ST33 Assessment – 15 Inner Classes and Inner Interfaces

Basic Questions:

1. **Simple Member Inner Class:** Write a program with a class `Outer` that has a member inner class `Inner`. The `Inner` class should have a method `show()` that prints "Hello from Inner Class". Create an instance of the inner class and call the `show()` method.

2. **Local Inner Class:** Create a class `MathOperations` with a method `performOperation(int a, int b)` that defines a local inner class `Addition`. The `Addition` class should have a method `add()` that returns the sum of `a` and `b`. Call the `add()` method from `performOperation()` and print the result.

3. **Anonymous Inner Class Implementing Interface:** Define an interface `Greeting` with a method `sayHello()`. Create an anonymous class implementing `Greeting` inside a method `greet()` of a class `Greeter`. The anonymous class should print "Hello, World!" when `sayHello()` is called.

4. **Static Nested Class:** Write a program with an outer class `Container` that has a static nested class `StaticNested`. The `StaticNested` class should have a method `display()` that prints "Inside Static Nested Class". Instantiate the static nested class from the `main` method and call `display()`.

Intermediary Tasks:

5. **Inner Interface:** Create a class `Device` with an inner interface `Battery`. The `Battery` interface should have a method `charge()`. Implement this interface in a class `Phone` and provide the implementation of the `charge()` method that prints "Phone is charging".

6. Write a class `Car` with an instance variable `String model` and an inner class `Engine` with a method `start()`. The `start()` method should print the car model. Create an instance of `Car`, set the model, and start the engine.