Junior Highschool Library Automation System Solution and Implementation

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Abstract: *A high school library is a crucial part of educational infrastructure. Textbooks, e-books, and other collections in a library need to be recorded for circulation and administrative support needs. To provide data for statistical analysis, users of the library must be tracked and recorded. Several library activities can be supported by a library automation system (SLiMS). East Jakarta's SMP Negeri 174 Jakarta is a public junior high school with a library. This project to install and implement SLiMS along with configuring the local network and library server. As a result, the library's infrastructure has been properly set up to support the library management system. Data entry for books and library members is currently underway. A guestbook option has also been added, and it is now switching from a manual guestbook to an electronic one to in order to precisely record library visitors.*

Introduction

A library plays an essential role in a school. Textbooks, e-books, magazines, and other collections in a library are required to be recorded for administrative purposes in support and also for book circulation (Aziz & Asmiatun, 2022), and these items need to be reported to the school principal for valuation. Library visitors need to be registered (Pajaransyah et al., 2018) to show students in the library for statistical analysis. A library automation system can support many library activities, from analog to digital, from manual to automated, to make library operations more effortless using the automated functions of SLiMS. SMP Negeri 174 Jakarta is a public junior high school in East Jakarta with a library. The school library was not yet managed with an information system, where books with detailed information were stored on a spreadsheet. This condition was sufficient only for cataloging book collections. Based on this

situation, a library automation system was required to support library activities and transactions, to enable the librarians worked easier (Safii et al., 2020). In this community service activity, we provided a dedicated server to be placed on-premise right in the library (Bhakti et al., 2022; Lestari et al., 2022). This server will house a library automation system over the school's local-area network. There are reasons for distributing the service internally, and broadening the network scale will be planned.

Not only a server machine but also supporting equipment are also provided to support the system implementation. Implementing a library management system requires analysis. Senayan Library Management System (SLiMS) was chosen to be installed on the server because it has the required features (SLiMS, n.d.-a) to support the school library, and it has been implemented also in another school with a different version (Ria & Budiman, 2021). One of the essential things is that SLiMS is free and is open source (SLiMS, n.d.-b). This library management system has also been implemented at the high school level (Kurniawan et al., 2020).

Methodology

This community service initiative used a qualitative method, utilizing an Internet-based literature review, discussions with school librarians, and consultations with library experts for approximately three months. These community service activities are shown in following Figure 1:
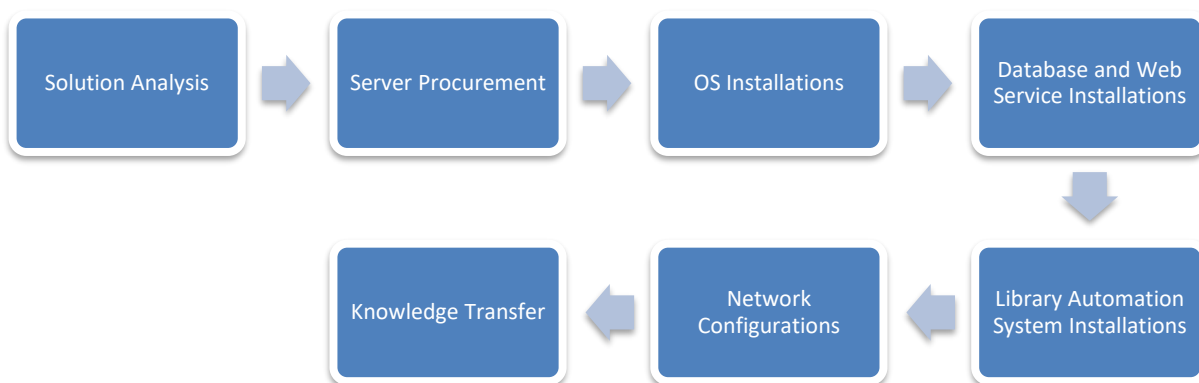

Figure 1. Library Implementation Community Service Activities

The activity started with procuring a Lenovo desktop machine from the campus auction for a desktop PC with good specifications. This computer is used as a desktop server to be placed in the school library. An Ubuntu operating system was then downloaded and installed on the server machine. Ubuntu 20.04 LTS was chosen as an appropriate operating system

with its security, open source, and free (Ubuntu, 2023). The next activity was downloading and installing a library automation system with essential software (database, web service, et cetera). This server was then placed in the library room in the school with a monitor, keyboard, mouse, and network.

The server machine was put in the library room for a future assessment of the library with the proper library system installed with its machine. A wired UTP cable has been pulled from the provided switch for this server. The existing network used an active DHCP for a more straightforward configuration. However, static IPv4 C class addresses are manually configured in the empty range that the server can use to avoid IP conflict. After this server has been connected to the Local Area Network, this server machine is also accessible from client desktops and laptops.

A server with its database and the required service is placed in the library. The wired UTP cable is connected to an available port in the nearby switch device. In this configuration, there is only 1 SSID name used with one password only to be used by the library.

Result

The library automation system has been installed and implemented into the server machine with adequate performance. The system is connected to the supporting laptops through a wireless network to support the library operations. Following figure 2 shows the library server machine:
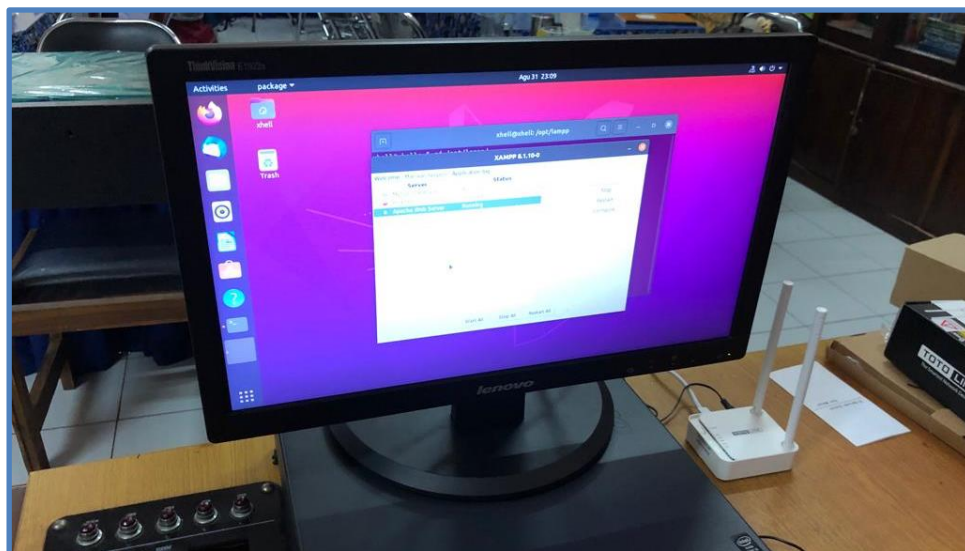

Figure 2. Library Server in Ubuntu Desktop

The system was first tested locally by accessing localhost from the Internet Browser to a specific folder defined during the Apache service activation. Shown in Figure 3 is how SLiMS version 9 can be accessed from the Ubuntu Web Browser:
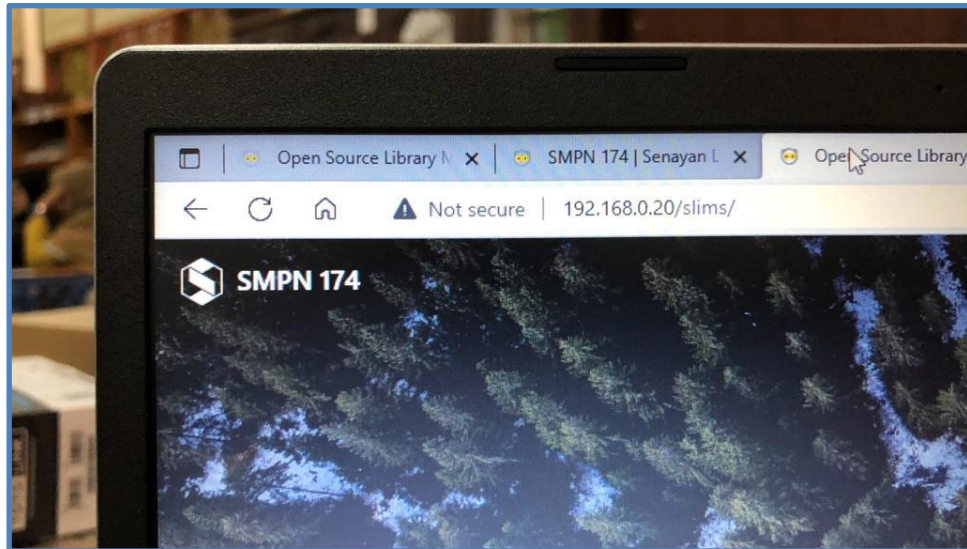

Figure 3. The installed library system

Discussion

The tasks completed as part of this community service program are listed in Table 1. The school library has received the server and barcode scanner that was ordered. Additionally, all network testing and hardware and software installations were finished. The library system was initially implemented in the SMP Negeri 174 Jakarta on October 21, 2022. As a result, all tasks have been completed.

Table 1. Library Implementation Community Service Activities

#	Activity	Status
1	Solutions Analysis	Completed
2	Server Procurement	Completed
3	Operating System Installations	Completed
4	Database and Web Service Installations	Completed
5	Library Automation System Installations	Completed
6	Network Configurations	Completed
7	Knowledge Transfer	Completed

Conclusion

The library server has already been configured, a local network has been set up, and the library management system has been put into place. Thus, the infrastructure for the library to support the library management system has been suitably set up. It is currently running for the input of book and library member data. A guestbook feature has also been implemented, and now transitioning from the manual guestbook to the electronic-based guestbook to capture library visitors more accurately. A library automation system soft launch and academic seminar were also held as part of SMP Negeri 174 Jakarta's community service initiative.

Acknowledgments

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