

1. Classes and Objects

- **What are Classes and Objects?**:

- Think of a class as a blueprint or recipe, and objects as the cakes or cookies made from that recipe.
- Classes define what an object will look like and what it can do, while objects are the actual things created from those definitions.

- **Attributes**:

- Attributes are like the characteristics or properties of an object.
- For example, a `Dog` class might have attributes like `color`, `breed`, and `age`.

- **Methods**:

- Methods are like the actions or behaviors of an object.
- For example, a `Dog` class might have methods like `bark()` or `eat()`.

2. Encapsulation

- **What is Encapsulation?**:

- Encapsulation is like putting your toys in a toy box.
- It keeps all the important stuff (data and methods) together and safe from getting lost or messed up.

3. Inheritance

- **What is Inheritance?**:

- Inheritance is like passing down traits from parents to kids.
- Imagine you have a class called `Animal`, and you create subclasses like `Dog` and `Cat`.
- The `Dog` and `Cat` classes inherit traits (attributes and methods) from the `Animal` class.

4. Polymorphism

- **What is Polymorphism?**:

- Polymorphism is like having different shapes of blocks that can all fit into the same hole.
- It allows objects of different classes to be treated as if they were the same type.
- For example, both a `Dog` and a `Cat` can have a method called `speak()`, but they sound different.

5. Abstract Classes and Interfaces

- **What are Abstract Classes and Interfaces?**:

- Abstract classes are like empty shells waiting to be filled with specific details.
- They have some methods that must be filled in by subclasses.
- Interfaces are like promises – they say, "I will have these methods, but you need to figure out how to do them."

6. Composition and Aggregation

- ****What are Composition and Aggregation?****:
 - Composition is like building something big from smaller parts.
 - For example, a `Car` class might have attributes like `engine` and `wheels`, which are made up of other objects.
 - Aggregation is like having a container that holds other things.
 - For example, a `Library` class might have an attribute called `books`, which is a list of book objects.