Ảnh có chứa màu xanh lam, Xanh điện, thiết kế

Mô tả được tạo tự động

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**Ho Chi Minh city, 6/2023**

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| BOOKSTORE MANAGEMENT SYSTEM |
| Project Introduction |
| v1/2 |

**Record of change**

**\*A - Added M - Modified D – Deleted**

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**LECTURER’S COMMENTS**

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# INTRODUCTION

## Introduction

Real needs of the project: In today's book market, there are countless genres and different book titles. With traditional management methods, bookstores face many difficulties in managing the quantity of books in stock, books sold, revenue, etc. This is a significant challenge for bookstores, especially large ones with multiple branches. Therefore, the development of software to assist in bookstore management is an essential requirement.

Current situation of the software development unit: Some bookstore units still manage their book inventory and revenue using Microsoft Excel. Using Excel for bookstore management is somewhat effective when dealing with a small number of book titles, typically less than 100. However, for large bookstores with a significant number of book titles, which can reach up to 1000, using Excel poses many issues.

Limitations of Microsoft Excel in bookstore management:

* + - * Difficulty in updating data.
      * Prone to errors when entering data.
      * Complexity in handling invoices.
      * Inability to be used simultaneously by multiple staff members.
      * Low data security and vulnerability to data loss.
      * Difficulty in managing large amounts of data.

## Research problems / Problems of the project

The bookstore industry has faced several challenges in recent years that have highlighted the need for a web-based management system to streamline operations and improve efficiency. One of the most significant issues is the limited availability of book information, which is typically only accessible in physical stores. This can be a major inconvenience for customers who prefer to browse and shop for books online. The lack of real-time data on book availability and sales can also lead to lost sales opportunities, as customers may be deterred by the uncertainty of whether a particular book is in stock.

Another challenge faced by bookstores is the management of book rentals and purchases. This process can be complex and time-consuming, with the potential for errors and inconsistencies. Traditional bookstores may have a limited selection of e-books available for rent, making it difficult to compete with online retailers who offer a wider range of options. Inefficient inventory management can further exacerbate these issues, as bookstores may struggle to keep track of stock levels and order new inventory in a timely manner.

In addition to these challenges, the lack of real-time data on sales and customer debt can hinder effective decision-making and planning. Bookstore owners and managers may struggle to identify trends and make informed decisions without accurate data on sales performance and customer purchasing habits. This can ultimately impact the overall revenue and profitability of the bookstore.

To address these challenges, a web-based management system can provide a centralized platform for managing various aspects of bookstore operations. The system can enable efficient processes for managing book rentals and purchases, supplier management, customer management, and generating reports on sales, inventory, and customer debt. With a web-based system, bookstores can provide customers with real-time access to book availability, rental options, and promotions, improving the overall customer experience and potentially increasing sales.

Overall, the implementation of a web-based management system can help bookstores to address these challenges and improve their overall performance and profitability. By providing a centralized platform for managing various aspects of operations, bookstores can streamline processes, improve data accuracy, and ultimately provide a better experience for customers.

## Research Objectives / Objectives of the project

This System is built for Businesses or Stores that need an IT-solution for managing their companies in the field of selling and lending books. It focuses on the managers, the employees and support team, which allow the to manage the information of employees, customers, books, suppliers, discount codes, book purchase, book rental; make statistics from sales data; support the users and customers.

## Scope of project / Limitations of the study

Because of limitations about time, human, our teams focus to some main features such as:

* + - * Manage customer
      * Manage user
      * Manage supplier
      * Manage Book
      * Manage Book rental
      * Manage Book purchase
      * Manage discount code
      * Statistics
      * Manage regulation

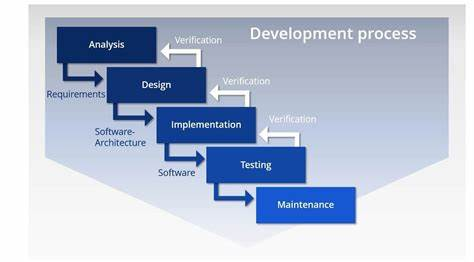
## Project Documents

|  |  |  |
| --- | --- | --- |
| **Report number** | **Title** | **Description** |
| RP-0 | Project Introduction | Contains information about the project: Problem & scope, objectives, the project plan, discussion with the customer, and the achievement) |
| RP-1 | Software Requirement Specification *for Bookstore Management System* | Contains information about the functional and |
| RP-2 | Software Design Document *for Bookstore Management System* |  |
| RP-3 | Vision and Scope Document *for Bookstore Management System* |  |
| RP-4 | Business Rules *for Bookstore Management System* |  |
| RP-5 | Test Report |  |
| RP-6 | User Guide |  |

# PROJECT PLANING

## Project planning

|  |  |
| --- | --- |
| **Week** | **Task** |
| Week 1 (15/3 – 21/3) | Analysis |
| Week 2 (22/3 – 19/4) | Design |
| Week 3 (23/4 – 30/5) | Development |
| Week 4 (31/5 – 04/6) | Testing |
| Week 5 (05/6 – 10/6) | Deployment/Maintenance |

For further information about the project planning, please check the *Project Tracker* Excel file - [SE104.N21] Project tracker

## Software development model

In our project, we’d like to use Waterfall

## Technical tools

* + 1. Development Environment
* Operating system: Windows 11
* Database: MySQL
* Text Editor: Visual Studio Code
* Web server: Express
* Web GUI: React
* Dependencies: Express, Sequelize, MySQL2, Babel, Nodemon, etc.
* StarUML: Used for drawing diagrams
  + 1. Deployment Environment
* Operating system: Window 10 or higher
* Web server: Apache HTTP Server
* Application server: NodeJS (version 14.17.0)
* Database: MySQL
* Text Editor: Visual Studio Code

# DISCUSSION WITH CUSTOMER

## Interview

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **General survey** | | | | |
| System: Book Store  Creator: Le Thi Thanh Tam | | | Created date: 20/04/2023 | |
| Ord. | Topic | Requirement | Start | End |
| 1. | Book management | To get detailed information about book storage, distribution,  and valuation processes. | 20/04/2023 | 20/04/2023 |
| 2. | Discount code management | Understand the proposed process and apply  the use of promotional events  in the store. | 20/04/2023 | 20/04/2023 |
| 3. | Customer management | To get detailed information about customers for better services and experience. | 20/04/2023 | 20/04/2023 |
| 4. | Analysis | Process of making inventory reports, debt reports and sales statistics, book sold, new customers from the database | 20/04/2023 | 20/04/2023 |
| 5. | Physical status | Physical equipment such as seats, rooms, cash registers, … | 20/04/2023 | 20/04/2023 |

Table 1.Survey Strategy

|  |  |
| --- | --- |
| **Survey forms**  System: Book Store | |
| Interviewee: Nguyen Van A | Interviewer: Le Thi Thanh Tam |
| Place: Book Store | Start: 8:00 am 20/04/2023  End: 11:30 am 20/04/2023 |
| Target: Collect and understand working process of book store. | |
| Details of the interview:  Introduction  Overview about current system  Survey plan:   * Topic 1: Book management * Topic 2: Discount code management * Topic 3: Customer management * Topic 4: Analysis * Topic 5:Physical status | Estimated time:  5 mins  15 mins  1 hour |
| General Observe |  |
| Unexpected occurrence |  |

Table 2 Survey form

|  |  |  |
| --- | --- | --- |
| Interviewee: Nguyen Van A | | Date: 20/04/2023 |
| Questions | | Records |
| **Topic 1** | 1. How will the book categorization be carried out? | According to each genre: novels, foreign books, reference books,... |
| 2. What information is stored in the books? | The information stored in the book system includes: Book Code, Book Title, Date of Entry, Genre, Author, Quantity Imported, Purchase Price, Selling Price, Supplier. |
| 3. How do you manage the book procurement and sales? | I usually have a separate notebook to keep track of the quantity of books purchased and sold. This process takes quite a lot of time, so I would like to have a system to manage it. |
| 4. How is the inventory management plan for the bookstore's goods import and export? | Goods Import:  It is necessary to have an understanding of the inventory quantity.  Plan the import of goods on a monthly, quarterly, and yearly basis.  Refer to market prices by requesting price quotes from various suppliers.  Select products that are of good quality, affordable, and profitable for the store.  Goods Export:  The warehouse personnel must maintain clear and documented records when goods are exported, including the recipient's signature.  Regularly conduct inventory checks to prevent pest infestation and ensure an accurate count of the goods in stock. |
| **Topic 2** | 1. Besides the form of discount promotion for members, are there any other promotions? | In addition to periodic discount codes given to each group of customers by month, the store also offers discount codes according to holidays. |
| 2. How many discount codes can be applied to 1 order? | For each order, customers are only allowed to use one discount code on the total invoice value. |
| **Topic 3** | 1. How is customer segmentation done? | Customers will be classified and prioritized based on their spending as follows:  Gold: above 3,000,000 VND  Silver: above 1,000,000 VND and below 3,000,000 VND  Bronze: below 1,000,000 VND |
| 2. Can customers who are new and have not registered their information still use the services of the store? | For customers who have not previously had any transactions with the system, when creating a new transaction, if their information is not found, the system will display the option to add a new customer. After that, the staff will record the information of the new customer and proceed with the purchasing process. |
| **Topic 4** | 1. Do you spend a lot of time checking the daily, weekly, and monthly sales figures? | It takes a long time because the old system I'm using doesn't support statistics. I have to calculate on Excel, but the process is quite slow. |
| 2. Please let me know what kind of statistics you need? | I hope the system will have the following statistics:  Revenue statistics for the bookstore by specific time periods.  Statistics on the number of new customers per month.  Statistics on the number of books sold.  Statistics on customer debts. |
| 3. How long is the time frame for each type of statistic? | The debt amount of customers will be periodically calculated on a monthly basis, and for specific time frames as provided by the manager, if needed for reporting purposes. |
| 4. How are the statistics displayed? (graphs, charts,...) | I think inventory and debt reports will be displayed in the bookstore's format. Revenue statistics, as well as the number of new customers, will be presented in a line graph format for easier tracking. |
| **Topic 5** | 1. How is the regular inspection of the store's equipment carried out? | The inspection of the store's equipment such as bookshelves, tables, chairs, computers, etc., will be conducted by us on a monthly and quarterly basis according to a planned schedule. This is done to ensure that all equipment is always in good working condition and safe for customers. |
| 2. How will system issues be handled when they occur? | If the management system encounters any issues, it is necessary to address them promptly to ensure uninterrupted business operations and convenient shopping experiences for customers. |
| 3. What kind of hardware does a computer system have? | Currently, the bookstore system is equipped with a server and a computer system dedicated to the staff. |

Table 3 Questions and Records

# CONCLUSION



## Project Achievement

Our team has learned a lot through this project development process, from requirements analysis and problem-solving techniques to planning and designing functionalities for a small piece of software. As a result, team members are now acquainted with the fundamental processes used in software development projects, such as:

* Knowing how to gather, survey, and analyze information from customers to determine and design essential functionalities along with features to address existing issues.
* Knowing how to model those functionalities through visual diagrams such as Use Case Diagrams, Activity Diagrams, Sequence Diagrams, Class Diagrams, and State Diagrams.
* Knowing how to plan for a software development project.
* Knowing how to allocate tasks and work effectively as a team.

Using this information, our team put it to use on their project and created a website for bookstore management with the bare minimum of features to meet management's needs (storage, calculations, login, authorization, etc.). The three main roles in the system are Manager, Employee, and Supporter, with the following specific functions:

* Role ***Manager***
* Manage regulation
* Manage Book
* Manage Book purchase
* Manage Book rental
* Manage Customer
* Manage Discount code
* Manage Supplier
* Statistics
* Manage User
* Role ***Employee*** (Employee of the Bookstore)
* Manage Book
* Manage Book purchase
* Manage Book rental
* Manage Customer
* Manage Discount code
* Manage Supplier
* Statistics
* Role ***Supporter***
* Manage User

## Limitations

Despite our best efforts, we were unable to avoid mistakes during the construction process or overlooking certain constraints for a more complete system due to a lack of time and experience.

## Future Development

Our team has identified possible directions for the system's development as it nears completion, not only to address its flaws but also to improve the user experience and expand the potential of businesses using this software application. The specific instructions are as follows:

* Transforming it into an e-commerce platform (making reference to current designs like Tiki, Amazon, etc.). This would enable the business to increase its operational scale. Additional features that could be used are as follows:
* The addition of a customer role and associated features (such as account creation, payment processing, order tracking, and adding items to cart).
* Integrating systems for book suggestions and recommendations.
* Investing more in the user interface of the system.
* Developing for the platforms of Mobile and Tablet
* Improve book rental service by renting e-books.

## References

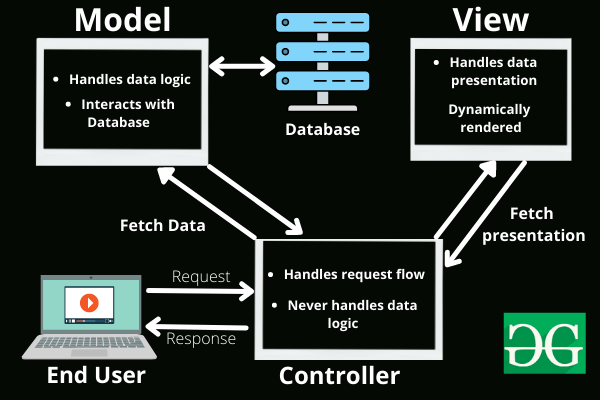
APPENDIX

**MVC (Model – View – Controller)**



**Framework**

* The web application is built using the ReactJS framework for the frontend
* The backend uses Node.js with Express.js framework for server-side development
* MySQL is employed as the database management system to handle data storage and retrieval

**System Architecture Model**

This web application follows the Model-View-Controller (MVC) architecture pattern, provide a clear separation of concerns and facilitating efficient development and maintenance

**Detail about MVC- Model System Architecture**

*Figure 2. MVC architecture*

The Model-View-Controller (MVC) widely adopted for developing web applications as it promotes a clear separation of responsibilities between different components

***MVC components:***

*M(Model)*

* The Model component handles business logic and data handling processes
* It interacts with the MySQL database to perform operations, data manipulation, and retrieval
* The Model responds to request sent by the Controller and sends data back to the Controller or other models

*V(View)*

* The View component focuses on presenting data to the end user
* In ReactJS, the View is implemented using reusable components that render UI elements based on the data received from the Controller or state management (Redux)
* The View transmits user demands to the Presenter or Model through the Controller

*C(Controller)*

* The Controller acts as the main part of the system, receiving requests from other elements (Models, Views).
* It gathers appropriate information and facilitates communication between the Model and View components.
* The primary objective of the Controller is to separate business logic from the UI layer.
* In the ReactJS application, the Controller functionality is often implemented using Redux to manage application state and handle interactions between components.

The use of MVC in ReactJS with MySQL provides several advantages. It offers a clear division of responsibilities, making it easier for developers to understand and extend the codebase. It also ensures that business logic is separated from UI, enhancing testability and maintainability.