**Exercise 1: Implementing the Singleton Pattern**

**Logger.java**

public class Logger {

    private static Logger instance;

    private Logger(){

        System.out.println("Logger initialized");

    }

    public static Logger getInstance(){

        if(instance==null){

            instance = new Logger();

        }

        return instance;

    }

    public void log(String message){

        System.out.println("Log: "+ message);

    }

}

**Main.java**

public class Main {

    public static void main(String[] args){

        Logger logger1 = Logger.getInstance();

        logger1.log("This is the first log message.");

        Logger logger2 = Logger.getInstance();

        logger2.log("This is the second log message.");

        if(logger1 == logger2){

            System.out.println("Both logger1 and logger2 refer to the same instance.");

        }else{

            System.out.println("Different instances exist! Singleton pattern fialed.");

        }

    }

}