



#24

DAY

C++ COMPLETE BOOTCAMP

INSPIRE CLUB, MANIT BHOPAL

D
BRINGS

C++

Complete
Bootcamp



Learn How To Apply Problem Solving Skills

Hello CPPBuddies

Day No. 23

Welcome
To
C++ COMPLETE BOOTCAMP
Your Guide To A Solid Foundation in C++
Let us begin

Deep Dive Into OOPs

Four Pillars of Object Oriented Programming (OOP)

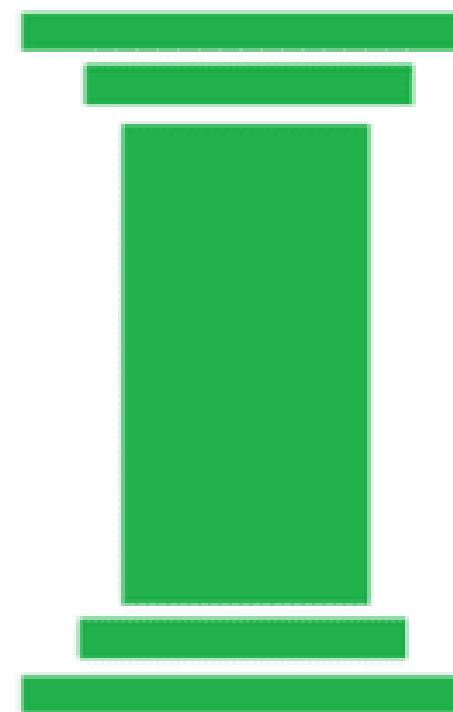
There are four Pillars of Object Oriented Programming:

- **Abstraction**
- **Encapsulation**
- **Inheritance**
- **Polymorphism**

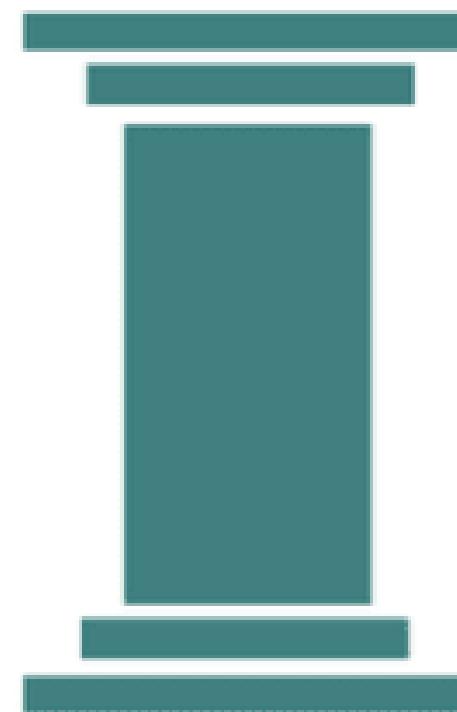
Lets try to understand each of them
in a most easiest way!

Object Oriented Programming

ENCAPSULATION



ABSTRACTION



INHERITANCE



POLYMORPHISM



1. What is **Abstraction**?

Abstraction of Data or Hiding of
Information is called **Abstraction**!
or in other words, what are those
things that a user is **not concerned**
about.

2. What is **Encapsulation**?

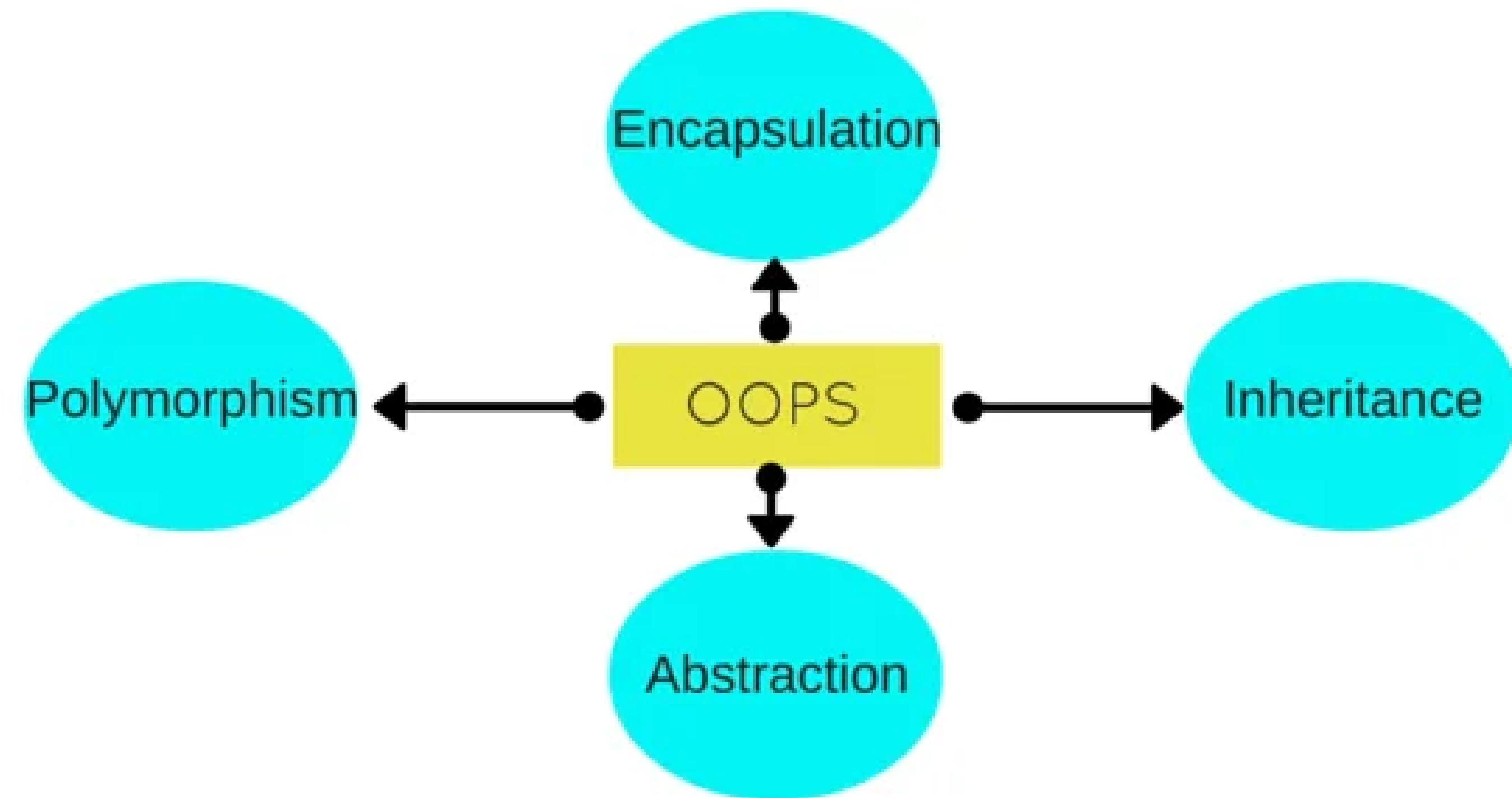
Binding of Data and Functions (that manipulate the data) together and keep both **safe from outside interference** and misuse is called **Encapsulation**

3. What is Inheritance?

Inheritance enables new objects
to take on the properties of
existing objects

4. What is Polymorphism?

It is the ability to redefine methods for derived classes. or we can say that object can behave in **different forms** is call **Polymorphism**.



ABSTRACTION

Data abstraction refers to, providing only essential information to the outside world and **hiding their background details**, i.e., to represent the **needed information** in program **without presenting the details**.

For example, a **database system** hides certain details of how data is stored and created and maintained.

Similar way, C++ classes provides different methods to the outside world without giving internal detail about those methods and data.



DEMO

Abstraction Example



C++ Abstraction in C++

- 01 Using Classes
- 02 Using Header Files

Encapsulation

Encapsulation is placing the data and the functions that work on that data in the same place.

While working with procedural languages, it is not always clear which functions work on which variables, but object-oriented programming provides you framework to place the data and the relevant functions together in the same object.

How can encapsulation be implemented?

By using
Classes
and
Structures

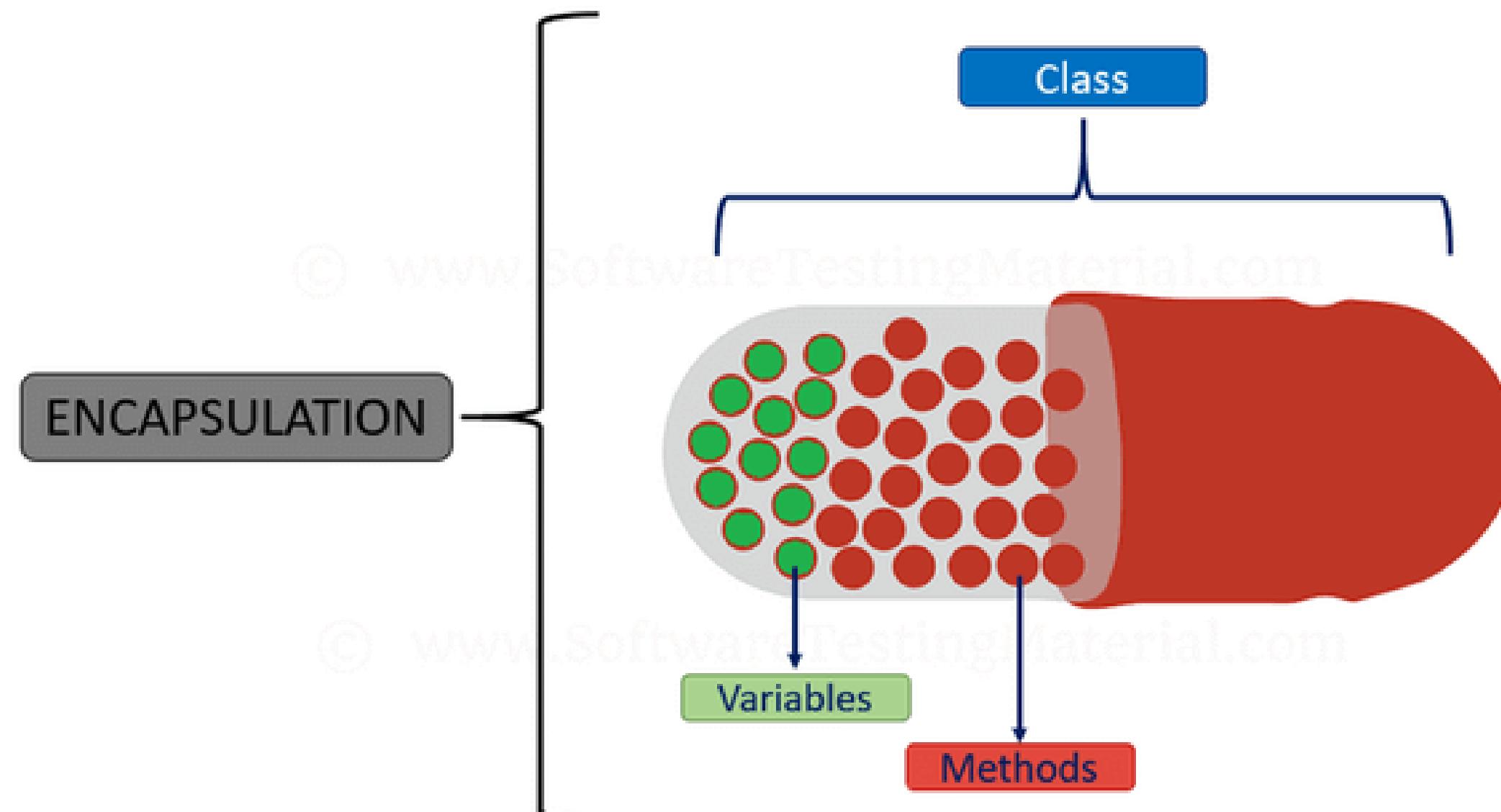
Class -> an encapsulated entity



DEMO

Encapsulation Example

Encapsulation: capsule



Inheritance

One of the most useful aspects of object-oriented programming is code reusability.

As the name suggests **Inheritance** is the process of forming a **new class** from an **existing class** that is from the existing class called as base class, new class is formed called as derived class.

This is a very **important concept** of object-oriented programming since this feature helps to **reduce the code size**.

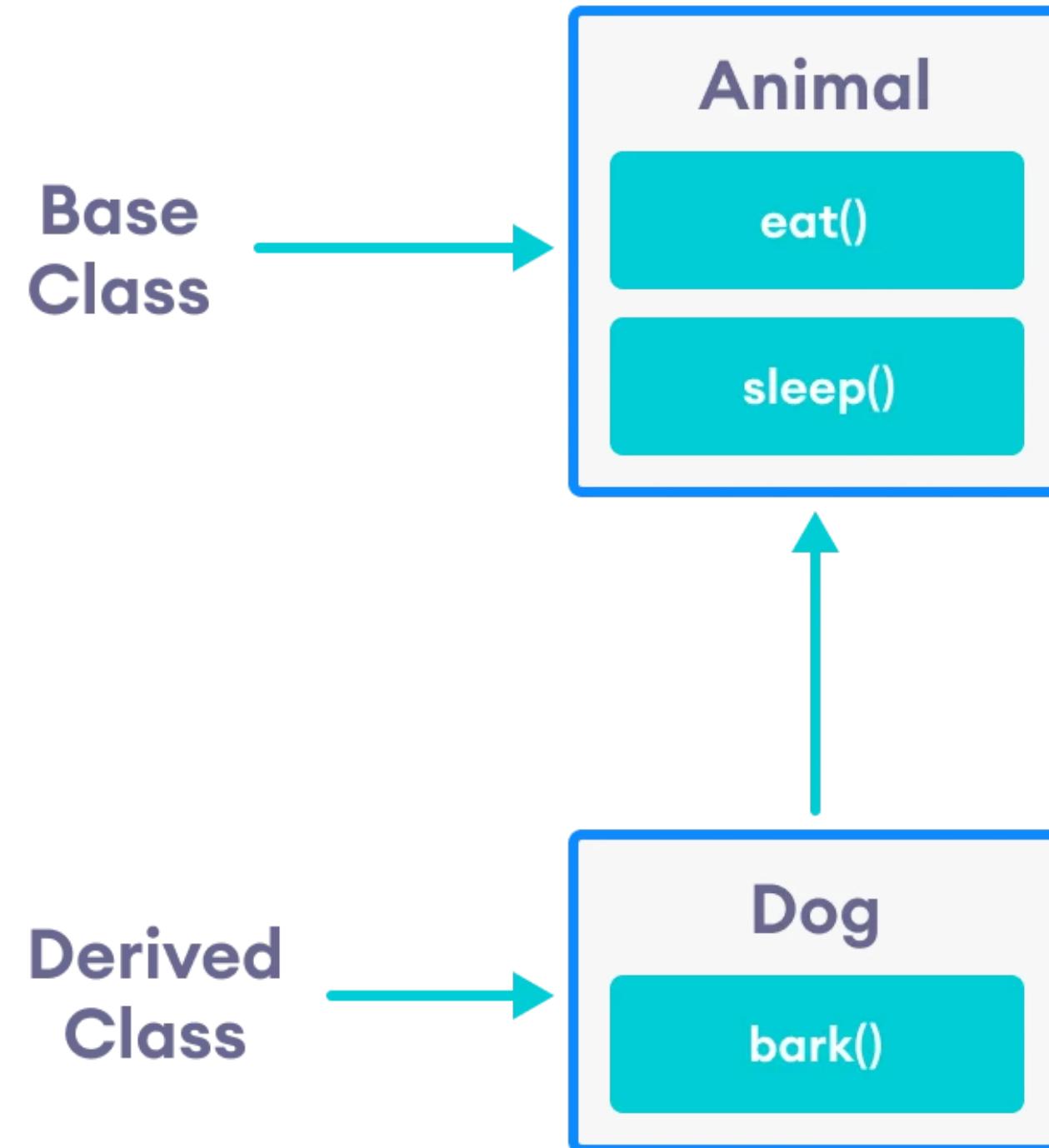


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Inheritance Example

Dog is an Animal

IS-A RELATIONSHIP



Polymorphism

The ability to use an operator or function in different ways in other words giving different meaning or behavior to the operators or functions is called **polymorphism**.

Poly refers to many.
That is a single function or an operator functioning in **many ways** different upon the usage is called polymorphism.

How can we implement polymorphism?

1. Operator Overloading
2. Function Overloading
3. Function Overriding



DEMO

Polymorphism Example



THANK YOU



keep calm,
wear mask,
and
study hard



whoami

AKASH MAJI
[TCS DIGITAL]
Your Mentor