PROJECT:

LIBRARY MANAGEMENT SYSTEM

Grade 1st *Year*

Submitted to:

GHULAM MUSTAFA

Conducted By:

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Introduction

In fact, decision is always takes place before application. Sir Ghulam Mustafa decided to assign us a task to make a feasibility report on 15th of July, 2024. When we were assigned with this task, after two days it was decided to make the feasibility report of *Library Management System*. Actually, it was selected because once upon a time we started to program a *Library Management system* but could not complete it. For our convenience to the uncompleted project, this system was selected for the report and the report was completed till 25th of July, 2024.

Although, this system is not actually exist programed by us, but, this report presents the project as does not let one to realize the actual absence of the project. The is efficient to get guidance from related to feasibility report. It is also beneficial for information of library management, issues and methodologies.

Briefly, while reading the report do not think about the limited presence of the actual system because it illustrates the system very deeply and completely. Undoubtedly, the will be efficient and informative to you.

Timeline Graph

Timeline Chart of Library Management System				
Date(July,2024)	Objectives(Completion till)			
25				
24				
23				
22				
21				
20				
19				
18				
17				
16				
15				
	Deciding Project	Computational Thinking	Feasibility Report	Designing

Summary

The report is about *Library management System.* It describes the computational thinking and feasible study of the *Library Management System*. Computational thinking is done before the programing is started. It has different phases such as abstraction, decomposition, pattern recognition and algorithm design. On the other hand, feasibility report determines the feasibility of the project.

Firstly, computational thinking is described in the report. Computationally, the abstraction of the *Library Management System* is performed. On the basis of abstraction, *Library Management System* is decomposed into different modules. Each module performs a specific task. After that, the pattern of the system is recognized. Finally, the algorithm of the system is designed.

Secondly, the next and the main focus of the report is feasible study of the project. It describes the entire criteria of the project on the basis of economic, operational, technical, social, schedule and legal feasibility. Conclusively, the report analyzes each feature of the system very specifically and correctly.

1 Library Management System

A library is a place where books are present in a huge amount. Thousands of books are available in a library. Meaningfully, library is the storage of any type of knowledge. Library promotes one's knowledge. Actually, library acts as a brain of institutions.

Whereas, a system is a collection of different parts that work together. All the parts communicate with each other for a common purpose. The concept of system was developed 19th century by Nicolas Leonard Sadi Carnot , who studied thermodynamics. The concept was introduced 1824 as he used a system (he called it *working substance*) in steam engine.

Efficiently, the merging of a library management with a digital system prompts the staff members and stakeholders to get benefits. The books and the other resources of library should be accessible easily. In that very manner, *Library Management System* is an useful software application that is used to facilitate the library staff. It eliminates the manual working and digitalize all the activities. Manual working includes manually registration, making records, physical movement in search of a specific book etc. It increases the efficiency of the library. Economically, it is implementable as it decreases the number of staff. It is user friendly.

2 Development of Library Management System

Development and implementation of *The Library Management System* is not so easy. It is a bit complex function. To make a computer treat like a librarian increases the complexities. There should be a computational plane before starting the work on *Library Management System.* Firstly, it involves computational thinking and after that in the SDLC (Software Development Life Cycle) it requires feasibility study before starting the programming.

2.1 Computational Thinking

First of all, the problem(The Library Management System) was thought computationally. Different steps were undermined to find the solution of the problem(The Library Management System). These steps include the following:

2.1.1 Abstraction

In *Library Management System,* the system must manage the data of students that studies in library. The system should be able to store record of issuing books. The record should be remained while the book is returned. The returning of book along with its returning date should be mentioned by the system. If a book is not returned in due date then the system show a warning about that very person. The record of books, issued and returned, should be mentioned in the category of a specific student.

2.1.2 Decomposition

The problem was decomposed into different parts and each was programmed separately. These parts include the *book issuing function, book returning function, searching function, the main function, database* and *GUI design*. Firstly, database was designed then each function was programmed separately. After that these functions was used in the main. After all, the GUI was designed. To understand the decomposition phase, let see a short example of book issuing function:

```
#include<stdio.h>
int main()
{
issue();
return 0:
}
```

The **Main function.**

```
int issue()
{
        char Sname[25];         /*student name*/
        char Bname[40];         /*book name*/
        char DOI[10];           /* Date of Issue*/
        printf("Student:");
        get(Sname);
        printf("\nBook   :");
        get(Bname);
        printf("\nDOI    :");
        get(DOI);
                                        .
                                        .
                /* Point the record to the database and store there */
                                        .
        return 0;                       .
}
```

A separate function of inserting information.

In the above example, the function of issuing books is called while the **issue Function** is defined below separately.

2.1.3 Pattern Recognition

While developing the system, the property of pattern recognition should be added to recognize the pattern. The property includes the ability to recognize the trend of books being mostly issued. Which type of books (novels, travelogues, historic books, fiction and non-fiction) are mostly read and by whom. Additionally, in the specific year which book had the large demand. If one loses the book, he will have to pay in exchange of the book. The following are the simple examples of pattern recognition:

Example#01:

Book Pattern Recognition		
BOOKS	**READ PER MONTH**	**Advance Demand**
Alchemist(Novel)	Four Times	3
Tipu Sultan(Historic)	Two Times	2
Ibn-e-Batuta(Travelogue)	One Time	1

The above example table shows that the novels are mostly read and the travelogues are read least.
Let examine another example:

Example#01:

Students Pattern Recognition			
Students	**Read Per Year**	**reading**	**Demanded books**
Student1	8	3	5
Student2	5	2	3

The above example table shows that Student1 is better than Student2 in reading library books.

2.1.4 Algorithm Design

The algorithm was, then, written. It was written in English language. It was written in a very simple way. Each function has its own separated algorithm. The algorithm of *issuing book function* is presenting below as example:

Step 1:

Start.

Step 2:

Ask the user to enter the name of the student.

Step 3:

Store the student name in the database.

Step 4:

Ask the user to enter the name of the book being issued.

Step 5:

Store the book name in database.

Step 6:

Get the due date of issuing book.

Step 7:

Point towards the database and store the correct date.

Step 8:

Stop.

2.2 Feasibility of the Project

The feasibility study of a project evaluates the project's benefits and risks. It also determines which way(the under construction software or any other) is suitable for implementation. The feasibility of *The Library Management System* was conducted on basis of the following properties:

2.2.1 Economic Feasibility

Economic feasibility of a library management system includes economic efficiency, costs and direct and indirect benefits of the system that is being analyzed below.

- **Initial Costs:** Initially it does not cost any rupee. It is because the systems and LAB are available for development.
- **Deployment Cost:** The system will require some expenses whenever deployed. The reason is that a computer system is needed for the execution of the software. It may cost Internet packages to train the library staff.
- **Updates Cost:** By the time, it may acquire a financial need to get new updates and upgrades as *The Library Management System* modernizes.
- **Covering The Spent Costs:** Although, the system has a plethora of benefits but it may take a long period to secure itself financially.
- **Market Demand:** The project benefits slightly because of the large number of the soft wares available there.
- **Risk Assessment:** The system may rarely assess any risk. It is because there is almost no chance of data damage or any other loss.
- **Time Saver:** It will be proved time saver as it is efficient than manual working. It saves the time because it uses different searching methodologies (binary search, linear search, exponential search etc.) in accordance with the scenario.
- **Improved Access:** The system will make any resource of library far away by a click.

2.2.2 Operational Feasibility

Operational feasibility determines the operating and the effectiveness of the system. It shows the impact of the project on the routine of the library. Operational feasibility is determined as below:

- **User Acceptance:** The system will be acceptable for the user. He adjust himself with the newly implemented system as it is user-friendly

- **Scalability:** The system is scalable for library of a school or college, but, its use is slightly limited in public libraries as these libraries had a vast amount of books.
- **Alertness:** The system will be effective to alert whenever the period of an issued book is over.
- **Cutting Off Physical Interaction:** The system will inform the book borrower though email or SMS as the time period for borrowed book is overpassed.

2.2.3 Technical Feasibility

Technical feasibility analyze whether the system is applicable for available resources. The technical feasibility is listed below:

- **Updates and Substitutions:** On the basis of technical analysis, *The Library Management system* will prompt the user to update the library computer system or completely substitute it.
- **Security:** The system is secure enough but limited to the performance (storing and retrieving data). Its security is not sure in case of physical threat.
- **User Friendly:** The System is easy to use because a simple GUI (Graphic User Interface) is used.
- **Management:** It is very effective in managing the users and other types of information. It uses a simple database which makes storing and retrieving data comfortable.

2.2.4 Social Feasibility

Exactly, social feasibility of the system actually means how a library responds to the society. Social feasibility determines the engagement of the system with the community. Some postulates of the social feasibility are given below:

- **Accessibility to Everyone:** Anyone, who has no leisure time to go to library or a disable one, can access the resources (books, maps, researches etc.) of the library online without any physical movement.
- **Community needs:** The system fulfills the needs of the community by availing information and resources according to their interest such as education, personal development of children etc.
- **Cultural and Educational Resources:** The system will make the access of cultural view easy. It will enable a large number of inhabitants to know their culture, Local history as well as completely stick them to their culture.

- **Making Society United:** The system will organized the people together as they study and debate about a particular topic. This type of act will blow positivity in people and make them sensitive for rights of each other.
- **Feedbacks and Evaluation:** As the people interact with the library through this system, they can ensure some types of feedbacks (recommendations of books) that are necessary for well-being of society. As the recommendations are brought into action, the society will be evaluated.

2.2.5 Schedule Feasibility

Schedule feasibility focuses on completion of the validated product in a specified time period. It determines schedule and monitoring of each phase of until the project is completed. The schedule feasibility of *Library Management System is described as below:*

- **Project Updates:** The entire schedule of *Library Management System* was designed. It shows the first release features of the system. The schedule has a planning of future updates.
- **Phases Timeline:** The schedule Feasibility has a completely planned schedule for each phase of *Library Management System* such as requirement engineering, design, development, testing, deployment etc.
- **Dependency Analysis:** The Scheduled timeline of the system was quit longer. It is because of the sluggishness of stakeholders.
- **Resource Availability:** The Schedule of resources availability was planned as a new computer system have must been substituted instead of the old one.
- **Development Models:** The agile development model is used in the SDLC of *Library Management System*.
- **Testing:** Firstly, unit testing (easily finds error because check for each module or unit) is done, secondly, integration testing (combined modules are checked for errors) is performed, thirdly, user acceptance testing (the system is installed and used by end users) is done.
- **Deployment Methods:** Direct implementation method is used for the deployment of the system. It is because, its direct implementation is beneficial as it is user friendly and easy to use.

2.2.6 Legal Feasibility

Legal Feasibility makes the system more efficient and reliable. The more legalized the system, the more will be the users. The library management system is legalized as below:

- **Security and Privacy:** The system uses a particular type of security that ensures the

protection of the library's data and the privacy of users such as user's identity, issued books etc.

- **Intellectual Property Rights:** A book is one's intellectual property. No one can hold it on his own behalf and get benefit. While digitalizing the books and other theses and assignments must be permitted by the actual owner (writer).
- **Accessibility Laws:** The system running library management system must be complied with accessibility standard, for instance, American with Disabilities Act (ADA). This make an ease for disables to access library's resources.
- **Library Regulations:** The system is enabled to alert the users, members of library and library staff to familiarize them with library rules and regulations in case if they commit any mistake.
- **Ethical Use:** The system will allow the use of library ethically. None can commit a crime using this system, for example, hacking one's privacy or accessing disallowed books or other materials.