Design of website-based library information systems at SMK Pasundan Jatinangor

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Abstract. SMK Pasundan Jatinangor is a private vocational high school located in Jatinangor District. Currently the system in effect in the place under study is semi-computerized based, when a book is borrowed in the library the data is inputted in Ms. Excel, as well as member data, book data, date of borrowing and date of return are inputted manually which resulted in the calculation of fines being calculated manually. So that some significant obstacles are found, including 1. can be lost because the book does not automatically update 2. When there is a loan, there is an error recording book data and member data 3. Lower handling of services in the library 4. A error in late fines for returning books 5. requires a long process of inputting books, members and borrowing. In this study, the authors use a system development tool using UML (Unified Modeling Language) which consists of: Use Case Diagrams, Activity Diagrams and Class Diagrams. With the design of this library information system, it is hoped that it can make it easier for officers / librarians to monitor the availability of books, add books, borrow and return books, so that they can assist in library services and management.

1. Introduction
Information technology is the technology needed to process information using electronic computers, the development of information technology is very rapid, of course, providing benefits to human life. Various areas of human life are now starting to implement various new technological devices to make it easier for humans [1]-[4].

SMK Pasundan Jatinangor which is a private vocational high school located in the Jatinangor District area. More precisely, having his address at Jalan Colonel Ahmad Syam No.46, Cikeruh Village, Jatinangor District. This school is under the auspices of the Pasundan Elementary and Secondary Education Foundation (YPDM). It has 5 departments, namely: Computer Network Engineering, Motorcycle Engineering, Light Vehicle Engineering, Accounting, and Office Administration.

One of the facilities at SMK Pasundan Jatinangor is a library which is often used every day to read and borrow books. The system that the author wants to design is a Library Information System which is an information system created to provide information on a list of available books that students can borrow and make it easier for officers / librarians to monitor book availability, add books, borrow and return books, so that they can assist in service and management library.
Currently the library system process is semi-computerized based, namely using the Ms. Excel application, when a book is borrowed in the library the data is inputted in Ms. Excel, as well as member data, book data, date of borrowing and date of return are manually inputted resulting in calculations.

Based on the description above, the authors conclude this research will focus on designing a website-based library information system at SMK Pasundan Jatinangor. The writer hopes that this system design can facilitate all library services reduce the work time of officers to be faster and more effective, minimize the occurrence errors in inputting book and member data, work that was originally done in a manner manual becomes automatic especially facilitate the work of library management staff.

2. System Devices

2.1 System Development Tools
In an information system design, the system development tool used is UML [5]. UML is a set of tools used to perform abstraction of an object-based system or software. UML stands for Unified Modeling Language. UML is also one way to facilitate sustainable application development. The tools used in this information system model are:

a. Use Case Diagram
Use Case is a technique for recording the functional requirements of a system [6]. Use case diagrams are UML diagram models that are used to describe the expected functional requirements of a system or can be said to briefly describe who uses the system and what they can do.

b. Activity Diagram
Activity Diagram is a technique for describing procedural logic, business processes, and work lines. In some ways, activity diagrams play a role similar to flowcharts, but the principle difference between flow chart notations is that they support parallel behaviors [7]-[8]. The nodes in an activity diagram are called actions, so the diagram shows an activity composed of actions.

c. Class Diagram
Class Diagram is a collection of similar objects [9]-[10]. Class diagram is a type of diagram that is useful in UML which can map a particular system structure by modeling classes, attributes, operations and relationships between objects.

3. System Analysis

3.1 Use Case Diagram
The use case diagram of the website-based library information system at SMK Pasundan Jatinangor has visitor use cases and librarian and admin use cases (See Figure 1 and Figure 2).

3.2 Activity Diagram
The activity diagrams in the website-based library information system at SMK Pasundan Jatinangor include visitor activity diagrams, admin activity diagrams and librarian activity diagrams (See Figures 3-7).

3.3 Class Diagram
The class diagram of the website-based library information system at SMK Pasundan Jatinangor is as follows:
Figure 1. Visitors use case

Figure 2. Librarian and Admin Use Case

Figure 3. Visitor Activity Diagram

Figure 4. Admin Login Activity Diagram

Figure 5. Admin Menu Activity Diagram
3.4 User Interface

To facilitate interaction between users and the system, it is necessary to design a user interface. User interface can be interpreted as a means or media used to connect microprocessor devices and then communicate with the user [11]-[12]. This user interface serves to provide new knowledge, display system explanations and provide guidance on system usage as a whole so that the user understands the workings of a system that provides easy use of the system and interactive ease. The user interface design for the website-based library information system at SMK Pasundan Jatinangor can be seen in Figures 9-13.
4. Conclusions

Based on the design results of the Library Information System at SMK Pasundan Jatinangor, it can be concluded as follows:

a. Can facilitate computerized input of new books and reduce errors in inputting.

b. Reducing the processing time in calculating the availability of books in the library.

c. Provide new changes for staff and teachers in keeping up with the times with a computerized system.

d. Reducing the difficulty in calculating fines that were originally calculated manually.

e. Minimizing the loss of books in borrowing.
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