

Encapsulation vs. Data Hiding - Are You Managing Your Code Like a Bank Manages Money?



① What's the Difference?

Encapsulation = Grouping data & methods together 

Data Hiding = Restricting direct access to sensitive data 

 **Bank Analogy:**

 **Encapsulation** = A bank (class) manages accounts & transactions internally.

 **Data Hiding** = You can't access vaults directly, only authorized transactions are allowed.



② Encapsulation in Banking

Encapsulation ensures controlled access to data & behavior.

Example: A BankAccount class encapsulates balance & transactions.

```
● ● ●  
1 public class BankAccount  
2 {  
3     private decimal balance; // Hidden data  
4  
5     public void Deposit(decimal amount)  
6     {  
7         if (amount > 0) balance += amount;  
8     }  
9  
10    public decimal GetBalance() => balance;  
11 }
```



③ Data Hiding in Banking

Data Hiding protects sensitive data from direct access.

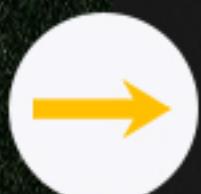
Example: Hiding account PIN while allowing authentication..

```
● ● ●  
1 public class BankAccount  
2 {  
3     private string pin; // Hidden PIN  
4  
5     public void SetPin(string newPin)  
6     {  
7         if (newPin.Length == 4) pin = newPin;  
8     }  
9  
10    public bool ValidatePin(string input) => pin == input;  
11 }
```



④ Comparison

Feature	Encapsulation	Data Hiding
Definition	Wrapping data and methods together	Restricting direct access to data
Purpose	Organizing and structuring code	Protecting sensitive data
Access Control	Uses public, private, and protected members	Primarily uses private members
Example	Class with private fields & public methods	Hiding a password with controlled access
Best Practice	Keep fields private, expose behavior via methods	Avoid exposing internal details unnecessarily



⑤ Common Questions ?

Top Interview Questions

- Difference bw Encapsulation and Data Hiding.
- How does Data Hiding improve security in software?



Let me know if this helped!

