SOFTWARE ENGINEERING

V-BOOK

A Single Platform for All Library Needs

Feasibility Report

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Feasibility Report on VNR VJIET Library Management System

I. EXECUTIVE SUMMARY

The following Library Management System is intended for the Library staff of VNR VJIET College. The primary client in the following proposed system is the Staff of the VNR VJIET Library. The aim is to improvise the current System by replacing it with the one proposed.

In the proposed system, each member will have an identity card which can be used for the library book issue, fine payment etc. whenever library members wish to take a book, the book issued by the library authority will check both the book details as well as the student details and store it in the library database. In case of retrieval of books, much of human intervention can be eliminated. The system will provide a detailed analysis of various data like Books issued, Books to stock up, etc. The proposed system would allow staff from multiple departments to input data simultaneously (like requesting a book that's not currently in stock) and will provide automated reporting of aggregated data to produce daily, weekly, monthly, or yearly reports.

The overall goal of the new system is to provide an automated process to deal with works that would otherwise require a lot of paperwork, which will enhance the ability to make effective management decisions concerning student and staff needs.

II. PRELIMINARY REQUIREMENTS ANALYSIS

Part I – Application Overview

Objectives

The main objective of the program is to serve the library to handle day to day book transactions and maintain sound information about the books as well as the members. The system's fundamental duty will be together real-time reference statistics in real-time from various points in the libraries and store the data. Reports based on staff allocation statistics can be generated using queries on this data.

Other objectives include:

- Tracks all information on members, books, etc.
- Provides filter reports on Issues, Books, Student.
- Editing, adding and updating of records is improved.

Business Objectives

The project's objectives include lowering the expenses, optimizing the staff levels and storing the data more effectively and efficiently in useful categories. It will help to keep track of when the books are being issued, books to be returned, books to be stocked up, etc.

The Library's current method will be replaced by a more efficient online system with a user-friendly web interface. Moreover the copyright of the software will belong to the team and the team agrees to transfer the copyright to the Client and to provide the Client with unrestricted license to use the system.

The project is anticipated to have a significant positive impact on the personnel by decreasing burden and improving the simplicity of operations linked to data reference and report preparation.

Current Business Process and Rules

Currently, the client uses a combination of both computerized software and a paper system. And the users need to make a trip to the library to become a member and to borrow a book. And everytime the user/member borrows a book he/she would have to write the book details and their membership number in a register.

Also, as the current style has a combination management system it is difficult for users to know if the borrowed book's borrowing date is about to be expired or not and if the book is not available in the library the user should make many rounds on different days to borrow a single book which is not efficient.

The new system hopes to solve these problems by eliminating paper based entries by replacing it with a real time system, creating a more efficient centralized central data repository, and generating meaningful reports. The system will also provide a search facility for users to find the desired book and to see if it;s in stock or not.

User Roles and Responsibilities

Administrator Role: The ability to enter, record, edit, and update data, and exclusive abilities to make limited changes such as adding more users, staff levels, categories, etc.

Librarian(User): The ability to enter, edit, and store data, and exclusive property to access the stored data (Read Only).

Student/ Faculty: The ability to search books and their availability, see fine (if any), etc.

Part II – Functional Requirements

Statement of Functionality

This software system will be flexible and sustainable with a UI for entering the library and user data into a central data repository.

The software system is designed in such a way that it will have different access levels so that different types of users may log in and out.

The system needs to allow retroactive editing of input and have the ability to delete older data in case users make entry mistakes.

The system must be accessible from various computer stations simultaneously. At any given time.

The system needs to enable sorting of data (by name, time, etc). The system should be able to produce a range of reports specific to user needs.

Automatic backups of information from the central data repository should be enabled as well as password- protected user access.

Security and User Capabilities

The software system will support different users with different UIs. In order to access the system all the users will need to login with a password. At the administrative login level, the user will be given additional permissions such as adding or changing staff levels and user types.At the other access level (for Librarians, Student, and Reference assistants), only the data entry and editing functionalities would be provided.

Reporting

The reports generated will help in statistical analysis of the collected reference data that is stored in the central data repository. Daily, weekly, monthly, quarterly, and yearly reports will be created using the functionalities of the system and sorted data.

Non-functional requirements

The software system will be installed and run on existing Windows systems and the system will be tested out on the college library servers. The system needs to be functional whenever reference staff needs to access it.

The criteria for success of the system would be measured by the flexibility and sustainability of the system. The functionality and ability of the system to meet all requirements (i.e. simultaneous access from different workstations, effectiveness of the design of the central data repository, automatic backups, retroactive editing of data, various levels of user access, etc.) would be critical for success as well. Ease of use and efficiency would be adequate measures of performance; after a week of training and testing, the users should be able to use the system effectively.

Optional Features

The system may contain a reminder for the book borrowers if the book is to be returned.Or the FAQ section to ask questions & feedback section to give reviews.

Usability

Usability issues such as speed of operation for the user interface, collection and storage of important quantitative data, speed and efficiency of the work flow processes through automation, and concurrency of collected data will be important considerations.

Simply, The system is designed for a user- friendly environment so that students and staff of the library can perform the various tasks easily and in an effective way.

Scope

The scope of our system includes reference data entry, tabular report generation, and administrative system tasks including user editing, system backup, and limited field editing.

The system will allow users to remotely do their task which would otherwise require them to go to a library (Registering Themselves, etc) and will decrease work burden on the staff.

The system will not support critical changes to the fundamental way information is gathered. It will support category renaming and the addition of new user types and locations.

III. PROCESS TO BE FOLLOWED

For this project, the team has decided to follow an Iterative model that involves beginning with a sample UI & gradually adding all the features and functionality until all the client's requirements are met. The team chose this method based on the client's requirements like less risk, modifiable, early results, & another reason was that it is a College level Software i.e, Institute Level (Large Project). By using The Iterative method, the team can quickly make a prototype for the client to evaluate.
Below is the proposed outline of the iteration stages and milestones including what the team expects to have completed at each stage.

Process Outline

1st iteration

Requirements Document

The team will prepare a formal document that will detail the client's requirements for the software by communicating with the client directly or indirectly. The client will categorize these requirements into required, desired, and optional features. After the document is approved by the client, the team will design the simple initial UI (sample) for the client's evaluation.

2nd iteration

Design Document and Presentation

A formal document will be prepared that gives the details on both the design of the system and the code behind it. In describing the design of the system, the hardware and software needed from the client will be specified. Details about the program design will cover internal functionality so that the client can maintain and modify the end product in the future.

Revised User and Administrator Interfaces

Based on feedback from the client concerning the first iteration deliverables, the team will modify the design of the interface as needed. This modification will include more planned features and advanced abilities.

3rd iteration

Final Testing Period

The team plans to reserve two weeks before the final presentation so that the client can test the product in its intended environment with real users and data. All functional requirements will have been met before this point; any changes hereafter will only cover small details.

Final Documentation and Presentation

Documentation for the final version of the product will be presented to the client so that the end product can be maintained and extended. This will include information on all required features, which will be fully implemented. The documentation will also cover any desired and optional features that have also been implemented. The team will also provide a demonstration of the system and training so that the client can understand how the user interface is intended to be used.

IV. SUGGESTED DELIVERABLES

To satisfy the client's need for a digital and automated solution to their current system, the following set of work-products will be delivered to the client:

Management Deliverables:

(1) Periodic Status Reports & presentations

Throughout the software development process, reports will be periodically sent to the client to maintain transparency. The team understands that the client will wish to comment and respond to the development progress. In turn, the team will strive to continually adjust and target processes and progress to the client's needs.

The team will also do periodic presentations where the team will explain different aspects of the project.

The team's iterative approach ensures that during every presentation the team focuses on a different aspect of the system according to the client's needs.

These presentations are designed to give the client maximum understanding of how their needs are being addressed in the actual product.

Feedback will be critical to these presentations, so that the team may use the client's comments to understand completely how the system meets the client's needs. This ensures that the process of software development is transparent.

(2) Source Code

Delivering the source code along with the documentation of the project is the final deliverable at the end of the project.

The final presentation is done to demonstrate the implementation of the software that is developed based on the requirements and the feedback given by the client.

(3) Documentation and Demonstration

The client and other individuals (identified by client) will be provided documentation both explaining how to use the system and describing its underlying mechanics, making them familiar with the software.

The demonstration will consist of performing routine tasks that have been identified by the client, and the training will either consist of group instruction led by team members or one-on-one training with the client.

Technical Deliverables:

1) *Database* with required tables to support Inventory & other features — a database needs to be set up on a library server with the tables needed in the system to store Book details, User details, etc.

2) ***The Admin Interface*** to add, modify, delete & search for inventory — a UI designed to help admin to add/modify info about users & books.

V. TECHNICAL FEASIBILITY

The feasibility of the technical requirements can be judged by identifying and outlining *at least one* technical method that will satisfy the client's needs. Since any technical solution must embody the client's requirements, it is useful to identify them:

Requirements:

(1) Data sorting by different fields (time, date, etc.)
Data sorting is needed to sort the stored data based on different categories and to generate a report on the data.

(2) Centralized data repository
Since the software will be working on many systems simultaneously there is a need for a centralized database that provides the required data to many different users at the same time.

(3) Multiple levels of access to the system
As the System is intended for users having different jobs (student, faculty,librarian, admin) the need for different UIs with different permissions become necessary.

(4) Multiple, simultaneous users and input
The software should provide a way for different users at different service points to access the data in the server at the same time without any delay.

(5) Automatic report generation
The new system will generate reports as it is one of the main reasons for switching to an automated, computerized system.tem.

(6) Security
Security needs to be maintained to ensure the integrity of the data, and to avoid any malicious third party from tampering the user's data. Also the ability to backup the data automatically.

VI. VISIBILITY

External – The Group will conduct regular biweekly meetings with the Client. If situations arise or if a problem needs to be addressed between the meetings, the Group will conduct any further necessary communication via email/Phone. Because Iterative model will be used, a report will be issued to the Client at the end of every step to ensure that both parties are in-sync and to minimize any miscommunication in the requirements.

Internal – The Group will meet weekly once to discuss progress and problems. Meeting minutes will be kept track of and sent to all members of the Group for reference. Any additional communication will be done via email or through other collaboration tools such as document sharing. In addition, the source code will be stored at a separate repository for the project. All source code will be documented carefully before being submitted to the repository. The progress of the principal activities and major milestones will be closely monitored and compared with the schedule.

VII. RISK ANALYSIS

Risk analysis is done to identify unforeseen factors that may affect the systems functionality and as with any project, this undertaking is not entirely risk-free.

(1). Changing Requirements:

Risk: The Client may have different ideas about the system during the course of the project. Depending on the situation, the changes that the Client wishes to have implemented may require little or major changes to the architecture.

Solution: To reduce the possibility of this occurring, the Group needs to establish a clear visibility plan with the Client.

(2). Incomplete Requirements:

Risk: It is possible that requirements may be implied but not discussed or misunderstood. This frequently occurs after meetings.

Solution: The Group's interpretation of the Client's requirements will be presented back to the Client to get a confirmation on whether the Group has understood the Client. Frequent client updates and a high level of visibility will also help call attention to any misunderstandings.

(3). System Integration:

Risk: Depending on the level of access to the servers that the Group receives, the Group may need to work on the system offline and eventually integrate with the production system when it is ready and thoroughly tested. Due to different software configuration, there may be unpredictable obstacles.

Solution: To ensure a smooth system integration, the Group needs to be aware of as much about the configuration as early as possible.

(4). Technical Requirements:

Risk: The software and hardware server environment are not perfectly certain at this point. The client is not aware of the technical aspects of the project. The technical server configuration may have an affect on system architecture and design.

Solution: To resolve this problem, the Group has requested the client to refer the Group to the technical staff working at the library for further inquiries.

(5). Non-functional Requirements:

Risk: Similar to incomplete requirements, non-functional requirements is something that has not been brought up in the initial meeting with the Client. These include requirements on the number of users that the system expects to support concurrently, and the response time of the database lookup.

Solution: A follow up meeting is needed to specify the non-functional requirements.

(6). Resource Risks

Resource risks involve technologies the team has available for their use. Due to costs and other external constraints, the team may not be able to obtain the needed or best resources to complete parts of the system.

In addition, there are inherent risks in the resources, such as the software and hardware the team decides to use. Currently, to keep costs at a minimum, the team is considering open-source software, which is available without charge. Hardware for actual system implementation is also dependent on the hardware the library has available. Risks that stem from resources include hardware failures, system crashes, bugs in the code, etc., which may cause accidental data loss. Changes in the computer system of the library in the future that largely cannot be foreseen may also cause the system to malfunction. Since part of the system is web-based, slight variations in display of the user interface may also occur due to different internet browsers.

VIII. BUSINESS CONSIDERATIONS

There are several business considerations that must be taken into account when determining the feasibility of the project, including but not limited to: copyright and trademark issues, and considerations with regards to patents.

Patents, Copyrights and Trademark

A patent is a type of intellectual property that gives its owner the legal right to exclude others from making, using, or selling an invention for a limited period of time in exchange for publishing an enabling disclosure of the invention. In other words, patent protection means that the invention cannot be commercially made, used, distributed, imported or sold by others without the patent owner's consent.

No part of the system is foreseen to be eligible for any patent applications. However, if upon a later date, a part of the system is found to be patentable, the team reserves the rights to the uncontested patent and any derivative works based therein.

A copyright grants the owner the exclusive right to reproduce the copyrighted work, prepare derivative works, distribute copies of the copyrighted work, and display the copyrighted work publicly. Registration of a copyright is important to protect the work from unauthorized use or copying as it is a prima facie evidence to prove the ownership of the work and it also provides the owner of the registered copyright to avail the maximum benefit by licensing, assigning and raising capital.

A trademark registration establishes ownership of a brand, name, or logo. It safeguards your brand against unauthorized third-party use. This establishes that the product is entirely yours, and you have the sole right to use, sell, and modify the brand or goods in any way you see fit.

IX. CONCLUSION

Based on the analysis of this feasibility study, the Group has collectively agreed that this project IS FEASIBLE and the group IS WILLING to take on the afore mentioned project. The benefits are significant enough to justify the development effort required.

The team believes the scope of the project is manageable and that the client's requirements can be satisfactorily fulfilled upon system completion. The team members also possess the adequate skills to implement the system and are familiar with hardware and software that may be used in this project. The conclusion of the feasibility report is to go ahead with this software development project.