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**EEX3467 – SOFTWARE ENGINEERING AND
CONCEPTS**

MINI PROJECT

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SOFTWARE SOLUTIONS FOR LIBRARY SYSTEM

Wednesday, 6 April 2022, 12:00 AM- Friday, 13 May 2022, 12:00 AM

Introduction

1.1 Introduction to the project

Every library has a unique system according to its facilities and Requirements. We only saw the part about borrowing books but library staff members gathered with huge responsibilities. Every library system consists of all the daily tasks of the library. Library Management System is used by every librarian to manage the library in a perfect way. Every library system has the main task like issuing books, returning books, records of new books, new student registrations, etc.

Every library has a collection of information about books and readers. In this current library system, I found many difficulties. Solution for the errors I had created a new system for the library with great user-friendliness.

I have given many new features which are generally not available in the current system. In the new system users no need to waste time finding their library cards. Library members can identify the users by the unique library card ID number. Users can register to the system by providing their personal details and after that, they provide the login id number as library card Id number password is their choice. This is the software solution for library management Systems for school libraries.

This software system is designed for a library management system which will give more benefits to the students and the staff members of the library.

1.2 Current Library System

I have selected a School library for my project. This library, it has no developed system for every task, but they have a unique system for managing their daily work because it has no large amount of students. I start up with how they record the new reader's registration task. They have a card called a "library card". The library has provided this library card for the reader's name. In this card it has columns. They are year, grade, Receipt number, Name of the book, issue date, return date, the sign of the reader, and the sign of the library staff member.

Student Name:

Year	Grade	Receipt Number	Book Name	Issue Date	Return Date	Sign of Reader	Sign of Staff

This is how they recorded the details when they provide books to the readers. They have given one week time period to read the book and borrow it but if they cannot read it within a week they must visit the library and extend their date by filling this again. The book has a number it was the receipt number. When the reader borrows a book they must sign in this card and when they return the book to the library, staff members sign in the card and accept the book. If the reader goes to a new grade no need to issue a new card they can continue on the current card by changing year and grade. If the reader leaves the school they must accept all the books to the library and get a receipt card otherwise they can't get the school leaving. The school leaver's cards are protected in a separate file in the library. If the readers couldn't return the book by the due date, they do not need to pay a fine but are advised Thoroughly.

Inside the library, library staff members have tasks to do. There is a book called Receipt Book. This book has all the names of the books in the library. When a new book is received in the library, library staff must write the new book details in this Receipt Book. Details like the name of the book, Author, received date, and give a number to the book by the order of the Receipt

Book. At the same time, they write the Receipt number on the book also and make a cover for the book and store it on the Book Shelves. When someone comes outside from the school check this Receipt Book. So the library staff members have a huge responsibility to update this Receipt Book. And also some special thing is if the pages less than 48 were not written in this Receipt Book, they were written in another small CR type exercise book. There are separate CR books for writing details of magazines, School Past Papers, and assignments.

Books are received by the library in many ways. Some people donate books to the library, students present books for their birthdays and also when money is passed out from the zonal office, they buy new books for their needs. When received books in those ways they were signed by the librarian in the school office and accept.

In this School library school teachers, students and non-academic staff members borrow books to read. There are two library staff members and a librarian. The details of all books in the library are not sent anywhere. All the information is only in the Receipt Book and those small CR Books I mentioned before. There is some special occasion, the students who read more books in a small time period has selected by the school and give the details of the student to the zonal office. They provide gifts for the students. This occasion has not happened these days because of the pandemic.

The damaged books were removed with the permission of the zonal office. If some books were damaged librarian inform the zonal office and they checked them after that the auction is being held or else destroy the books. Also removed the book name and the number of the Receipt Book.

This how the school library management system work.

1.3 Library details

Library Name : Paragastota Vidyaloka Maha Vidyalaya School Library

Address of the library: Moronthuduwa Horana Rd, Paragastota, 12414

Detail of Contact person :

Mrs.Anoma,

Librarian of School Library,

Paragastota.

Contact Details :0771785377

Stakeholders of the System

2.1 Stakeholders of the system

Stakeholders are who are the users, administrators, suppliers, beneficiaries, etc of the system. In this School library, I found some of them.

1. Administrators

Librarian

Two staff members

School Principal

2. Users

Students

School Teachers

Non-Academic Staff members

3. Suppliers

Donators

Students

Zonal Office members

Requirements Elicitation Methodology

3.1 Requirements Elicitation method

The first task in the software development process is requirement elicitation. It means gathering requirements. In this topic, we ask questions from users, clients, etc. This is the point we get a better idea of their old system and what will they expect from the new developing system. There are many kinds of requirements elicitation methods like Interviews, Use of focus groups, Observation, prototyping, etc.

I used Interview as Requirement Elicitation method. Firstly I contacted Mr.Anoma the librarian, and get a suitable date and time from her valuable time. During that time, I was readying my set of questions. These are the questions I asked to gather the requirements for the system to be developed.

1. How does a new student register for the library? what are the details get from them?
2. What happens when a student goes to a new grade?
3. What is the way used when a student leaves school?
4. Describe the way of issuing and returning books?
5. If they need to pay a fine when late to return?
6. What are the tasks and responsibilities done by you? Is there any book managed by you?
7. What are the ways of receiving books?
8. Who borrows books from the library?
9. Is anyone help you to do those tasks?
10. Is the details of the library given to any outside person or department?
11. How to remove damaged books from the library? What is the procedure?

I had asked those questions by the librarian by a voice call and recorded them on my mobile. I gathered all the requirements that I need for the development system. In this software development, we have to give the solutions for the new system.

According to the interview, I find some problems in this school library system.

1. Get more time to identify the student library card

In this system when the student goes to the library it gets more time to identify the library card because they identify it by the student's name. I give the solution by giving a library card number.

2. Receipt Book and library cards lost

If some reason Receipt Book is lost or stolen by someone or else if the book is damaged physically, it will be huge damage to the whole library. Library cards are also the same. So it is good if we move to a computerized system.

3. Library staff felt difficulties when a large gang of students comes at the same time

If a gang of students comes to borrow and return books same time staff can't sign them and accept them because there are only two staff members and a librarian. So need a develop system.

4 . Space consuming

The library received many books per year. So a large set of records can't store in the Receipt Book. It is not possible.

5. Cost

The school has no money to waste. The librarian said that they write details of magazines, past papers, and assignments in small CR books. So they need more books from time to time. It gains the cost of library management. If you used a computerized system only cost for maintenance.

Functional and Non-functional Requirements for the proposed system

4.1 Functional Requirements

1. New User Registration

Teachers, Students, and non-academic staff members must register first to the system by filling a form including their details. After that library offer a library card ID. Their information stored in a database.

2. User Login

When the pre-register user's login to the system they must enter the library card id as the username and they can provide the password they set before.

If the users enter a wrong password they can reset their old password to a new password.

3. Add new books to the library

This task is done by the librarian. When the school principal delivered books to the librarian, she must provide the Receipt Number to the book and then enter the Book name, amount of copies, and Delivered date to the library database. There are no same Receipt Number books in the library.

4. Search books

Search the book by the users only providing the Receipt number, because there is no same Receipt numbers.

5. Issue books and return books

When the librarian issues books enter the Receipt number of the book, Issue date, return date, and the user's library card id number into the database.

When the user returns the book enter the return date to the database.

6. Good reader presents

Select the students who read more books and send the details to the zonal office to give presents to them.

4.2 Non- functional Requirements

1. Security Requirements

Security is not a more important feature in the school library system.

2. Usability Requirements

The system is designed for user-friendly so that students and the librarian can perform tasks easily.

3. Reliability Requirements

The system should perform user registrations, book search and validations.

Business Actors

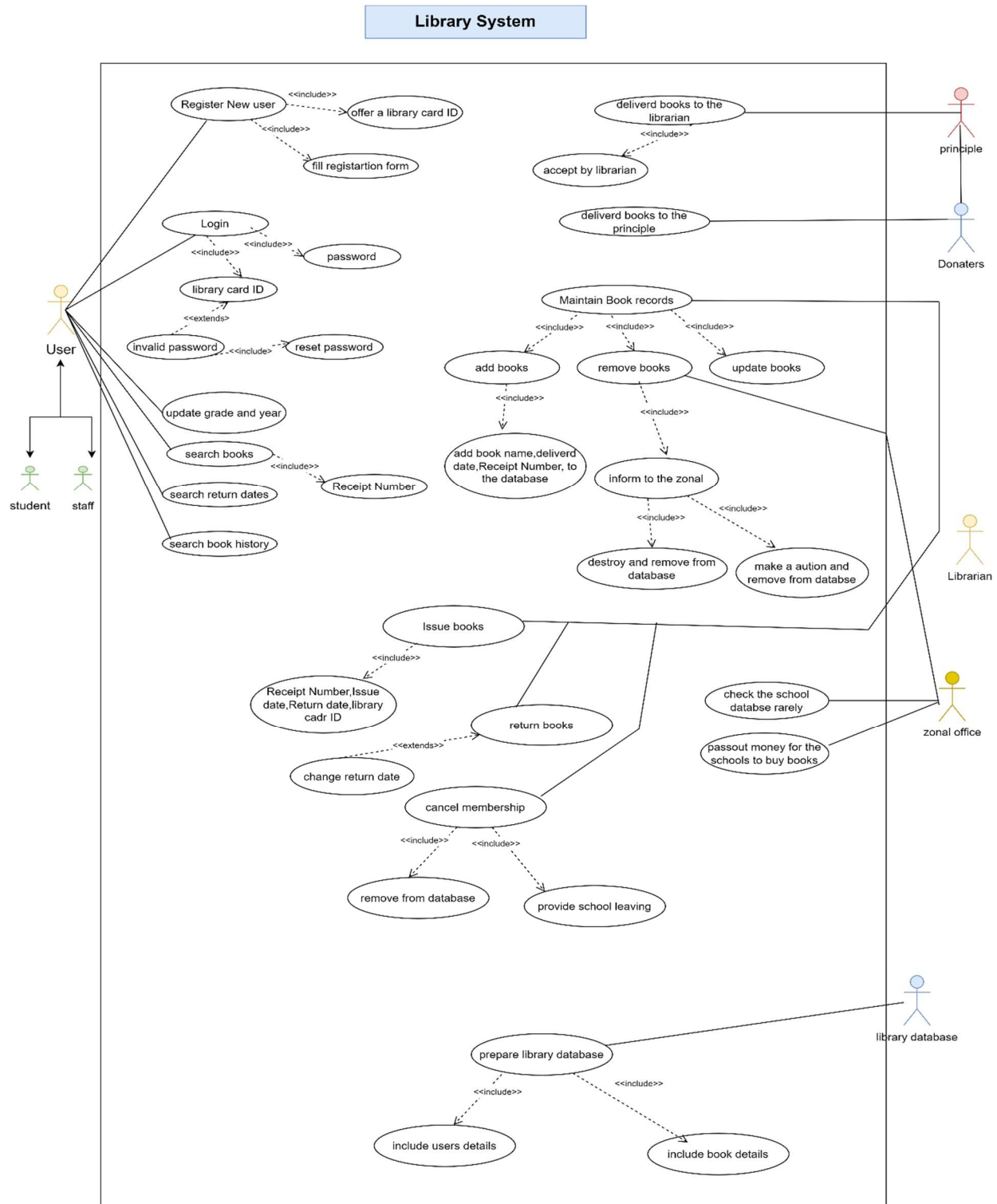
5.1 Business Actors of the proposed System

Business actors are the stakeholders that primarily benefit from the execution of the use case.

1. Librarian assign to library works
2. Library staff members help to the librarian
3. Zonal office members checking the library systems in schools and pass out the money for buy books
4. Technical officer to manage the database provide by the Zonal office if a faults come
5. Donators share the address for others for more donations

Requirement Analysis

6.1 Use Case Diagram



6.2 Use Case Narrative

Register a new user	
Date:	
Author(s):	
Use case name: Register a new user	Use-Case-Type : Business Requirement
Use-Case-ID : IH-Gk2526 322	
Primary Business Actor:	<ul style="list-style-type: none">• Students• Teacher• Non-academic staff member
Other participating Actors :	<ul style="list-style-type: none">• Librarian• Libaray staff members• Database system
Description :	This use case describes the event of how the new user can register for the library system. First, the user has to fill up a registration form given by the library management system. It contains the User's Full Name, Grade(if the user is a student only), Year join to the library, Address, and mobile number, and the user must provide any password. After filling out the form user has given a Library card ID number. That was remembered by the user for login to the system. Then when the user login to system only they can provide Library card ID number and password.
Precondition: 1	The user who complains must be a student or a staff member
Trigger : 2	

Conclusion

This software system is designed for library management system which will give more benefits to the students and the staff members of the library. This software solution system consists of where the users(students and staff)can log in to the system and can search books availability, what are their return dates, what are the books they read before, etc.Also, students can access the assignments and past papers. The zonal office also has access to this website if they want any details library can provide them.

In this project, I have gotten a better understanding of how to collect requirements, and how analyze the requirements for developing a system. I hope this system gives more user-friendliness and no need pre educational knowledge for maintenance.

I thank all who help me to make this project, especially Mrs.Anoma who provide me with lots of information about the school library,also my parents.

Thank You.

References

- Get information from the Textbook EEX3467