

Interview Preparation

Self-Introduction Sequence

Name

Education

Experience

Current organisation + Designation

Skill and projects

Hobbies

PHP

- Get method can transfer up to 2048 characters of data.
- (===) is called Identical Operator
- fopen() to open a file or generate a new file that does not exist.
- fprintf()- is to write the text into a file. It takes three parameters. like: fprintf(\$file, "%u" , \$variable name).
- MD5 - is a string function that calculates the hash of the given string. and hash is a process of transforming the given input into another value.
- money format returns a string as it is a currency string.
- nl2br is to break a line into a new line where it finds \n.
- strstr() find the first occurrence of the string.
- number_format() is a format of numbers with a group of thousand.
- parse_str() parse the query string into a variable.
- Include & Require add the content from one php file to another PHP file. It has some different way to handle the errors.

- Function is a self-contained block of code.
- Array combines create an array by using a key of array and value of an array.
- Array merge and combine both work to merge an array and creates a single array, but array combine will create an associative array this will take first argument of array keys and second would be values array. Where array_merge will create a single array.

E.g

```
// Combine output: ['name' => 'John', 'age' => 30, 'city' => 'New York']
```

```
// Merge output: ['apple', 'banana', 'carrot', 'tomato']
```

- Predefined constants are the magic constants that get changed on the basis of their usage.

e.g: `__line__`, `__dir__`, `__class__`, `__traits__`, `__file__`, `__methods__`, `__namespace__`.

- A closure is an anonymous function that can't access outside scope.
- Const can't be used in conditional statements. in define function we can define the function.
- Types of error -
 - Notice = unused variable,
 - Warning = use variable without declaring it/ function with improper parameters,
 - Fatal Errors= Class/ Functions are not defined,
 - Parse Error = syntax error

- Single \$ and double \$\$ - single \$ is a simple variable and double \$\$ variable is used as a reference variable to store a variable which can dynamically change.
- Echo can output one or more strings at the time when print can only print one string at the time, always return 1. Echo is faster because that does not return anything.
- Require and include both are used to include a file, but include sends a warning if a file is not found but require throws a fatal error.
- Include_once include a PHP file, If it is found that the file has already been included, the calling script is going to ignore further inclusions.
- Type of constructor - There are three types of constructor.

Default constructor - with no parameter.

Parameterized constructor - With Parameter.

Copy constructor - Copy Constructor: This constructor is not natively supported in PHP. A copy constructor is used to create a new object as a copy of an existing object. In PHP, you can achieve similar functionality using the clone keyword.

E.g : class NewClass {

 //Copy constructor

 Function __constructor (Dummy dum){

 }

}

- Type Juggling - PHP is a loosely typed programming language. It means that when you define a variable, you don't need to declare a type for it. Internally, PHP will determine the type by the context in which you use the variable. PHP has a feature called type juggling. It means that during the comparison of variables of different types, PHP will convert them to the common, comparable type.

For example

```
<?php
```

```
$qty = 20;
```

```
if($qty == '20') {
```

```
    echo 'Equal';
```

```
}
```

What is new in PHP 8?

1. **Union Type** – It brings flexibility to variable types while also benefiting from type hinting. Without union types, if a variable could be one of two types, like NULL or integer, the type declaration would be omitted and replaced with a *docblock* comment.

Example:

```
function do_the_thing(ThingOne|ThingTwo $thing) { ... }
```

2. **New String function** – Added new string function like `str_contains($haystack, $needle)`, `str_starts_with($haystack, $needle)`, `str_ends_with($haystack, $needle)`
3. **Named Arguments** – Helps to eliminate optional parameters by passing empty or null values as placeholders.

Example:

```
function do_the_thing( $one, $two, $three ) { ... }
```

```
do_the_thing(  
    one: 'that got away',  
    two: 'towers',  
    three: 'little pigs'  
)
```

4. **Nullsafe Operator** – When accessing a property multiple levels deep, checking for null values each step down the line is no longer necessary, as shown in the following example.

```
if( null !== $user ) {  
    if( null !== $user->profile ) {  
        echo $user->profile->getAvatar();  
    }  
}
```

This code block can be reduced by below line

```
echo $user?->profile?->getAvatar();
```

5. **Constructor Property Promotion** – In this we don't define properties separately, now we can define it in the constructor argument itself along with access modifiers as well.

Example:

```
public function __construct(protected OneCount $one, protected TwoCount $two, protected  
ThreeCount $three) {  
  
    // Your code block
```

}

6. Readonly class - In previous syntax, it is possible to dynamically set and retrieve class properties that are not declared. But in readonly class can not set and modify the class properties.

session

- super global variable
- combination of (domain + browser + macid + IP)

cookies

- super global
- can't create can't destroy

SOLID Principles:

- S - Class should have one responsibility, and therefore it should have only a single reason to change.
- O - Open for extension and close for modification, in doing so, stop from modifying existing code.
- L - Liskov substitution should be able to replace parent responsibility with a child without disrupting the behaviour of our program. (Similar to overriding)
- I - Interface Segregation is used to segregate the work for better usage and code readability. A template which has different usage for the different person
 - then segregation will help to achieve this work.
- D - Dependency Inversion - A child class should always dependent on the parent class. Parent class should never be dependent on any child class.

SDLC

- 1) Waterfall model
- 2) Interactive Model
- 3) Spiral Model
- 4) Agile Modal
- 5) V-Modal
- 6) Big Bang Modal

SDLC Steps:

- Planning and Requirement Analysis
- Designing
- Coding / Implementation
- Testing
- Deployment
- Maintenance

How to secure your application?

- Update PHP version regularly
- Use SSL certificate for HTTPS
- Log every error
- Use prepared statements in SQL queries
- Always validate user inputs

Dependency injection means, a function which takes a class as an argument and creates an object for the same. We mostly use constructor for this.

The Distinction Between High-Level Design And Low-Level Design Is As Follows:

S.No.	LOW-LEVEL DESIGN	HIGH-LEVEL DESIGN
1.	LLD is an abbreviation for Low-Level Design.	HLD stands for High-Level Design.
2.	Low-Level Design, like detailing, refers to the component-level design process.	A high-level design is an overall system design related to the entire system design.
3.	It provides a full description of each module.	It defines the application's general description/architecture.
4.	It is often referred to as micro-level detailed design.	It is often referred to as macro-level System design.
5.	Designers and developers make it.	A solution architect designs it.
6.	Low-Level Design explains the module's functional logic in detail.	High-Level Design and describes the module's concise functioning.
7.	It is produced as a secondary means following High-Level Design.	It is created initially, which implies it comes before Lower Level Design.
8.	Participants in Low-Level Design include the design team, operating teams, and implementers.	The participants in High-Level Design are the design team, the review team, and the client team.
9.	The Low-Level Design process transforms the High-Level Solution into a Detailed Solution.	A high-Level Solution transforms a business/client demand into a High-Level Solution.
10.	The output criteria in LLD are programme definition and unit tests plan.	The output criteria in HLD include database design, functional design, and review records.

OOP's

- Abstract: Is a way of hiding something from another resource, The implementation details will be hidden.
 - abstract class: create a common definition of a base class and share it with the derived class. Will have an abstract method and non-abstract method with the body. cannot create an abstract class object, to use this class we need to extend it.
 - abstract method: Does not contain the body. to use any abstract method, need to extend in another class and then have to define.
- Encapsulation is a process to restrict a direct access of a class data. It is also Wrapping data members and data functions in a single unit.

How to achieve:

- we create a class and make private data members of the class.
- Using Getter & Setter methods.
- Inheritance: Accessing the features of one class to another class.
- Polymorphism: Something which has a different type. It depends on the level of hierarchy.

String Functions:

- addslashes()
- addslashes()
- chop()
- chunk_split()
- char()
- fprintf()
- echo()

- strtoupper()
- strtolower()
- lcfirst()
- ucfirst()
- ucwords()
- strstr('String', 'r') – case sensitive / stristr('String', 'l') – case insensitive

// Output: ring, Output: ing

- strpos('String', 'l') – case sensitive / stripos('String', 's') – case insensitive

// Output: false, Output: 0

- strrev('string') – reverse a given string

// Output: gnirts

- substr('string', 2) – return part of string from given index

// Output: ring

Array function:

- sort – asc
- rsort – desc
- asort – sort based on values but key will be remains same (asc)
- arsort – sort based on values but key will be remains same (desc)
- natcasesort – will sort based on natural number first or ASCII value
- array_change_key_case
- array_map – Use to when we need to operate on each and every element of array.(without any condition)

Ex:

```
function squareValue($number) {
```

```

        return pow($number, 2);
    }

    $numbers = [2, 4, 7, 9];

    $transformedNumbers = array_map('squareValue', $numbers);

    print_r($transformedNumbers);

```

Output:

Array

```

(
    [0] => 4
    [1] => 16
    [2] => 49
    [3] => 81
)

```

- `array_filter` – Use to when we need to operate on each and every element of array.(with condition)

Ex:

```

function testNumber($number) {
    return $number % 2 == 0;
}

$numbers = [2, 3, 7, 8, 10, 21, 42, 45];

$sevenNumbers = array_filter($numbers, "testNumber");

print_r($sevenNumbers);

```

Output:

Array

```

(
    [0] => 2
    [3] => 8
)

```

`[4] => 10`

`[6] => 42`

)

- `array_reduce` – Used to operate on every element and its result for the next element using a callback function. It takes a minimum 2 argument 1st array, and 2nd callback function and 3rd for carry forward(the result).

Ex:

```
function doSum($carry, $item) {  
    return $carry + $item;  
}  
  
$numbers = [2, 4, 7, 9, 11, 22];  
  
$sum = array_reduce($numbers, "doSum", 0);  
  
echo $sum;
```

Output:

`55`

- `array_walk` – This function use to run each array element in a user-defined function. The array's keys and values are parameters in the function.

Ex:

```
function myfunction($value, $key)  
{  
    echo "The key $key has the value $value<br>";  
}  
  
$a = array("a" => "red", "b" => "green", "c" => "blue");  
  
array_walk($a, 'myfunction');
```

Output:

The key a has the value red

The key b has the value green

The key c has the value blue

- `json_decode()` – First parameter will have the json object and the second will set it to true for getting data in an array, Default is false.
-

Javascript / JQuery

- Features of jQuery : Easy DOM manipulation, Lightweight framework, easy syntax, event handling
- `var` will have an access to the variable throughout the script but `let` has the script within the scope.
- Strict mode provides a strict operational environment.
- A closure is a function having access to the parent scope, and without having the name of the function.
- Callback function is a function passed an argument to another function or call at the return time.

ES6

Helpers

- Map Array - Use to when we need to operate on each and every element of array.(without any condition)
- Filter Array - Use to when we need to operate on each and every element of array.(with condition)
- Find Array
- Every & some
- Reduce

JavaScript:

- JavaScript is a scripting language for creating dynamic web page content.

- What is “defer” attribute in <script>, What is use of “defer” in <script>? = It will wait for HTML to be loaded completely before loading script file, thus will not break any dependent HTML code.
- Use of ‘type=“module”’ attribute? = It enables the feature of export and import functionality.
 - Syntax for import
 - (a) import variableName from filePath;
 - (b) import { variableName1, variableName2 } from filePath;
 - (c) import * as aliasName from filePath;

MySQL:

Notes: default storage engine for MySQL until December 2009. With the release of MySQL 5.5,

- MyISAM was replaced with InnoDB.

MariaDB is a compatible improved version of MySQL.

- Features which is non-existed in MYSQL
- Faster loading
- Better for huge data
- Provide extra engines category

CSV:

```
(CREATE TABLE csv_test (id INT not null, value CHAR(20) not null) ENGINE = CSV;)
```

```
(INSERT INTO csv_test VALUES (1, 'Record 1'), (2, 'Record 2'), (3, 'Record 3'));
```

- To change DB engine you have to write ENGINE=CSV at the last of the query
- CSV column does not supporting null value
- CSV Doesn't support - auto increment, primary, unique key, Indexing, Transactions
- CSV Display data in table using any tool.

- Normalization is a collection of principle that guarantee to reduce data redundancy and anomaly and main aim to avoid collection of irrelevant data together.
- ACID (Atomicity, Consistency, Isolation, Durability)
- Cluster index - Sort and store the data rows in the table or view based on their key values.
- A Non-Clustered index is a special type of index in which the logical order of the index does not match the physical stored order of the rows on the disk.
- MySQL & MySQLi - MySQL is procedural oriented where MySQLi is object oriented and procedural oriented both. (We can use prepared statement in MySQL)
-

Joins :

Example of joins with practical data:

A = 1,2,3

B= 1,3,4

inner joins = 1,3

left join = 1,2,3

right join = 1,3,4

cross Join = 1,1 1,2,1,4 2,1,2,3,2,4,3,1,3,3,3,4

Example with Query:

=> select ---, --- from table alias_name left join second_tab alias_name on l_t = r_table. (Left Join)

=> select dt_1 .id, dt_1.name, dt_1 .hod_name from dep_table dt_1 , dep_table dt2 where dt_1.id=dt2 .hod_id; (Self Join)

=> **Get 2nd highest salary query(example)**

1. SELECT * FROM `new_employees` WHERE salary < (SELECT MAX(salary) FROM new_employees) ORDER BY salary DESC LIMIT 1;

2. `SELECT * FROM `new_employees` GROUP BY salary ORDER BY salary DESC LIMIT 1, 1;`

Laravel :

- How to use REST API? Enter the URL of the API in the textbox of the tool.
 - ü Steps:
 1. Select the HTTP method used for this API (GET, POST, PATCH, etc).
 2. Enter any headers if they are required in the Headers textbox.
 3. Pass the request body of the API in a key-value pair.
 4. Enter the required content type (such as application or JSON).
- How can you secure a restful API?
 - ü Use HTTPS (obtain a valid SSL certificate), Implement authentication and authorization, such as API keys, OAuth, JWT.
- How to validate JWT token?
 - ü (JSON Web Token) a string of random alphanumeric characters. base64url-encoded and joined together as a string separated by dots. Less sure, needs proper validation.
- Tell me about the Composer.json file structure?
 - ü Composer, Require, Require-dev, Autoload, Autoload-dev
- How to connect from php to database?

ü using mysqli_connect();

- How to create the MySQL user?

ü CREATE USER '<CNCC User Name>'@'%' IDENTIFIED BY '<CNCC Password>';

ü GRANT SELECT, INSERT, DROP EXECUTE ON <CNCC Database> . * TO '<CNCC User Name>'@'%';

- Which command used to create the seeder in Laravel and how to run the migrate?

ü php artisan make:seeder UserSeeder;

ü php artisan db: seed --class="";

- Rollback command, how to two step back rollback

ü php artisan migrate: rollback

- Difference between php artisan migrate: refresh and php artisan migrate: fresh?

ü The difference between “refresh” and “fresh” is that the new fresh command skips all the down methods or the rollback by dropping the tables, then running through the up methods.

ü Refresh does rollback first then migrate the migration table.

ü Fresh will drop all the table at once and then execute the table.

- Write query for delete record where id=8 in table?

ü Delete from table name where;

- What is the purpose of the .env file and how to set the auth variable?

ü To store sensitive data such as passwords, API credentials, and other information that should not be written directly in code.

- Explain what NoSQL databases are?
 - ü NoSQL databases store data in documents rather than relational tables
- Define containerization.
 - ü Software developers use containerization to deploy applications in multiple environments without rewriting the program code.
- Explain what REST means in backend development?
 - ü Representational state transfer (A type of software architecture that was designed to ensure interoperability between different Internet computer systems)
- Monolithic architecture is a unified development model for software applications. It has three components: Client-side user interface Server-side application Data interface All three parts interact with a single database.)
- Microservices allow a large application to be separated into smaller independent parts, with each part having its own realm of responsibility.
- SSL(Secure socket layer) is standard technology for securing an internet connection by encrypting data sent between a website and a browser.
- Stack overflow - When a computer program tries to use more memory space in the call stack than has been allocated to that stack.
- ENV provides more flexibility and convenience in managing the application's configuration settings.
- Composer is a tool used for managing dependencies in PHP. In order to manage its package dependencies and autoload classes, Laravel makes use of Composer.

Vue:

Interpolation

- It is a technique of rendering the data inside the template. Mainly used as “{{ }}”.

Teleport

- Teleport technique is used to move HTML elements to the desired element from the nested structure.
- Usage: `<teleport to="body"><p>Here text!</p></teleport>`

Composition API

- Composition API is an alternate way of writing vue logic in which we need to write our logic into `setup()` only and return functions and properties.

refs

- `refs` is a Vue instance property which used to select or reference HTML element or child element in template of your application.
- We can register refs in HTML like `<input type="text" ref="input">` and it can be used as `this.$refs.input` or `this.refs['input']` in script.
- Mainly it used in Vue3(Composition API)