Lab 3 : Student Activity Log Analysis System

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Dec 19, 2025

A university maintains a for each student enrolled in an online course. The log records student actions such as login time, resource access, and assignment submission. Each record is stored in a in the following format:

StudentID | Name | Activity | Date | Time

Example:

S101 | Asha | LOGIN | 2025-03-10 | 09:15
S102 | Ravi | SUBMIT_ASSIGNMENT | 2025-03-10 | 22:40

S101 | Asha | LOGOUT | 2025-03-10 | 11:30

The university wants to develop a to monitor student engagement and generate reports.
Design and implement a Python program to perform the following tasks:

- Create a with attributes such as student_id, name, and activities.
- Implement methods to:
- add a new activity
- display student activity summary

- Read student activity records from a .
- Write a to an output file showing:
- total number of logins
- total number of submissions per student

- Use to:
- validate student IDs (e.g., S followed by digits)
- extract date and time from each log entry
- identify only valid activity types (LOGIN, LOGOUT, SUBMIT_ASSIGNMENT)

- Implement a to:

- read the log file line by line
- yield one valid activity record at a time (memory-efficient processing)
- Display the final report on the console and save it to a file.
- Detect abnormal behavior (multiple logins without logout)
- Generate daily activity statistics
- Handle invalid log entries using exception handling