easily by communicating with each other. Threads can be used for calculating results while the main part of the program is running.

13. What is Python's parameter passing mechanism?

Parameter passing can be done by two methods in Python:

- Pass by reference: All the arguments are passed by reference in any function in Python. When the value of the parameter is changed within the function, the change can also be seen in the calling function.
- Pass by value: When an argument in the program is passed to the function, only values pass to the function, leaving reference behind. It is not changeable and immutable.

14. How good is Python for data analysis?

Python is very good for data analysis. Processes like data mining, data processing, and data visualization are done easily with the help of Python.

15. Tell me about the use of frozenset in Python?

The frozenset is a collection of unique values in Python. It is an immutable collection that is made of distinct hashable objects. The values in the frozenset can not be changed, and methods from the set on the frozenset can’t be used and updated.

16. What are the differences between Python 2 and Python 3?

Python 2 is faster than Python 3. The print keyword is considered a statement in 2 and a function in 3. Strings are stored as ASCII as default in version 2, while UNICODE is in version 3 as default.

The xrange() function is used for iterations in Python 2, and the range() function is used to perform iterations in Python 3. Version 2 is used by the DevOps engineer, and version 3 is used in fields like data science and software engineering.

The syntax is also easier in Python 3 than in Python 2. Many libraries in Python 2 are not forward compatible and are strictly used with Python 3.

When the division of integers is performed, version 2 of Python gives an integral value while version 3 provides floating type values.

Exceptions are enclosed in notations in Python 2 and enclosed in parentheses in Python 3. If variables are used in a for loop, the values change in Python 2 but never change in Python 3.

17. What is the execution time for else part of a try-except block?

The else part of the try-except block will execute when there is no exception in the program.

18. Is it possible to call the parent class without its instance creation?

Yes, it is possible by creating an object of the child class and calling the function of the parent class in the Python program with the help of the dot operator.

19. What are Python namespaces? Why are they used?

A namespace in Python is a system that has a unique name for every object. It is used to implement scope, and it is created when a function, package, or module is evaluated. Basically, It is used to organize codes into logical groups when there are multiple libraries.

20. How will you combine data frames in pandas?

The data frames in pandas can be combined with three methods:

- Concatenating dataframes by stacking the two of them vertically.
- Concatenating dataframes by stacking the two of them horizontally.
- Combining dataframes on a common column is called joining.

21. How is OOPS used in Python?

OOPS is a paradigm in Python that uses classes and objects. Coding is done with the help of real-world elements like class, data abstraction, polymorphism, inheritance, encapsulation, etc.

22. What is encapsulation in Python?

It is a concept in OOP that is used to wrap data and the methods that work on data within a single unit. This helps a Python program to restrict the variable that is used to prevent unnecessary modifications and changes to the data.

With encapsulation, the data can be changed by the method of the object. These methods are called private variables. A class is a good example of encapsulation in Python as it is used to encapsulate the data like variables and member functions.

23. What is inheritance in Python?

It is the capability of one class in the program that is used to inherit the properties from another class. The class that derives properties is called the child class or derived class, and the class from which the properties are derived is known as the parent class or base class.

24. Tell me about the types of inheritance?

Inheritance is of four types:

- Single inheritance
- Multilevel inheritance
- Multiple inheritances
- Hierarchical inheritance

25. What are the advantages of using inheritance in Python?

Here are some of the key advantages of using inheritance in a Python code:

- It provides the reusability of the code.

- It is used for showing real-time relationships.
- It allows additional features to a class in the code without any modification.
- It is transitive in nature.

26. What is data abstraction in Python?

Data abstraction is used for hiding the actual implementation of the Python program, and it is done by showing only the functionalities.

If a class has one abstract function, it is called an abstract class. Once the module is imported from the ABC (Abstraction Base Class) module, abstract methods can be created in a Python program.

27. What is polymorphism in Python?

It means to have multiple forms of any object in a Python program. A code can be used to determine and differentiate the program.

Python Programs for Interview Preparation

1. **Python code for printing HelloWorld**
2. **Python code to add two or more numbers**
3. **Python code to find factorial of a number**
4. **Python code to reverse a string**
5. **Python code for snake game**
6. **Python code for building a calculator**
7. **Python code for cracking a Wi-Fi password**
8. **Python code to check prime number**
9. **Python code for Fibonacci series**
10. **Python code for sending WhatsApp messages**