Digital Library management

Criteria A – Planning

Defining the problem

Ms Kamna, a primary school librarian, is my client. She is responsible for enhancing the reading skills of primary students. She does this using a reading program that calls for her to keep track of the reading progress per student according to the defined reading levels and maintain an inventory for the books.

Ms Kamna currently keeps the manual record of the books issued to the students. She enters/updates the book details in a register to keep a record of books issued to students and returned by the students. Each student is assigned a unique reference number to keep a record of which book is being assigned to which student. This calls for her to make a record of the date of issue and return, book details, student's details, etc. She also needs to maintain a record of the number of books read by students per month for students' reading progress.

After having the initial conversation with my client, I conducted two interviews with her on 20th Apr 21 and 30th Apr 21 present in the appendix. This helped me identify the problems she was facing. The current process of manual recording is inadequate and error-prone. She has to always flip over pages to cross-check if a book is issued or returned or update/remove any book or student information. Also, it is a daunting task for my client to locate and tally which all books are available where she spends long hours searching up the library shelf. Also, the client needs to keep a manual record of the overdue books. At last, my client has to share a manually prepared monthly report with the student's parents about their child's progress and the total books read.

Word count - 285

Rationale for the proposed solution

I believe I can make a difference by easing down Ms Kamna's operation overhead. The best way to do so is to digitize the process for her so that it's easy to use, faster and error-free.

A computer-based system can enable the record updates for students and books quite effectively and as the information remains in the system it can be pulled anytime to check book availability, student progress, etc conveniently. Another reason for digitization is to prevent paper wastage as per month a register used to be maintained and printing of reports could be avoided by sending emails.

I have decided to make this a computer-based system using Java NetBeans as the front end and PostgreSQL as the backend. I have chosen Java because Java NetBeans for the front end will provide my client with a user-friendly Graphic user interface which is easy to operate. Also, the dynamic forms used in the software will make it easy for my client to add/update/remove any information within a few

seconds. Another reason is because I have prior knowledge in Java which can aid the development of the program. The backend will be made with PostgreSQL. I have chosen PostgreSQL because it will allow my client to access the information in real-time instantly and easily store and retrieve data. Also, provide login credentials to the client to restrict undesired individuals or organisations from accessing the data.

Word count – 234

Success Criteria

1) Login screen to provide privacy and restrict undesired access to the library management system

2) A user-friendly desktop application with easy navigation

3) Easily accessible data from GUI with pre-populated dropdown fields

4) Avoidance of Data Re-entry at multiple forms like Student form, Book form and hence ease down manual entries

5) Real-Time access to Student and Book Data with a robust supported Database

6) Automatically filtering data from the database to get the desired results from the PostgreSQL

7) List out all the student's names with their details who have overdue books

8) Check whether a book is overdue for a student or not and If there is an overdue book then Automated Warning Generation for Overdue Books and recommended action

9) Searching available books based on criteria chosen by the client

10) Automatically create a Bar Graph depicting the progress of the student over the period of the month chosen by the client

11) Automatically generating a progress report mentioning the information about the books read by the student and how long has he read the book.

12) Forms Refreshed seamlessly to reflect the updated field data

13) Automatic retrieval and reporting the total number of books read in each month per student in graphical format