LMS, a Library Management System

Design Document

Technical Dependencies Summary:

OS:

- Ubuntu 16.04.1 LTS

Languages and Libraries:

- Python 2.7.12
- PyQt4
- mysql Ver 14.14 Distrib 5.7.11, for Linux (x86_64) using EditLine wrapper
- bash

System Architecture:

Logically, the system can be divided into three interactive parts:

- Back end database, Library;
- Program for query and data manipulation on the Library database;
- GUI for interaction with database user.

Back end database is created in command line by using QSL script. Python programming language and PyQt4 library were used in program development and GUI development. Program interact the back end database and GUI for database users and served as the most important part phase of the development of the library management system.

SQL script is used for schema creation in command line because the schema will usually not changed during the life cycle of a small database application like what was developed in this implementation.

Initial popularization, queries and data manipulation is done by programs. It is the center part of the design. These programs interact with the back end database, and are quite simpler to do data query and manipulation using programs than in command line.

The main design aim of graphical user interface is provide a user friendly interface for database query and manipulation. In order to make the GUI friendlier, in this system, tab view is main style used for the display of the main interface of the library management system. By using tab style, many different interfaces can be combined into one main window, it is much better than using pop up dialogs.

The program was divided individually into following parts based on the functional requirements:

- book search and availability,
- book loans, check out,
- book loans, check in,
- borrower management, i.e., borrower add
- fines search and fines paying

The program directly interacts with the back end ‘Library’ database and called by the GUI program which through system arguments.