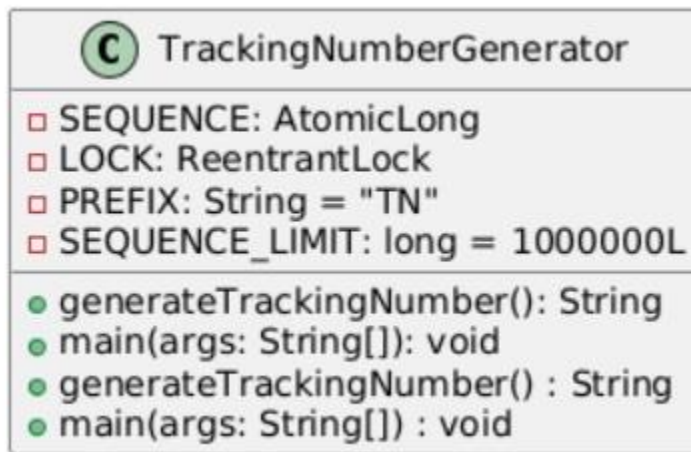


## Class Diagram:



## Java Code:

```
import java.util.concurrent.atomic.AtomicLong;
import java.util.concurrent.locks.ReentrantLock;
import java.time.Instant;

public class TrackingNumberGenerator {

    private static final AtomicLong SEQUENCE = new AtomicLong(0);
    private static final ReentrantLock LOCK = new ReentrantLock();

    private static final String PREFIX = "TN";
    private static final long SEQUENCE_LIMIT = 1000000L;

    /**
     * Generates a unique tracking number.
     * @return A unique tracking number.
     */
}
```

```

public static String generateTrackingNumber() {
    long timestamp = Instant.now().toEpochMilli();
    long mySeq;
    LOCK.lock();
    try {
        mySeq = SEQUENCE.getAndIncrement();
        if (mySeq >= SEQUENCE_LIMIT) {
            SEQUENCE.set(0); // Reset sequence if limit is reached
            mySeq = SEQUENCE.getAndIncrement();
        }
    } finally {
        LOCK.unlock();
    }
    return PREFIX + "-" + timestamp + "-" + String.format("%06d", mySeq);
}

```

```

public static void main(String[] args) {
    for (int i = 0; i < 10; i++) {
        System.out.println(generateTrackingNumber());
    }
}

```

**Output:**

28

LOCK.unlock();

Problems Javadoc Declaration Console × Progress Error Log

<terminated> TrackingNumberGenerator [Java Application] C:\Program Files\Java\jdk-11.0.16\bin\javaw

TN-1723462547022-000000

TN-1723462547056-000001

TN-1723462547056-000002

TN-1723462547056-000003

TN-1723462547056-000004

TN-1723462547056-000005

TN-1723462547056-000006

TN-1723462547056-000007

TN-1723462547056-000008

TN-1723462547056-000009