Web-Based Online Study Plan Card Application Design

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Abstract. Filling in the Study Plan Card (KRS) is a part that plays an important role in the academic system. The KRS filling system that has been running so far is still using the manual system. The development of a web-based online KRS application aims to replace the manual KRS system that is running so that later lecture activities can run smoothly. The system development method used is WebE, the system design method uses UML (unified modeling language), and the system test uses a black box system. This application is made with the programming language PHP and MySQL as a database. The results of this study indicate that the application of web-based online KRS applications can make it easier for students to fill in KRS compared to manual filling. This application can also assist the campus in managing data on the number of students who are active in the current semester. However, it is necessary to develop the system that has been made to become a better and perfect system, such as adding the KRS menu for short semesters so that this system makes it easier for students.

1. Introduction

Development The demand for the development of information that is so fast and easy eventually brings human life to a more advanced and modern era, due to the increasing need for information. To meet the needs of information ultimately encourages human thinking to develop technology so as to provide convenience in human life [1] Web-based services, an online application can be made to help facilitate students in the process of filling in the Study Plan Card, wherewith this system, the process of filling in the Study Plan Card can be made better and more efficient [2].

The development of the world of technology, especially the internet, is now progressing rapidly.[3] The internet can provide a variety of information, ranging from information for tourist attractions, shopping centers to the world of education. In the world of education, the process of filling out the Study Plan Card is a routine activity that is always carried out every semester. Since the beginning, filling out the Study Plan Card uses a manual system, especially at the STT Mandala Bandung Campus where students must take the form in the education section, then fill in the form manually. [4] The students felt that this process was time-consuming because students had to queue, this was quite felt, especially for students who were already working, because it required a lot of time and besides that students became tired.

2. Methodology

This research is action research. Action research is a research method that is a scientific way of obtaining data with specific purposes and uses. Action research is research that aims to develop the
The most efficient work method so that production costs can be reduced and institutional productivity can
increase. Action research is a process through which individuals or groups require changes in certain
situations to test procedures that are expected to result in these changes and then, after a concluding.
The method of system development with the Web Engineering (WebE) system is a process used to
create high-quality web-based applications. [5] The basic concepts and principles of WebE in general
are not much different from Software Engineering. In general, the stages of the web-based software
development process with the WebE process model consist of 5 stages, namely:
1. Formulation / Business Analysis
   The formulation is the stage of finding all the needs of the WebApp and involving all stakeholders,
   aims to explain the problems that must be resolved by the WebApp with the information on
   available needs. Business Analysis defines the context of business for the WebApp, namely
   identifying stakeholders, predicting WebApp needs, databases, defining functions.
2. Planning
   The planning stage for the WebApp where planning contains a definition of each job, then a
   schedule of the projected timeframe for incremental WebApp development.
3. Modeling
   Conventional software engineering design and analysis are adapted to the WebApp development
   process, combined and then integrated at this modeling stage. This stage aims to produce an
   analysis and design of a model that has been defined on the requirements.
4. Construction
   The implementation stage, where tools and techniques are applied to build a WebApp that has been
   previously modeled. After that, the WebApp that has been built is gradually tested to find errors
   that occur at the design stage (content, architecture, interface ).
5. Deployment
   The WebApp is configured, released to the user, and an evaluation stage is carried out. At this
   stage, user feedback is used as a reference for the next stage of development. The five WebE
   process flows were applied repeatedly and gradually as in the illustration below.

![A design pyramid for webapp](image-url)

**Figure 1.** A design pyramid for webapp
The component-level design occurs after the first iteration of the architectural design. The objective of component-level design is to create a model design from architectural analysis and modeling. [6] This is useful for finding errors that are difficult to find and fix later (reduces time wasted on debugging). Component level design can be represented using graphics, tables, or text which can be translated into source code. The design of data structures, interfaces, and algorithms must adhere to existing guidelines to help avoid errors.[7]

**Table 1. Webapps category**

| Category             | Research Question (RQ)                                                                 |
|----------------------|---------------------------------------------------------------------------------------|
| Informational        | The web that is only for reading and providing information                             |
| Download             | Web for users to download information                                                  |
| Customizable         | Users customize content for their purpose                                              |
| Interaction          | Communication within the user community in the form of chatrooms, instant messages, etc. |
| User input           | Form base on input for a mechanism to communicates needs                                |
| Transaction oriented | User makes a request that is fulfilled by the web app                                  |
| Service-oriented     | Applications provide services to users                                                |
| Database access      | The user performs database queries and gets information                                 |
| Data warehousing     | User query many large databases and extract information                                |
3. Result and Discussion

Current system research results, the process of filling in student KRS in the current system is quite time-consuming. Students who can complete KRS that meet the financial requirements specified by the STT Mandala campus, students who have met the requirements can take the KRS filling form in the finance section by bringing proof of payment slip and students take a schedule in the academic section then students fill out the KRS form and adjust to that schedule. After filling in the KRS form, students carry out the guardianship process by visiting the guardian lecturer to be approved by the KRS that has been filled in. After being approved, students submit the KRS form to the general section for further processing. The process of filling in student KRS in the system proposed by the author, students only need to log in to the KRS Online application by entering their username and password then selecting the KRS menu to fill in KRS and choosing courses to be taken regardless of the schedule because the schedule has been written on the course. However, it is the same as the current system, where students who do not meet the financial requirements cannot fill in KRS. If the system that the author proposes is implemented, it will be more effective and efficient for student and lecturer guardians that can be done online and can be done anywhere.[8]

| Table 2. Design Technology |
|-----------------------------|
| **Hardware**                | **Software**               |
| Processor Intel(R) Core (TM) i3-7100u | Operating systems       |
| RAM 4GB DDR 3               | Windows10 Pro             |
| HDD 464 GB                  | Programming language     |
| Monitor                     | PHP                       |
|                            | Browser Mozilla Firefox   |

The design of this interface is the main design that will be used by the application and serves to design the appearance of the application form and layout designs that are designed simply.

![KRS Online](image)

**Figure 3. Display login page**
Testing is an important part of the software creation or development cycle. Tests are carried out to ensure quality and also to find out the weaknesses of the software. Black box testing tries to find errors in categories of functions that are incorrect or missing, interface errors, error accessing external databases, performance errors, and initialization.[9]

4. Conclusion
The process of filling out the Study Plan Card can be done faster than the old manual filling system for the Study Plan Card. With this application, it can facilitate students in the process of filling in KRS, without having to come to the campus. This application also helps the campus in managing data on the number of students who are active in the current semester. In this application, it is necessary to develop a system that has been created to become a better and perfect system, as well addition of the short semester KRS menu so that the application makes it easier for students.

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