

Basic back-end developer interview questions and answers

1.

Define the purpose of the back-end.

The back-end, also known as the server-side software, powers a website and app. It is responsible for storing and organizing data, handling user requests, and delivering content to the front-end.

2.

Name the key back-end development responsibilities that you held in your previous job.

For the recruiter, this question helps in gauging if the candidate is fit for the company/role applied. Conversely, for the applicant this may help to get in the right role. Some key responsibilities applicants may mention include server improvements, database creation, etc.

3.

Tell us about your experience working as a part of a team.

Back-end developers are required to work in a team. In answering the interview question, candidates should be able of giving a few examples of times when they worked in a group.

As a developer, you can mention any collaboration done with other developers in the past to achieve a goal and what tools they used to communicate with other team members.

4.

Are you able to maintain task focus even in remote environments?

Here interviewers can know if the applicants are able to complete tasks on their own. For developers, they can describe the turnaround time for different tasks.

5.

How do you overcome the challenges of time management and organizational skills as a remote developer?

This is an extension of the previous question. Here interviewers want to see that you are organized and can complete tasks on time. The tools you use, such as Slack, Excel sheets, and Calendar, could be mentioned. You could mention the tools you have been using to keep on track. This question reveals how seriously the interviewee takes remote work and whether they are willing to work on the daily challenges.

6.

What assistance can we offer to help you perform your job efficiently?

As an interviewer, you may ask the candidates about the resources they might need to do the job efficiently (example- software access) to sense their approach to work. And, as a developer, you can talk about all that you consider necessary for working efficiently and effectively in remote environments.

7.

Could you describe when you faced a challenge and how you overcame it?

This question tells the interviewer a great deal about the candidate. Here, developers can discuss a situation where a lack of a specific resource was a problem (example, you discovered a free online solution that helped you overcome the challenge). This question is designed to assess a developer's ability to think independently and their presence of mind.

8.

Do you have a designated place for work in the home office?

Through this question, an interviewer can know if the candidate is actually serious about work and can be free of distractions. Here, a developer should try to assure the interviewer of the separate workspace and how it is free of distractions.

9.

What are you most passionate about remote work?

Working remotely requires self-discipline. With this question an interviewer can know what inspires the developer to go remote. Here, developers can highlight

the reasons such as living with parents if they are getting older, zero commute and work-life balance, having peace of mind while still being close to your family, etc.

10.

As per your opinion, what are the top skills for remote working success?

A developer can outline skills such as task focus, time management, careful planning, and the ability to not be distracted. Also, they can mention skills like initiative and self-learning. At this point interviewers can dig in deep by asking how these skills contributed to their project success.

11.

How do you prioritize your work when working remotely?

Here the interviewer can ascertain how working remotely, developers were able to access and work with systems such as Trello, Slack, and Asana. Here developers can mention how they prioritized work, maintained the workflow or any other systems to determine work status and assess outstanding tickets to reach goals on time.

12.

What would you do if you were to resolve an intra-team conflict?

It is difficult to deal with office politics and team resentment, especially in remote teams. With this question, an interviewer can assess the candidate's leadership skills in a remote team. As a developer you can elaborate on how you find out the root cause of the problem, what perspective you took into account, and then the negotiation strategies.

13.

What is the typical workflow to implement a new feature on the back-end?

The workflows used to implement features on the back-end may vary depending on what technology stack the company uses. A typical workflow would include discussing the feature with stakeholders, prototyping and designing the feature, writing code, and quality assurance (QA).

The back-end developer will usually work with the front-end developer to ensure data is properly transmitted between the client and server. It is also important to

make sure that new features are compatible with older versions of the application.

14.

What is a web server?

A web server can be described as a computer that stores web pages and distributes them. When you enter a URL into a browser, the browser contacts a web server to request the page. The page is then sent back to the browser by the web server which is displayed on the screen.

NGINX and Apache are two of the most widely used web servers by back-end apps. Web servers are also capable of hosting other resources such as videos and images.

15.

What are the DRY and DIE principles?

Software developers must not duplicate code according to the DRY principle (Don't Repeat Yourself). Duplicated code can cause maintenance problems as multiple changes must be made. Similar to the DRY principle, DIE (Duplication Is Evil) goes one step further and states that even small amounts of duplication should be avoided.

16.

What's the difference between GET and POST?

A GET query retrieves data from a web server. A POST query sends data to a web server. A GET request passes parameters in the URL. With a POST request parameters are included in the request's body.

17.

Differentiate between software architecture and software design.

Software architecture refers to the program structure. As such, it can be understood as the bare skeleton of a program. Software design refers to the actual implementation of the code for the software requirements. So, **software architecture** can be considered as the program blueprint and software design can be considered as the process of how to build the program.

As far as development is concerned, software design gets into the details. Both software architecture and software design are two separate processes that work together to form an integrated development process.

18.

Talk about continuous integration and continuous delivery.

Continuous integration and continuous delivery are two interconnected software engineering processes. Continuous integration is a process that takes place in an ongoing manner to ensure that the program is built and tested regularly.

Continuous delivery, on the other hand, is the ongoing development process that takes place in the latter part of the program lifecycle just before production.

These two processes form a cohesive automated process that keeps the work on track and increases production speed by getting rid of the inconsistencies between the development and operations teams.

19.

How can you build scalability into a software program?

Scalability is an important aspect to be considered for enhancing productivity, especially concerning higher user demands and adaptation of functions and elements to higher amounts of user data. To determine the lifetime value of a software program, one must check its scalability.

Lack of scalability warrants the need for rewriting the application with a new tech stack that adapts to the growth in audience. The scalability of a program can increase with features like cache, states, API, sort, and asynchronous programming. Moreover, tools like databases and frameworks have greater scalability than some others.

20.

Why is Microservices architecture used?

Microservices architecture is characterized by integrating several small but independently deployable services into one application. It makes the operation more versatile as different programming languages can be used for writing individual services. Thus, different languages can be leveraged for different services.

Maintenance is also easier as, even though the services are integrated, they are loosely connected. The microservices architecture model works well with and is

preferred by larger teams, however, it may not be completely free of challenges like debugging.

21.

What are NoSQL databases? Mention different types of NoSQL databases.

With the increase in big data, the internet has become a complex place. NoSQL databases help solve this problem. The NoSQL databases are neither traditional nor relational database management systems.

NoSQL stands for 'Not Only SQL'. With the growing amounts of data, a large percentage, close to 85%, is unstructured, messy, and complicated. NoSQL database handles and sorts such data. Thus, NoSQL offers a storage and retrieval mechanism for data that is modeled using other means and not the tabular relations used in the Relational Database Management System (RDBMS).

Types of NoSQL databases include

- Graph
- Key-value
- Document oriented
- Column-oriented

22.

Explain SQL injection.

An SQL injection can destroy the database by injecting malicious code or hack your database by injecting a hacking code. This occurs because there is little separation between the program code and the user input. SQL injection is a common type of injection attack on databases.

An injection attack can be prevented in the following ways:

- Prepare statements with queries that have defined parameters
- Have pre-defined and stored procedures
- Have a validation process for the input whereby you can blacklist or whitelist the input
- Use the principle of least privilege, i.e. do not provide premium administrator type access to the public database server. So, even if the hacker is able to hack into the application, it would not compromise the integrity of the database as they wouldn't be able to access it.

23.

Differentiate between acceptance and functional tests.

The differences are as follows:

Functional testing: Functional testing is done to verify whether the product, especially the application, is working as required or not. It ascertains whether the created software meets the business needs.

Acceptance testing: Acceptance testing is done to validate whether or not you built the right product. It validates that the product meets the customer's needs. Acceptance tests ascertain that the user (customer) is actually benefiting from the product and is using it for the purpose it was meant for.

24.

Mention some performance testing steps.

Below are some performance testing steps:

- Determine the environment for testing
- Finalize what performance metrics to use
- Create a plan and design for the performance test
- Configure the environment for the test
- Implement the design for the test
- Execute the performance tests
- Conduct test analysis, create test report, and advise retest for underperforming applications

25.

Mention some advantages of web services.

Web services have the following advantages:

- **Interoperability:** Web services can be accessed over the network and run using HTTP/SOAP protocols. For transporting data, web services use XML/JSON, thus, they can be rendered using different programming languages. For example, a web service that is written in Java is accessible over the network, runs on HTTP/SOAP protocol, and uses XML/JSON to transport data, hence it can be developed in any programming language. Web service can be written in java programming with PHP as the client and vice versa.
- **Reusability:** Many client applications can use the same web service at the same time.
- **Loose Coupling:** Web services client code does not depend on server code, thus, loose coupling is possible in the application.
- It is easy to deploy and integrate, exactly like web applications.

- Several versions of the service can run at the same time.

26.

Differentiate between clustered and non-clustered indexes?

A clustered index physically stores the rows on the disk in the order they appear on the index. Thus, only one clustered index is possible. A clustered index tells the database to store values that are close next to one another on the disk.

A non-clustered index has a second list with pointers to the physical rows. There can be several non-clustered indexes, every new index increases the time for writing new records.

If all columns are needed as is, then reading from a Clustered index is faster. You need not go to the index and table in that order. However, if the data must be rearranged, writing to a table with a clustered index can slow down the process.

27.

What are some common problems with ORMs?

ORMs often have performance issues, incorrect data mapping, and difficulties with complex queries.

28.

What is the CAP theorem?

CAP theorem which is also known as Brewer's theorem states that a distributed databases system can only guarantee two of the three characteristics: consistency, availability, and partition tolerance.

This theorem is the foundation for modern distributed computing methods. The world's largest traffic companies (e.g. Amazon, Google, Facebook) use this basis for their application architecture.

29.

What does REST stand for?

Representational States Transfer (REST) is a software architecture that specifies how an API should operate. REST was first created to provide a framework for managing communication on complex networks like the internet.

30.

What is object-oriented programming?

Object-oriented Programming (OOP), a type of computer programming, organizes software design around objects or data rather than functions and logic.

31.

How do you capitalize the first letter in a string in Python?

The `capitalize()` method in Python capitalizes the first letter in a string. If the string contains a capital letter at its beginning, it returns the original string.

32.

How to convert a string to all lowercase in Python?

The `lower()` function is used to convert a string into lowercase.

```
stg='ABCD'
print(stg.lower())
```

Output: abcd

33.

How to delete files in Python?

To delete the file in Python, the `os` module must be imported. Then, you have to utilize the `os.remove()` function.

```
import os
os.remove("abc.txt")
```

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Intermediate back-end developer interview questions and answers

1.

What is a constructor?

Java uses a constructor to initialize objects. It is used when an object in a class is created. A constructor has the exact same name as its class. It is also syntactically similar to a method. However, a constructor has no explicit return type.

2.

What are the various types of constructors?

There are three main types:

Default Constructor: constructor with no arguments. They initialize data members with real values.

Parameterized Constructor: contains arguments in the constructor. Here we can pass more than one argument.

Copy constructor: Initializes an object using another object of the same class.

3.

What is serialization?

Serialization refers to a process or mechanism that converts the object's state into a byte stream. Deserialization does exactly the opposite. Serializing an object makes it possible to easily convert the byte stream into a copy of the object.

4.

What's the difference between finally, final, and finalize?

Final is an access modifier, finally is a block, and finalize is a method of an object class. The final method is executed when called. Finally is executed once the try-catch block is executed. Its execution does not depend upon the exception. Finalize method is executed before the object can be destroyed.

5.

What's the difference between Primitive Data Types and Wrapper Classes?

Wrapper classes allow using a variety of primitive data types such as int or boolean as objects. The wrapper class transforms a primitive type into an object. A primitive type is a predefined data type that the Java programming language provides.

6.

Is Java unable to support multiple inheritance?

Multiple inheritance in Java is not supported because of the ambiguity issue. To simplify the language and reduce complexity, multiple inheritance is not supported in Java.

Multiple inheritance is when one class (e.g. class B) extends beyond other classes (e.g. class A or class C), this is known as multiple inheritance. Multiple inheritance can lead to problems such as the diamond problem.

7.

How does a HashMap function?

HashMap in Java works with a variety of hashing principles. It stores the entries in the map by using its static inner classes. HashMap makes use of several buckets. Each bucket of HashMap points to a Singly Linked List.

In Java 8 however, HashMap replaces Linked Lists with a binary tree once the number of bucket elements reaches a threshold. HashMap supports multiple null values, but only one null key.

8.

What's a thread?

A thread is a thread of execution within a program. Threads enable Java applications to be more responsive and faster by performing multiple tasks at the same time.

9.

What are the different types of threads in Java?

There are two types of threads: user threads and daemon threads. A daemon thread, which is low-priority and provides services only to user threads. A user thread, on the other hand, is a thread of high priority.

10.

What's the difference between a thread and a process?

A process is the execution of a program, which allows users to execute the actions specified in the program.

A thread, on the other hand, is an execution unit. It is an execution unit and can be managed separately by a scheduler. A process can have multiple threads which execute at the same moment.

11.

What is exception handling?

Exception Handling is a method to handle runtime errors such as `ClassNotFoundException`, `SQLException`, `IOException`, `RemoteException`, etc.

12.

What are the various types of Java exceptions?

There are two main types of Java exceptions: unchecked and checked exceptions. If the compiler checks for checked exceptions, then the programmer handles them during compilation. Otherwise, a compilation error is caused. These exceptions can be handled with either a try-catch or re-throwing. It is not necessary to handle an unchecked exception.

13.

What is a design pattern?

A design pattern is a repeatable or reusable solution for common problems in software design. These patterns are similar to blueprints and often show interactions between classes or objects.

14.

What is the difference between MySQL and SQL?

SQL (Structured Query Language) is a programming language used to communicate with databases. MySQL is a relational database management system that uses SQL as its primary language. SQL is used to create, modify, and delete databases, while MySQL is used to store and access data within databases.

15.

What are the various subsets in SQL?

Data Definition Language (DDL): This allows you to perform various operations in the database, such as CREATE, ALTER and DELETE.

Data Manipulation Language (DML): This allows you to access and modify data. It allows you to insert, update, and delete data from the database.

Data Control Language (DCL): This allows you to control data definition and data manipulation operations, such as granting and revoking user access privileges, and creating, altering, and dropping database objects, such as tables and views.

16.

What is RDBMS?

A Relational Database Management System (RDBMS) is a program used to manage a relational database. It serves as the foundation of modern database systems such as MySQL, Microsoft Access, Microsoft SQL Server, and Oracle. RDBMS uses SQL to obtain data from the database.

17.

What is the "SELECT" statement?

The SELECT statement allows you to select data from SQL databases. The result-set stores the returned data in a result table.

18.

What are the most common clauses used with SQL SELECT query?

These SQL clauses are often used with a SELECT statement:

1. FROM: specifies the table(s) from which data is retrieved.
2. WHERE: filters the records based on certain criteria.
3. GROUP BY: groups the records based on certain criteria.

4. HAVING: filters the grouped records based on certain criteria.
5. ORDER BY: sorts the records in ascending or descending order.
6. LIMIT: limits the number of records returned from a query.
7. OFFSET: specifies the starting point from which records are returned.
8. AS: creates aliases for column names or table names.
9. JOIN: combines records from two or more tables.
10. UNION: combines the result set of two or more SELECT queries.

19.

What is OLTP?

Online transactional processing (OLTP) allows large groups of people to perform massive database transactions in real-time, via the internet. Database transactions are when data is modified, inserted, deleted, or queried.

20.

What are the differences between OLAP and OLTP?

OLTP stands for online transaction processing and OLAP stands for online analytical processing. OLTP can be described as an online database modification and OLAP is an online database query response system.

21.

What are SQL comments and how do they work?

SQL comments are used to clarify SQL statements and prevent SQL statements from being executed. Comments are essential in many programming languages.

Single-line Comments: It begins with two consecutive hyphens (-).

Multi-line Comments: It begins with /*, and ends with //.

22.

What is PEAR in PHP?

PEAR is a repository and framework for PHP components that can be reused. PEAR stands for PHP Extension and Application Repository. It includes all types of PHP code and libraries. You can also use the command line interface to automatically install "packages".

23.

What is the difference between static and dynamic websites?

Static websites have fixed content, meaning that it is not updated regularly. The content is coded directly into the HTML and requires manual updates when changes are needed. Dynamic websites are those which have content that is updated regularly and automatically.

24.

How do I execute a PHP script from the command line?

To execute PHP scripts, use the PHP Command Line Interface and then add the file name in the following way.

```
php script.php
```

25.

Is PHP a case-sensitive language?

PHP is partly case-sensitive. Variable names are case-sensitive, but function names aren't. It will still work if you use lowercase for the function name and call them in uppercase. While user-defined functions can be used in any case, the rest of the language is case-sensitive.

26.

What does "escaping to PHP" mean?

PHP parsing engine requires a way for PHP code to be distinguished from other elements of the page. The method for doing this is called "escaping PHP".

27.

What language is Python?

Python is an interpreted and object-oriented programming language that supports various programming models, including procedural and functional programming. It contains modules, exceptions, dynamic typing, high-level data types, classes, and dynamic typing.

28.

Is Python a case-sensitive language?

Yes. Python is a case-sensitive language.

29.

What is PEP 8?

The acronym PEP stands for Python Enhancement Proposal. It's a set of rules that defines how Python code should be formatted to ensure maximum readability.

30.

What are decorators in Python?

Decorators in Python are functions that modify the behavior of other functions. A decorator is a function that takes another function as an argument, adds some kind of functionality, and returns the modified function without changing its definition. Decorators provide a simple syntax for calling higher-order functions, allowing developers to modify existing functions without changing their source code

31.

What's the difference between .py and .pyc files?

The .py files contain the python source codes files. The bytecode of the Python files can be found in the .pyc files. When the code is imported from another source, .pyc files are created. The interpreter converts source .py files to .pyc files which reduces time.

32.

How does Python manage memory?

Python memory management involves a private heap that contains all Python data structures and objects. The Python memory manager ensures that this private heap is managed internally.

33.

What are namespaces in Python?

Python Namespaces represent collections of objects which are associated with a unique name and whose lifespan is determined by the scope of a variable.

Python modules contain Python code. These codes can be either function classes or variables. A Python module is a .py file that contains executable code.

34.

What are Python packages?

Python packages are namespaces that contain multiple modules.

35.

What does High Availability (HA) mean?

Accessibility refers to the user's ability to access the system. If the user is unable to access the application, it will be assumed that the application is unavailable. High availability means that the application will always be available without interruption.

Clustering with redundant server nodes is a common way of achieving higher availability for web applications. Availability is usually expressed as a percentage of uptime in a given period of time.

36.

Why would you choose Microservices architecture?

Microservices architecture offers many benefits. Here are some of the pros:

- Microservices are easily adaptable to other frameworks and technologies.
- One process failure does not necessarily affect the whole system.
- Supports both small and large companies.
- It can be used independently and takes relatively little time.

37.

What is Containerization?

A containerization is a form of virtualization that was developed as an alternative to hypervisor-based virtualization.

Containerization means that the operating system is shared between the containers, rather than being cloned for each machine. Docker, for example, is a container virtualization platform that can be used as an alternative to hypervisor-based arrangements.

38.

What is the difference between Acceptance Test and Functional Test?

Functional testing is a verification test to determine if we have built an appropriate product. Does the software satisfy the requirements of the business? Functional tests confirm that the program operates according to what the developer believes it should.

Acceptance Testing is an activity to verify that we create the correct product. Does the customer really want it? Tests of acceptance confirm that the product can solve the problem it was designed to handle. This is best done with the help of the user such as doing the tasks the software helps in.

39.

What do you mean by Denormalization?

Denormalization is a technique that is used to access data from higher to lower forms of a database. It assists database managers to improve the efficiency of the whole infrastructure by introducing redundant data into tables. It incorporates redundant data into a table by integrating database queries that integrate data from multiple tables into one table.

40.

What's an Index?

An index is an approach to tuning the performance and making it easier to retrieve records in the database. The index generates an entry for each value. Hence, it is faster to access information.

41.

What is DISTINCT statement? What is its use?

This DISTINCT query is used in conjunction with the SELECT query to get rid of duplicates and return only unique records. Sometimes, an entire table is filled

with duplicate records. The DISTINCT clause in SQL is used to remove duplicates in a SELECT statement's results set.

42.

What is "Trigger" in SQL?

In SQL, a Trigger is a particular kind of stored procedure that is defined to execute automatically after data modifications. It lets you execute a series of codes whenever an update, insert, or another query is performed against a particular table.

43.

What's the difference between natural join and cross join?

The cross join produces the cross product or Cartesian product from two tables. The natural join is built on all columns that have the same name as well as data types within both tables.

44.

Specify the tools that help in finding bugs or performing static analysis in Python.

PyChecker is an analysis tool for static code that helps to identify the flaws within Python the source code. PyChecker warns you about the style and severity of the problem. Additionally, Pylint is another tool that examines whether the module conforms to the standard for coding.

45.

What are Python Modules? Name some Python modules which are most frequently used.

Python modules contain Python code. These codes can be either function classes or variables. A Python module is a .py file that contains executable code.

These are some of the most popular built-in modules:

- os
- sys
- JSON
- math
- random

- data time

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Advanced back-end developer interview questions and answers

1.

What are Python's local variables and global variables?

Global variables

Global variables are declared outside of a function or in global spaces. These variables can be accessed from any function within the program.

Local variables

A local variable is any variable declared within a function. This variable is only present in the local space.

It will throw an error if you attempt to access the local variable from outside the function add().

```
a=5
def add():
    b=3
    c=a+b
    print(c)
    add()
Output: 8
```

2.

What are the rules for naming a PHP variable?

When naming a PHP variable, you should follow the following guidelines:

The name of a variable must start with a letter or underscore character. Variable names can contain numbers, letters, or underscores. However, You cannot use characters like +, -, and %.

3.

Is indentation necessary in Python?

Python requires indentation. You can use it to identify a block of code. An indented block contains all code that is contained within loops, classes, and functions. This is typically done with four space characters. Indenting your code incorrectly will throw errors and cause failure in execution.

4.

What's the difference between Python arrays and lists?

Python arrays are similar to lists in that they are both used to store multiple values. However, unlike lists, arrays are limited to a single data type and are fixed in size. Additionally, arrays are much more memory efficient than lists since they only store values of a single type.

5.

What are functions in Python?

A function is a block that executes code only when it's called. The `def` keyword in Python is used to define Python functions.

```
def Newfunc():  
    print("Hi, Welcome to Turing.com")  
Newfunc(); #calling the function
```

Output: Hi, Welcome to Turing.com

6.

What is **init**?

init can be described as a Python constructor or method. This method is used to automatically allocate when a new class instance or object is created. All classes have the "**init**" method.

```
class Developer:
def __init__(self, name, age,salary):
self.name = name
self.age = age
self.salary = 50000
E1 = Developer("ABC", 25, 50000)
# E1 is the instance of class Employee.
# __init__ allocates memory for E1.
print(E1.name)
print(E1.age)
print(E1.salary)
```

Output:

ABC

25

50000

7.

What is NULL?

The NULL data type is a special one-value data type. A variable of datatype NULL is a non-valued variable. It can be assigned using the following: \$var = NULL; or \$var = null;

8.

What is a UNIQUE constraint?

The UNIQUE constraint prevents identical column values from appearing in more than one record. The UNIQUE constraint assures that every value within a column is unique.

9.

How to define a constant in PHP?

You can define a constant using the define() function. To retrieve its value, you simply need to specify its name. A constant that contains a \$ is not required. A valid constant name begins with a letter or underscore.

10.

How can PHP and HTML interact with each other?

You can generate HTML using PHP scripts. Additionally, you can pass information from HTML to PHP. PHP executes on the server and returns its results in strings, arrays, and objects. Then, we display their values in HTML.

11.

What is self in Python?

The self is an instance or an object of a class. This parameter is always included in Python. Java does not have this option. It can be used to distinguish between attributes and methods in a class with local variables.

In the init method, the self variable refers to a newly created object. In other methods, it refers to the object whose method was called.

12.

How can Python generate random numbers?

The Random Module is the standard module used to generate random numbers. This is how the method works:

```
import random  
random.random
```

13.

What are unpickling and pickling?

Pickling and unpickling are processes related to serializing and deserializing objects in Python. Pickling is the process of transforming an object into a byte stream, while unpickling is the inverse operation, i.e. transforming a byte stream back into an object hierarchy. Pickling allows complex objects to be stored and transmitted as a single entity, and unpickling allows the byte stream to be converted back into the original object hierarchy.

14.

What are the various types of Arrays in PHP?

There are three types of Arrays available in PHP,

Indexed Array – An array that has a numeric index is called the indexed array. Values are stored in linear order and can be accessed by linear means.

Associative Array - An array that includes strings as an index is also known as an associative array. This stores element values in association with key values, rather than in strict linear index order.

Multidimensional Array - A multidimensional array contains one or more arrays. Multiple indices are used to access the values.

15.

How can you set an infinite execution time in a PHP script?

The `set_time_limit(0)` attribute is added to the script's beginning to infinite the time it takes to execute. This prevents PHP from displaying the error message 'maximum execution time exceeded'.

16.

What is Database Black Box Testing?

Black Box Testing is a method of testing functions of the software, that involves not knowing their internal code structure, implementation details, or internal routes. It focuses solely on the input and output of software applications. It is completely driven by specifications and software requirements. Another name for it is behavioral testing.

17.

How do you do data abstraction in Python?

Data Abstraction provides only the necessary information and hides the implementation from the world. It is possible to achieve this by using Python through abstract classes and interfaces.

18.

What is the usage of the `help()` and the `dir()` functionality in Python?

The `Help()` and `dir()` functions are available from the Python interpreter and are used to view a consolidated listing of the built-in features.

Help() function: The help() function is used to display the documentation string. It can also help you see the assistance related to modules, attributes, keywords, etc.

Dir() function: The dir() function displays specified symbols.

19.

What is len() in Python?

It's utilized to calculate the length of a string, list, array, etc.

```
stg='XYZ'  
len(stg)
```

Output: 3

20.

What is a FOREIGN KEY in SQL?

FOREIGN KEY is a field (or set of fields) in one table which is linked to the PRIMARY KEY in another table. The table that has this foreign key is known as the child table. The table that has a primary key is known as the parent table.

21.

What is Type hinting in PHP?

Typo hinting is used to define the expected data type for an argument in a function declaration. When you call it, PHP determines whether the arguments are of the specified type. If they are not, the run-time shows an error, and the execution will stop.

22.

How to display the current date in SQL?

In SQL there is a built-in function called GetDate() that can provide the current date and time in a 'YYYY-MM-DD hh:mm:ss.mmm' format.