# Object-Oriented Programming (OOP) in PHP

OOP (Object-Oriented Programming) is a programming paradigm (style) that organizes code using objects and classes instead of just functions and logic.

## Benefits of OOP

• Encapsulation – keep data safe inside objects

• Abstraction – hide unnecessary details

• Inheritance – reuse code from other classes

• Polymorphism – change behavior depending on the object

These are known as the 4 Pillars of OOP.

### 1. Encapsulation

• Definition: Wrapping data (variables) and methods (functions) that work on the data into a single unit — a class.

• You can control access to data using visibility keywords: public, protected, and private.

### Public, Private, and Protected in PHP

These are **access modifiers** used in Object-Oriented Programming (OOP) to control **visibility** of class properties and methods.

|  |  |  |  |
| --- | --- | --- | --- |
| Modifier | Accessible Within Class | Accessible in Subclass | Accessible Outside Class |
| public | ✅ Yes | ✅ Yes | ✅ Yes |
| protected | ✅ Yes | ✅ Yes | ❌ No |
| private | ✅ Yes | ❌ No | ❌ No |

### 2. Abstraction

• Definition: Hiding complex implementation details and showing only essential features.

• Achieved using abstract classes or interfaces.

• Helps reduce complexity.

### 3. Inheritance

• Definition: A class can inherit properties and methods from another class.

• Promotes code reuse.

• Use the extends keyword.

### 4. Polymorphism

• Definition: The ability of different classes to provide a different implementation of the same method.

• Can be method overriding or interface implementation.