

Using Data Structures in PHP - Guide

1. What is a Data Structure in PHP?

A data structure in PHP is a way to organize and store data efficiently.

Common types include arrays (indexed & associative), stacks, queues, and multidimensional arrays.

2. Using Arrays to Store Records

```
$students = [  
    ['id' => 1, 'name' => 'Saket'],  
    ['id' => 2, 'name' => 'Rahul']  
];  
  
foreach ($students as $s) {  
    echo $s['name'];  
}
```

3. Stack (LIFO) in PHP

```
$stack = [];  
array_push($stack, 'A');  
array_push($stack, 'B');  
echo array_pop($stack); // Output: B
```

4. Queue (FIFO) in PHP

```
$queue = [];  
array_push($queue, 'A');  
array_push($queue, 'B');  
echo array_shift($queue); // Output: A
```

5. Nested Arrays for Menus or Hierarchy

```
$menu = [  
    'Home',
```

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```
'Products' => ['Laptops', 'Mobiles'],  
'About'  
];  
  
echo $menu['Products'][0];
```

6. Working with JSON

```
$json = '{"name": "Saket", "skills": ["PHP", "HTML"]}';  
$data = json_decode($json, true);  
echo $data['skills'][0]; // Output: PHP
```

7. Searching & Sorting

```
$nums = [5, 3, 9];  
  
sort($nums);  
  
echo array_search(3, $nums);
```

8. Multidimensional Arrays

```
$matrix = [  
    [1, 2],  
    [3, 4]  
];  
  
echo $matrix[1][1]; // Output: 4
```

9. Summary - When to Use What

- Use Indexed Arrays to list records
- Use Stack for LIFO logic
- Use Queue for FIFO logic
- Use Associative arrays for key-value data
- Use JSON to handle external data (API)
- Use Nested arrays for trees or menus