Library Book Management System

Team B: SWEN-262 Design Project R1

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# REVISION TABLE

|  |  |  |  |
| --- | --- | --- | --- |
| ***Revision Number*** | ***Revision Date*** | ***Summary*** | ***Author*** |
| *0.1* | *02/14/2017* | *Domain Model* | *Anthony Palumbo* |
| *0.2* | *02/16/2017* | *Nouns & Verbs, Knowns & Unknowns* | *Charles Barber, Edward Wong* |
| *0.3* | *02/21/2017* | *Design Pattern Usage* | *Nicholas Feldman* |
| *1.0* | *02/22/2017* | *Initial creation and changes* | *Christopher Lim* |
| *1.1* | *02/03/2017* | *State vs. Strategy* | *Nicholas Feldman* |
| *1.2* | *03/02/2017* | *Design Evaluation* | *Anthony Palumbo* |
|  |  |  |  |

# PROBLEM STATEMENT

Design and implement the Library Book Management System (LBMS). The LBMS is Book Worm Library’s (BWL) system for providing book information to users, tracking library visitor statistics for a library statistics report, tracking checked out books, and allowing the library inventory to be updated. It is the server-side system that provides an API used by client-side interfaces that BWL employees use.

# SYSTEM REQUIREMENTS

At a high-level this project will be source controlled on GitHub, implemented in Java as a desktop application. Must be compatible with the standard Java 1.8 SDK installed on the RIT SE lab machines. The system does not require or use any form of external database, persisting only in standard Java constructs. The system will be delivered as an executable jar file and require no network connection to function. A start.bat file will be provided to set any required environment variables, perform any program specific initialization, and execute the program, and will able to be executed from a Windows Command Prompt.

# FEATURE REQUIREMENTS (USER STORIES)

|  |  |  |
| --- | --- | --- |
| ***No.*** | ***User Story Name*** | ***Description*** |
| 1 | API | The LBMS shall be use text-based requests and responses. |
| 2 | Visitor Registration | The LBMS will require that first time visitors to the library register. |
| 3 | Visits | The LBMS shall keep track of visits by visitors and the time each visitor spends at the library during each visit. |
| 4 | Operational Hours | The LBMS shall be available for full use while open from 08:00 to 19:00. All visits are automatically ended when the library closes at 19:00, and the LBMS does not allow users to start a new visit or check out books. |
| 5 | Searching | The LBMS shall respond to queries for book information. |
| 6 | Checking out | The LBMS shall track checked out books by visitors. The system shall allow for a maximum of 5 books per visitor to be checked out and each book may be checked out for a maximum of 7 days. |
| 7 | Fines | The LBMS shall apply an initial $10.00 fine to all books 1 day overdue. Subsequently, adding $2.00 for each additional week overdue, with a maximum fine of $30.00. |
| 8 | Statistics Report | The LBMS shall respond to queries for an informational report of the library. |
| 9 | Advance Time | The LBMS shall support a feature to track and advance time. |
| 10 | Clean Shutdown | The LBMS system shall provide a mechanism for a “clean” shutdown of the system. The system shall end any visits in progress at system shutdown and persist all data at system shutdown. |
| 11 | Startup | The LBMS system shall restore persistent state on startup. |

# DOMAIN MODEL

# COMPONENTS AND FUNCTIONS

|  |  |
| --- | --- |
| ***Component*** | ***Function*** |
| API | * Component Behavior:  1. Accepts request string 2. Executes specified functions based on a given request 3. Returns an appropriate response string |
| Visitor Registration | * Component State:   Maintains:   1. Visitor First Name 2. Visitor Last Name 3. Visitor Address 4. Visitor Phone Number 5. Visitor ID  * Component Behavior:  1. Enter/Exit the library 2. Borrow/Return books |
| Visits | * Component State:   Maintains:   1. Visitor 2. Date and Time of Visit 3. Time of Departure 4. Duration of Visit  * Component Behavior:  1. Generate statistics report |
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# ARCHITECTURAL MODEL

# SUBSYSTEM DESIGN

# DESIGN PATTERN USAGE

# UML CLASS DIAGRAMS

# CLASS RESPONSIBILITY CARDS

# SEQUENCE DIAGRAMS