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**EEX3467 SOFTWARE ENGINEERING CONCEPTS AND PROGRAMMING.
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MINI PROJECT REPORT

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Table of Contents.

Table of Contents

01.	Introduction.....	3
a.	Introduction to the report	3
b.	Selected library details.....	4
c.	Other relevant details.	5
02.	Stakeholders of the system	6
03.	Requirements elicitation methodology	7
04.	Functional and Non-functional requirements.	8
a.	Functional Requirements	8
b.	Non-Functional Requirements.....	9
05.	Business Actors.....	10
06.	Requirement analysis.....	11
07.	Use case Diagram	12
08.	Use case Narrative.....	13
09.	Discussions and Conclusions	14
10.	References	15
11.	Appendix.....	16

01.Introduction

a. Introduction to the report

My project is about to familiarize with the current system of a library, then plan a software solution to make easier library management. Therefore, I select **Pottuvil Public Library** for the project.

The library is situated in my hometown and it's in Ampara district and this report is consisting about **Pottuvil Public Library**.

This library is divided by into some several parts such as, Books section, Newspaper section, Reading section and Public auditorium. Students and publics are getting advantages by this library. It will open 9am to 5pm at weekdays and above 14 years old peoples can become a member of this library and they can borrow books and articles. And also, People can read all kind of newspapers with free of charge.

If a person/student want to become a member of library, He / She needs to register for the library. For that they can get application form from the library office. He / she must fill the application and want to submit to the library management team. And also, in application they must have include a referral for the member verification. If the member is a student, they want their principal/vice principal signature for the referral and other members want Grama niladhari signature for the referral.

After that library management will verify the application and take an amount for the registration and register the person as a library member. After successfully complete the registration process library provides a membership card to the member. The card is the evidence for you are a member of the library. Members must renew this card for every two years. A member can take two books for two weeks. If the member misses the particular time period, he/she have to pay fine for every extra day. If a member takes more than one month to return books, library management will send a warning letter and the fine details to that particular person. If the member lost the books, he/she need to give new books or pay total amount of that books. And also, a member must be given proper reason for the late return or lost the books. Else he must eliminate from the membership of the library.

Currently the library has not any software system solution. They are maintaining their database by manual. They will check member details every week. This manual system contains following problems.

1. Manual records can be missed and can destroyed easily.
2. Hard to find members details quickly.
3. Hard to find available book stock.
4. Have to check late return details daily.
5. Cost problems.
6. Documents may be missed.
7. Takes more time.

These are the details of the library current system and the problems they faced. I got from one of the library staff Mr. Muhajir told me.

And they are trying to develop a software solution instead of their current manual library system. This report may be helpful for their problems.

b. Selected library details.

Name – Pottuvil Public Library.

Location – Pottuvil.

Established year – 2005

Librarian – Mrs. Ismail Ayesha

Sections – Books section, Reference section, Newspaper section, Reading Section

First Librarian – Mr. k. Adham kundu

Books categories – Action and adventures, Classics, Comic books, Geographic, Novel, Mystery, Fantasy, Past papers, Historical.

Total Books – Near 40 000

Total Staffs – 07

Total Members – 1789

Books checkouts daily – Approximately 780

Library open time – 08.00 am

Library closing time – 04.00 pm

Details of contact person

Name- Mr. K. Muhajir

Job – Library Assistant

Responsibility – Dealing issues of library management

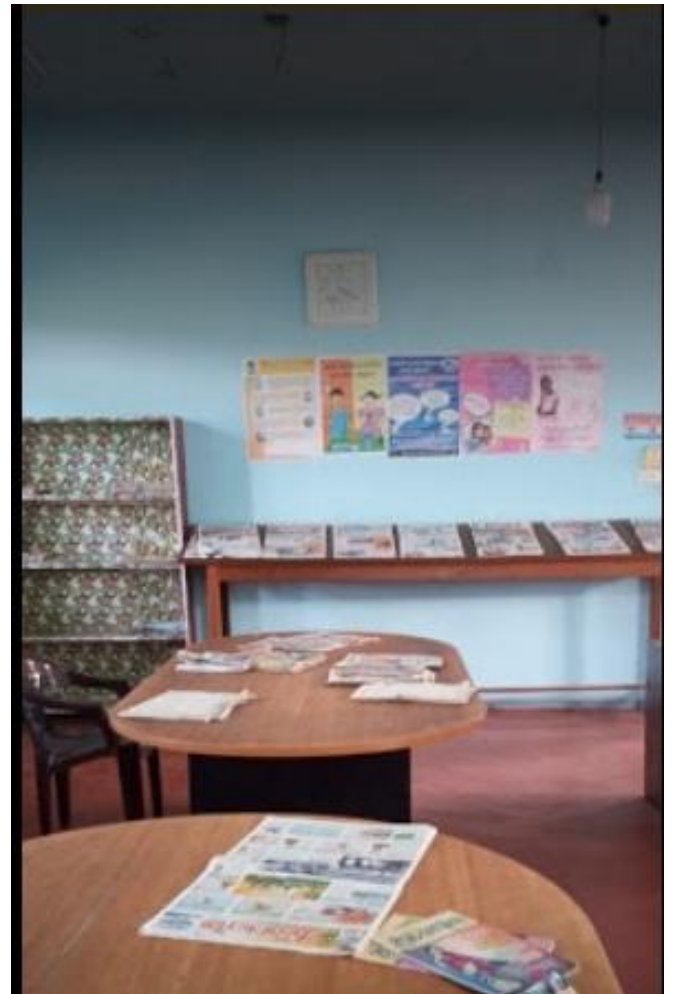
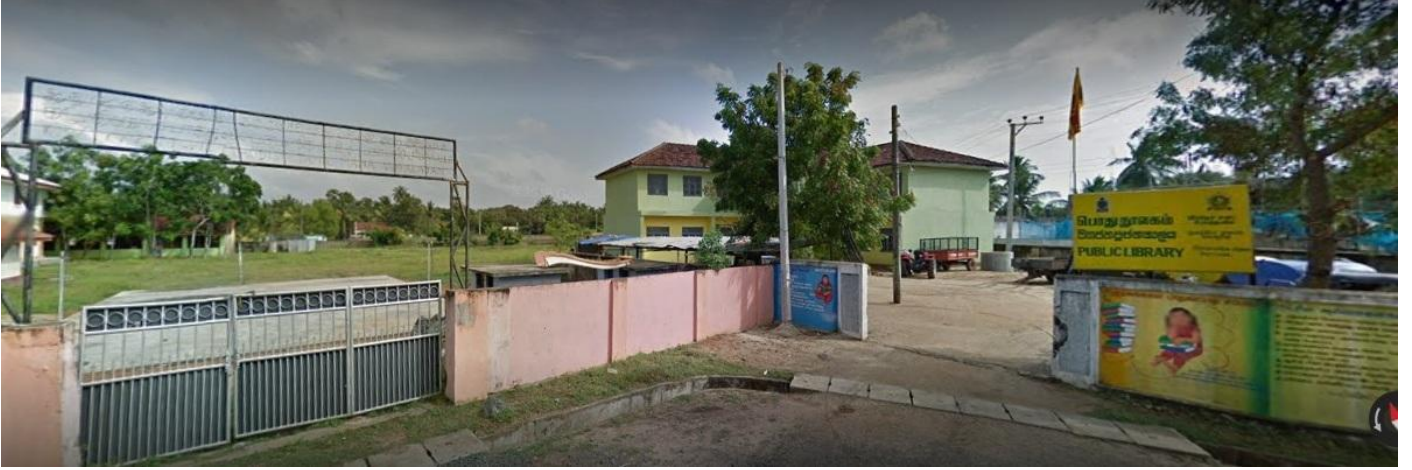
Phone no. – 0717275057

Address – Pottuvil

Service – 10 years

c. Other relevant details.

I have collected some photos of the library I selected “Pottuvil Public Library”.



02.Stakeholders of the system

Stakeholder	Category	Responsibility
Library users	Client	Use facilities offered by the library including Borrowing books, library materials, renewal of library materials.
Librarian	Actor	Responsible for library management system
Library administrator	Actor	Manage finance details
Library assistant	Actor	Dealing issues of library management
Acquisition manager	Actor	Order new books
Library clerk	Actor	Writing book issue details, checking renewal dates
Library supervisor	Actor	Supervise newspaper section
Library watchman	Actor	Maintenance outside of the library

03.Requirements elicitation methodology

In every research project, Requirement elicitation is very important. I had selected interview as my requirement elicitation method. It's helped me to gather lots of requirements of the system to be developed.

Interview is a face to face elicitation method provides advantages over other data collection methods, it's allows the participants to relate what they expect as a problem-solution and its very useful method to gather more information. And it's very useful in allowing domain knowledge to be identified.

The importance thinks are the quality of data you received will get depend on the ability of the interviewer. Some people have natural ability to conduct an interview and gather data well.

So, I was very careful to list down the questions for library staff. And this method does not contain misunderstanding problem and faked news. Because, we can clear that on the spot.

These are the reasons that's why I selected the interview as requirement elicitation methodology,

- Interviews allow ideas and information to be exchanged
- Interviews are useful to obtain detailed information about personal feelings and opinions.
- Usually achieve a high response rate and it's flexible
- Interviews is best technique for getting respondents to cooperate.

I had got real time experience of the library structure because I selected the interview as my elicitation methodology.

04.Functional and Non-functional requirements.

a. Functional Requirements

- Member must have access to the system by their member id number
- Member can also register via system.
- Member can be able to read library rules and regulation.
- Members can able to search required books and can check the required books is available or not.
- Members can able to see all payments details
- Member can be able to know the date return to handover book
- Can be able to see library staff details.
- Can be see the copies of a book.
- Can check the book is currently available or not.
- Member can be able to give their issues and feedback.
- Members able to know category of the books.
- Can be able to add, update, delete book details.
- Can enter new book details
- Administrator can calculate total income of the library.
- Can check the checkout books and not return books details
- Can send warning letter / important messages via emailing or SMS.

b. Non-Functional Requirements

A. Performance -

- Quick response
- Speed
- The server would be able to perform perfectly

B. Security -

- Fully secured and only authorized person can use it.

C. Maintainability –

- Library system needs to be updated daily.

D. Availability –

- System is available for E-books services any time.

E. Reliability –

- Library System must be reliable.

F. Scalability –

- Library system would be scalable to support a greater number of members.

G. Hardware –

- Have backup facilities
- Server based systems

H. Software Quality

- User friendly
- Easy user interface.

05.Business Actors

A **Business Actor** is defined as an entity that performs behavior in an organization such as business process or functions.

Here I identified that **Librarian and Members** are the business actors in this library.

- **Librarian** has following responsibilities as a Business actor,
 - Making sure all users can access the system / library resources
 - Cataloging and keeping tracks of library materials
 - Manage books.
 - Manage issues.
 - Manage members
 - Adding, Update, Removing Books
 - Checking checkout books and members id.
 - Ordering and confirming books and other resources.
 - Managing library staff details.
 - Provide customer services for the users.

- **Member** has following responsibilities as a business actor,
 - Can search the catalog.
 - Checkout.
 - Reserve Books.
 - Renew Books.
 - Return Books.

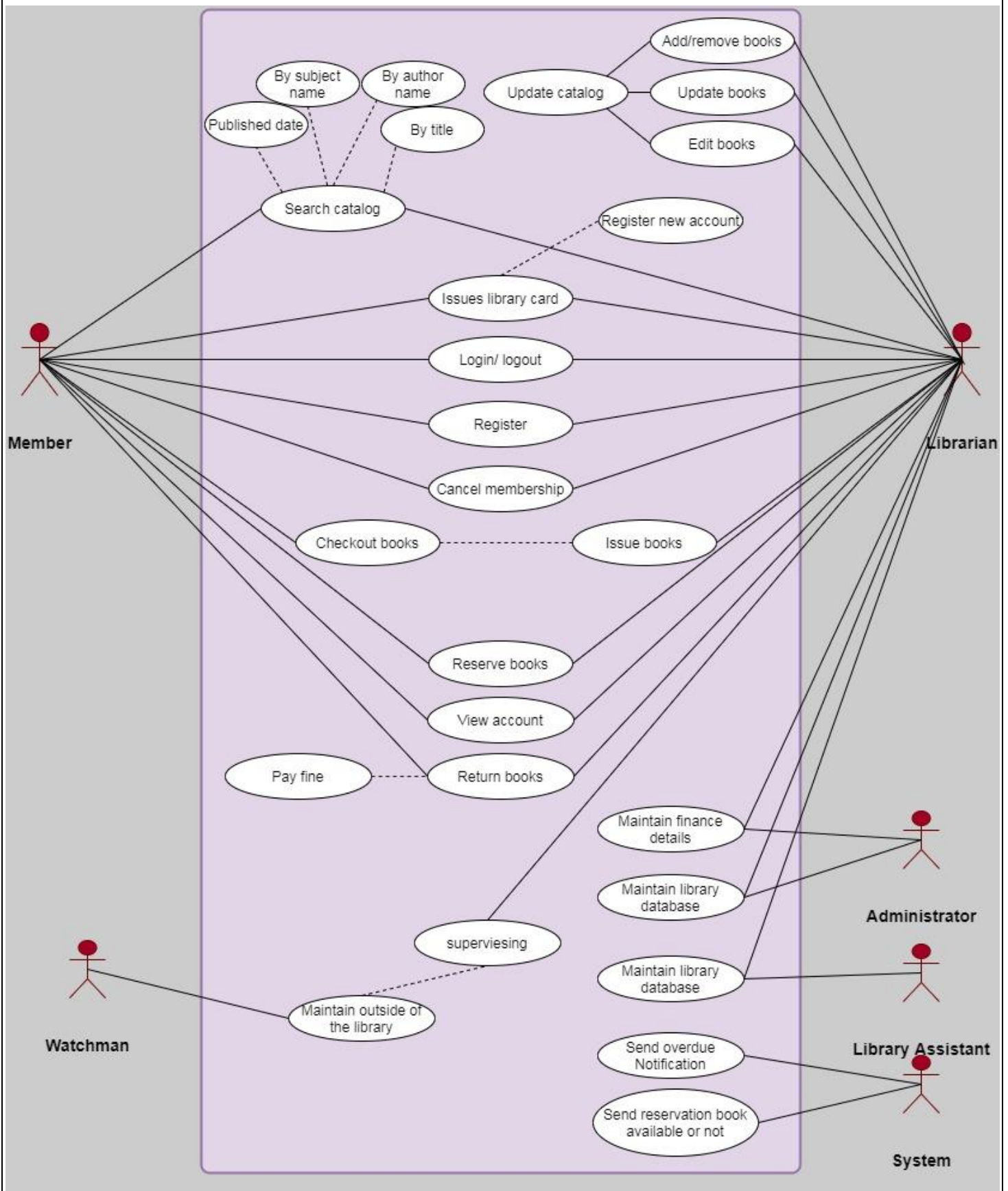
06.Requirement analysis

The first think for a software solution is always clarify requirements at the beginning of the interview. So, in this matter I was carefully list down my questions to the library staff.

Following set of requirements are, I notified in the interview,

01. Any library member should be able to search books by their, Title, Author, Subject, Category as well by the publication date.
02. Each Book will have a unique identification number and other details including a rack number which will help to physically locate the book.
03. Each book and member card will have a unique barcode. The system will be able to read barcodes.
04. There could be more than one copy of a book and library member can check the book is checkout or can reserve any copy.
05. The system should be able to retrieve information like, who took a particular book or what are the books checkout by a specific library member with his/her member id number.
06. There should be a maximum limit on how many books a member can check out. (02)
07. There should be a maximum limit on how many days a member can keep a book. (14)
08. The system should be able to collect books that are not currently available
.
09. The system should be able to send notifications to the member whenever the reserved book become available, as well as when the book is not returned with in the due date.

07. Use case Diagram



08.Use case Narrative

Library Registration		
Author – M.N.M. SAFRAN	S ID – S92064060	Date – 2022.05.12
Use-Case-Name:	Library Registration	Use- Case Type - System Use cases
Priority:	High	
Source:	Requirement	
Primary Business Actor:	Librarian, System Administrator	
Other participating Actors:	Member, Library Assistant, clerk, Watchman.	
Other Interested Stakeholders:	Library Administrator - Update the details of new member and check whether user can make payments comfortably. Library Assistant - Check whether user gets any problems while register by system and managing issues related registrations.	
Description:	If a user wants to become a member of the library, the user should submit the proper application. And the administrator verifies the application and get approval from the librarian. Then create an account give a username, password and the member id to the student. After that user can log in to the system by using his personal details. And user should need to pay registration fee by online to get permanent member of the library. Then user can borrow books and other resources.	
Precondition:	Before Registration user needs to submit the Applications.	
Trigger:	This use case is initiated when the Member ask help from the Administrator.	

09.Discussions and Conclusions

After we have completed the project, we are sure the problems in the existing system would overcome. The “Library System” process made computerized to reduce human errors and to increase the efficiency.

The main focus of this project is to lessen human efforts. The maintenance of the records is made efficient, as all the records are stored in the access database, through which data can be retrieved easily. The navigation control is provided in all the forms to navigate through the large amount of records.

If the numbers of records are very large then user has to just type in the search string and user gets the results immediately. The editing is also made simpler. The user has to just type in the required field and press the update button to update the desired field.

The Books and Students are given a particular unique id no. So that they can be accessed correctly and without errors. Our main aim of the project is to get the correct information about a particular student and books available in the library.

And here I have learned the Requirement elicitation methodology and Requirements analysis. This is an effort to develop a software solution to library to handle the books and other resources.

Finally I hope to say this is just an try or a scope for further development.

10. References

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03. www.google.com
04. www.youtube.com
05. <https://cites.openlearn.lk/course/view.php?id=5#sectionid-314>

11.Appendix

This report argues that the trends the reports identify are best explained by digital disruption. And the solutions they propose are best advanced by digital change.

I put my full effort in this mini project and Carefully handle the situation and requirements gatherings to get a best software solution for the library “Pottuvil Public Library”.

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