Module 2: SDLC Assignment Part 1

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Course: Software Development

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A diagram of software development

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Software Development Plan

**Library Patron Management System**

The primary purpose of this learning project is to design and implement a console-based Library Management System (LMS) for our client at a local library. This is our first customer as a client and I’m so excited to develop a plan and software for the clients’ needs. A software application that will allow a librarian to add patrons, remove patrons, or display a list of all patrons within the system. The system will be simple to meet the clients’ needs. We will now go over the system requirements, understanding the user needs, implementation plan including a UML diagram, and a testing strategy. We will use the SDLC V-Model that will evolve as this project continues.

**System Requirements**

**The features the customer desires:**

A**console-based** application for managing a library's list of current patrons. The features that it must implement are:

1. Each patron in the system has a unique 7-digit ID number.  Each patron also has a name, address, and overdue fine amount, ranging anywhere from $0-$250.
2. Users must be able to add patrons to the LMS from a text file.
3. Users must be able to manually enter the details of a new patron from the CLI.
4. Users must be able to remove patrons from the LMS using their ID  number.
5. Users must be able to see a list of all patrons currently in the LMS.
6. Users must interact with the system using an on-screen menu.
7. Data will be stored directly within the application; connection to a relational database is beyond the scope of work for this project.

**Requirements Gathering Understanding the user needs**

The user's input text file will be formatted as follows: each line represents a patron, and the id, name, address, and current overdue fine amount are separated by a dash. There will be no dollar sign shown with the overdue amount.

For instance:

1245789-Sarah Jones-1136 Gorden Ave. Orlando, FL 32822-40.54  
3256897-Mason Arby-6060 Saginaw St. Casselberry, FL 34852-0  
4567891-Avery Jones-1919 Pine Lance Blvd. Oviedo, FL 32478-1.36

**Implementation Plan**

The LMS should be implemented using some form of object-oriented programming using the software IntelliJ for this learning project. My thoughts for the system should include at least three classes as of this time. For now, until the programming team takes over the software design should be something simple as a Main for the menu, Library System should manage the adding, removing, importing, and display. Patron to store the details for the library members. This implementation plan is subject to change.

Hopefully the LMS system doesn’t confuse the librarian when removing patrons by ID.

Using IntelliJ idea to create the code.

https://www.youtube.com/watch?v=\_XQjs1xGtaU

<https://www.youtube.com/watch?v=XPLyBfdXzJw&t=1s>

Here is a simple V-Model plan for the project

**Testing Plan**

Unit Testing:  
- Verify add Patron correctly stores a new patron  
- Verify remove Patron deletes the correct patron  
- Verify import Patron loads valid patrons and rejects abnormal ones, checking for bugs

Integration Testing:  
- Ensure menu calls correct Library System methods  
- Test combined operations (import → remove → display)  
  
System Testing:  
- Validate all requirements are met

User Acceptance Testing:  
- Librarians run workflows to confirm ease of use

Using lucid.app I created a simple UML diagram for the LMS project

A diagram of a computer

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