📘 Dart OOP Assignment

1. Inheritance

🔹 Task:
Create a base class `Vehicle` with properties `brand` and `year`.

- Add a method `displayInfo()` that prints the brand and year.
- Create two child classes `Car` and `Bike` that inherit from `Vehicle`.
- Add unique properties to each (e.g., `doors` for Car, `type` for Bike).
- Override `displayInfo()` in both classes.

2. Method Override

🔹 Task:
Make a class `Animal` with a method `speak()`.

- Create two classes Dog and `Cat` that override `speak()` to print different sounds.
- In `main()`, create a list of `Animal` objects (some Dogs, some Cats) and loop to call `speak()` on each.

3. Abstraction

🔹 Task:
Create an abstract class Shape with a method `area()`.

- Implement two subclasses `Circle` and `Rectangle`.
- Calculate and return the area in each class.
- In `main()`, create objects and print their areas.

4. Static

🔹 Task:
Create a class `Counter` with:

- A static variable `count` initialized to `0`.
- A constructor that increases `count` every time a new object is created.
- A static method `getCount()` to print total number of created objects.

Test by creating multiple objects.

5. Method Overloading (Simulated in Dart)

⚠️ Dart does **not support overloading** directly, but you can simulate it using **optional/named parameters**.

🔹 Task:
Create a class `Calculator` with a method `add()` that works:

- With two parameters → sum of two numbers.
- With three parameters → sum of three numbers.
  (Hint: use optional parameters).

6. Mixins

🔹 Task:
Create two mixins:

- `Logger` → has a method `log(String msg)` that prints `[LOG]: msg`.
- `Printer` → has a method `printData(String data)` that prints `[DATA]: data`.

Create a class `Report` that uses both mixins and adds its own method `generateReport()`.

- Test by creating a `Report` object, logging messages, and printing data