

# LIBRARY ANALYTICS SYSTEM

A Java-based system that models and analyzes library items using object-oriented design.

OCT 11, 2025

## TECHNOLOGIES USED:

Java, Java Streams, Object-Oriented Programming, Collections Framework, JUnit

## FULL DESCRIPTION:

The Library Analytics System was developed as part of the *Software Engineering practical class (SWER348)*. It models different library items such as books, magazines, and DVDs using inheritance and polymorphism principles. The system provides analytical insights into item usage, late returns, and category trends. It leverages Java Streams to process collections efficiently and outputs aggregated reports in real time.

## KEY FEATURES / ACHIEVEMENTS:

- ❖ Designed class hierarchy with clear inheritance (Book, Magazine, DVD).
- ❖ Implemented data analytics using Java Streams for fast processing.
- ❖ Added error handling and user-friendly console interaction.
- ❖ Wrote test cases using JUnit for validation and correctness.

## MY ROLE:

Lead Developer — responsible for class design, data processing logic, and testing.

## Screenshot Caption:

```
1  abstract class LibraryItem {
2      protected int id;
3      protected String title;
4      protected int year;
5
6      public LibraryItem(int id, String title, int year) {
7          this.id = id;
8          this.title = title;
9          this.year = year;
10     }
11
12     public int getId() {
13         return id;
14     }
15
16     public String getTitle() {
17         return title;
18     }
19
20     public int getYear() {
21         return year;
22     }
23
24     public abstract String getInfo();
25
26 }
```