E-Yudisium Application Design at Universitas PGRI Yogyakarta

Sunggito Oyama[1], Firdiyan Syah[1,*]

Faculty of Science and Technology, Universitas PGRI Yogyakarta
Jl. PGRI I, No. 117, Sonosewu, Ngestiharjo, Kasihan, Bantul, DI Yogyakarta, 55182, Indonesia
[*]Corresponding author: ryuakendent@upy.ac.id

ABSTRACT.
This study aims to for the process of registering the judiciary in the eligibility of the files that have been submitted by students, can facilitate the administration of the Faculty of Engineering in checking and approving the documents that have been given by students as a condition for doing the graduation. This research uses a spiral software development method and is built using built using the PHP programming language, with MySQL Database and SublimeText Text Editor. Data collection methods use observation, interviews, document library studies, and use the Alpha Test test method, which is a test conducted on the application to ensure that the application can run correctly in accordance with the needs and objectives expected. The results of the study are Web Based Judisium Registration Application which contains student data, study program data, account data, event data, and feedback data.

Keywords: *Application, Web, Alpha Test and Spiral*

1. INTRODUCTION

One of the bureaus at PGRI Yogyakarta University is the Academic Administration Bureau, one of which is to serve students in the judicial registration process where the eligibility requirements by fulfilling the judicial documents are a requirement for students to be able to do graduation.

Yudisium is a process involving the application of grades and graduation of students from all academic processes that have been undertaken during lectures. In this case the judicial file which is managed by the Academic Administration Bureau, especially in registration, checking and approving the files that have been collected in accordance with the terms and conditions by students is still done manually, such as currently the name of the student who will do the graduation, and in checking the sheet or the completeness of the files one by one so that it takes a long time to process the inspection of the files that have been collected. Sometimes there are files that are missing and can result in file security not being maintained. The explanation given by the Head of the Academic Bureau of the University of PGRI Yogyakarta in the results of the interview stated that the desire for an application, especially for graduation registration, was to facilitate the administration in the process of checking the graduation files so that students are eligible to attend the graduation. Therefore, modeling in defining applications to describe the flow of information is very necessary[1]. In this study, the focus is on applications that can be used easily and are familiar to students[2]. The first step in designing an application is to define the application model[3]. The database used to develop this system uses MySQL which is open source[4]. A technical approach through several methods either JAD or PD can be used to improve Information design[5]. In addition, the development of methods that focus on the user is also applied to continue to develop interactive media[6]. Decisions in designing and designing interactive media must be completed in a systematic and modular manner[7]. Analysis is not only on the interface but also on the database in order to produce columns that can be indexed properly so that scanning the database does not take a long time[8]. Database technology is the key element in data storage in information technology[9]. To develop the application, which was developed using the PHP programming language which is already very familiar, it is used because it speeds up performance on the web[10].

A. Kusuma Wardana (ed.), *Proceedings of the 2023 International Conference on Information Technology and Engineering (ICITE 2023)*, Advances in Intelligent Systems Research 179,
https://doi.org/10.2991/978-94-6463-338-2_27

Based on the problems described above, the authors utilize web-based technology, namely "*E-Yudisium Application Design, PGRI University Yogyakarta*". It is hoped that this application can facilitate the process of managing judicial files for the Academic Administration Bureau and maintain file security. As well as making it easier to check and approve all files that have been given by students easily and quickly.

Services that are still carried out manually, one of which is the service in the graduation registration carried out by the academic field. The service that currently exists is that students come to academics and then students ask for a registration form and fill out a graduation registration form. After the student is finished, the form is returned to the Faculty. Of course, these methods are not optimal and will take quite a long time.

2. RESEARCH METHODS

2.1. Types of research

This type of research uses descriptive qualitative research methods with the aim of making it easier to explain the research situation and can present a clear narrative description. With data collection is expected to answer the questions why and how the problems that occur. Data collection methods in this study were used as follows:

a. Observation
   In this method, a survey at the location is in the academic section of PGRI Yogyakarta University to identify objects and collect the data needed to create an overview of the system design that will be built.
b. Interviews
   Interviews are the method used to collect data directly by asking and answering the interviewees, in this case the Academic Head of PGRI Yogyakarta University
c. Literature Views
   This method collects data by seeking information that is relevant to the topic or problem of the object of research. Literacy is collected both from scientific journals, literature, theses, and from the internet as research support material.
d. Documentation
   To complete research data, data collection also requires additional data sources, namely archival data or official documentation from the academic section of PGRI Yogyakarta University.

This research method can be described in the research flow in Figure 1.

2.2. Software Development Method

In order for software development to get maximum results, the spiral method is used in software development. This method combines prototyping and waterfall approaches which have an iterative and systematic nature.

The stages carried out in the spiral method in software development can be explained as follows:

1. Communication
   In order to obtain information for an initial description of the application that will be built, communication is carried out with the Head of Academics at PGRI Yogyakarta University.
2. Planning
   The purpose of planning is to be able to perform an analysis of the files used which are the requirements for the judiciary. This becomes a reference for scheduling the implementation of the Judicial Registration Application Design at PGRI Yogyakarta University.
3. Modellind
   This modeling stage aims to analyze the design of the system to be made, described as an overview of the Web-Based Judiciary Registration Application Design that will be built..
4. Construction
   At this stage, make the program into an application that can be executed by the user to go to the application testing process stage and Alpha Test is the method chosen for software testing.
5. System Submission
   At the end of this stage, the system/software is handed over to the user.

Database design is a process of database development that involves analysis to define problems, namely: specifications and requirements to provide all problem discovery needed to build logical data structures with primary keys, unique indexes and auto increments[11]. The model is considered to have a conceptual level or view that allows in the precise mapping to define the database schema (metadata), can be described in a data definition language (DDL). A relational database system, DDL has SQL statements that provide the database along with tables and can be indexed. Such data models are represented as Entity Relationship Diagrams (ERDs) and all contemporary database designs can convert diagrams into metadata. Several methods of transforming metadata to ERD can initially be presented in the ERD setup[12]. My Sql is widely used for web applications and because of its

speed and reliability in database processing, besides that it has many interesting features[13][14].

PHP is a scripting language designed for web-based applications. The advantages of PHP are a matter of performance, speed and open source. One of the things that is difficult is in application development because it uses programming and coding languages to manipulate databases. From several studies, it can be seen that the query language is not easy to assemble, there is always a faster and easier comparison in displaying data[15].

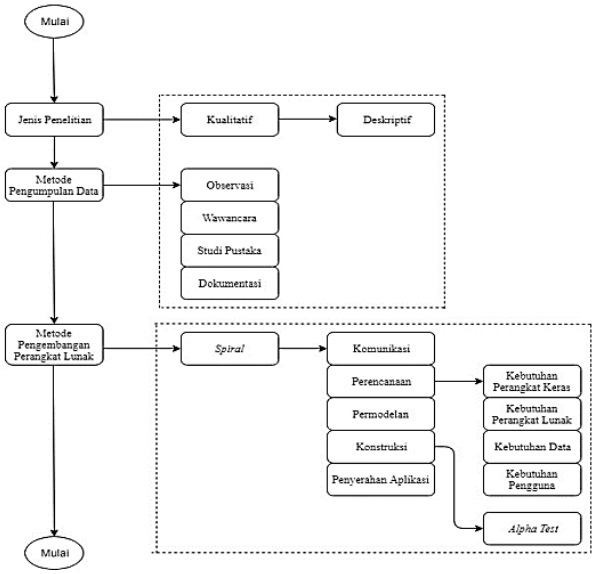

FIGURE 1. Research Method Flow

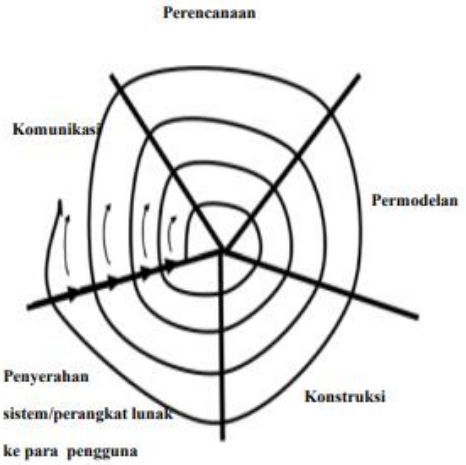

FIGURE 2. Spiral Method

3. RESULTS AND DISCUSSION

The system design for the web-based E-Yudisium application can be explained as follows:

1. Use Case Diagram

   The description that can be explained in the Use Case Diagram is divided into two, namely:

   a. Use case Diagram main menu.

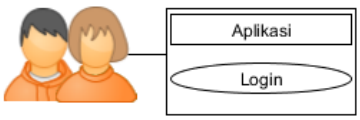

FIGURE 3. Administrator Use case Diagram

TABLE 1. Description of the main menu

Application	Function
Login	Directly enter the login key on the NPM app

b. File Upload menu Use case Diagram.

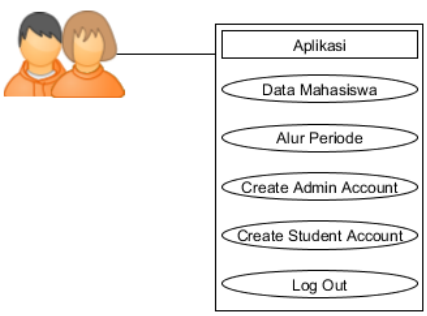

FIGURE 4. Use case Diagram Menu Utama

TABLE 2. Description of the Upload Menu

Application	Function
Student Data	Contains student administration information
Period Flow	Set the graduation year period
Create admin Account	Create administrator
Create student Account	Filling graduation students
Logout	To exit the app

Activity Diagram The purpose of the activity diagram is to provide an illustration by showing the flow of each function in the application. In Figure 5 is an activity diagram of the Judicial Registration Application at PGRI Yogyakarta University which can be described as follows:

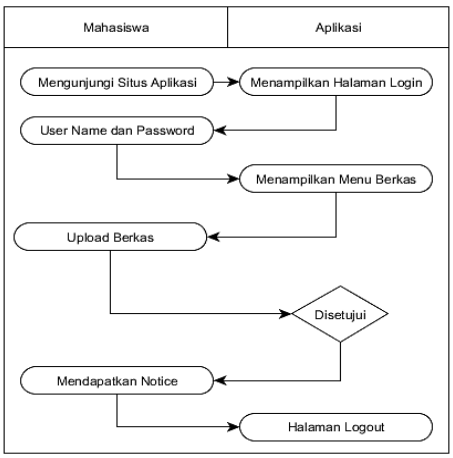

FIGURE 5. Activity Diagram

Figure 5 explains the process of students logging in by entering the NPM, then for students to just enter the graduation requirements by uploading files to the system. After completing the file, you will get a notification from the administration.

2. Sequence Diagram

Sequence diagram is a diagram that describes the interaction between objects that indicate communication between these objects. Figure 6 shows a sequence diagram of the Web-Based Application for Judisium Registration at PGRI Sumbawa University which is described as follows:

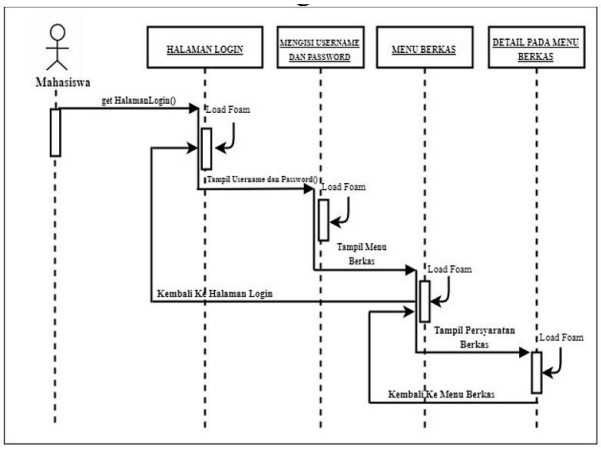

FIGURE 6. Sequence Diagram

3. Class Diagrams and relations between tables

Class diagrams and relations between tables in the Web-Based Application for Judicial Registration at PGRI Yogyakarta University can be explained in the interactions between classes and applications and are explained in connected lines between classes showing communication between class diagrams. Figure 7 is an application class diagram which can be described in detail as follows:

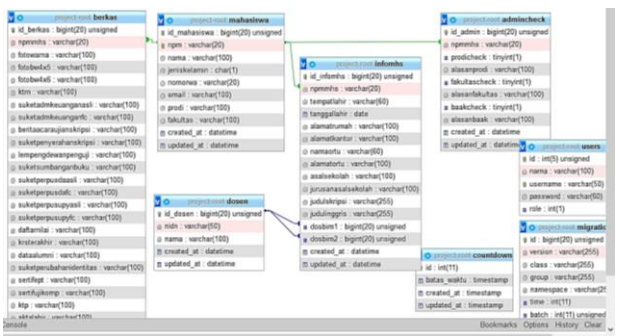

FIGURE 7. Class Diagram of *Yudisium* Registration Application

4. User Interface Design

The user interface design for the Yudisium Registration Application at PGRI Yogyakarta University can be seen in Figure 8. Figure 9 is an interface when students upload files as a condition for taking part in the yudisium.

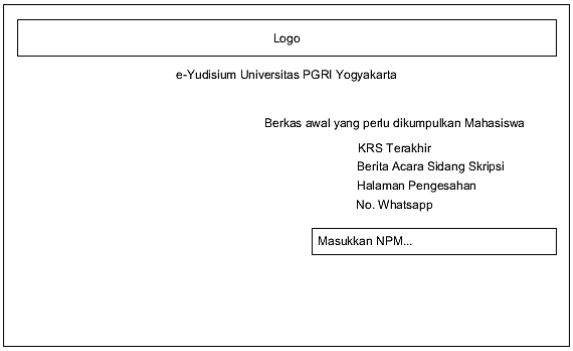

FIGURE 8. Application Design

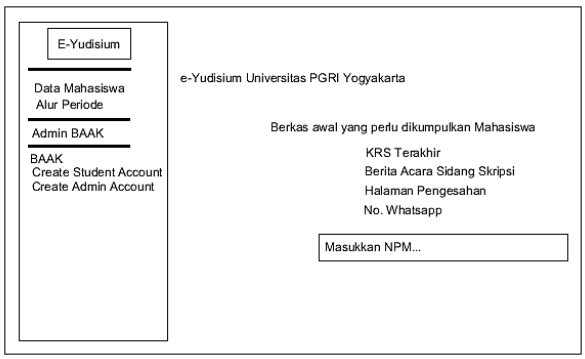

FIGURE 9. Upload menu application design

4. CONCLUSION

The end of the research the design of the Web-Based *Yudisium* Registration system at PGRI University Yogyakarta was built using the PHP Programming Language and MySQL Database. In this design, it can function multiplatform to run the entire judicial registration process by providing convenience to the applications presented, namely uploading files, and the admin account providing feedback based on mobile phone number data which will later be sent via SMS or WA. Thus, it is hoped that this research can contribute to PGRI Yogyakarta University, in facilitating the registration process.

REFERENCES

[1] T. Obasi and M. Omair Shafiq, "Towards comparing and using Machine Learning Techniques for Detecting and Predicting Heart Attack and Diseases," *Proc. - 2019 IEEE Int. Conf. Big Data, Big Data 2019*, pp. 2393–2402, 2019, doi: 10.1109/BigData47090.2019.9005488.

[2] Y. Aridor and D. B. Lange, "Agent design patterns: Elements of agent application design," *Proc. Int. Conf. Auton. Agents*, pp. 108–115, 1998.

[3] M. H. Gray, D. J. M. J. de Baar, J. D. Foley, and K. Mullet, "Coupling application design and user interface design," *Conf. Hum. Factors Comput. Syst. - Proc.*, pp. 657–657, 1992.

[4] Khawar Islam, Kamran Ahsan, S.A.K. Bari, Muhammad Saeed, and Syed Asim Ali, "Huge and Real-Time Database Systems: A Comparative Study and Review for SQL Server 2016, Oracle 12c & MySQL 5.7 for Personal Computer," *J. Basic Appl. Sci.*, vol. 13, no. 21, pp. 481–490, 2017, doi: 10.6000/1927-5129.2017.13.79.

[5] E. Carmel, R. D. Whitaker, and J. F. George, "PD and joint application design: A transatlantic comparison," *Commun. ACM*, vol. 36, no. 6, pp. 40–48, 1993, doi: 10.1145/153571.163265.

[6] D. Lashbrook, "Rapidly Exploring Application Design Through Speed Dating Scott," *Educ. Prim. Care*, vol. 21, no. 6, pp. 392–5, 2010.

[7] S. D. J. Barbosa, "Systematic Hypermedia Application," *Main*, pp. 116–128, 1996.

[8] S. Maesaroh, H. Gunawan, A. Lestari, and M. Sufyan, "Query Optimization in MySQL Database Using Index," vol. 2, no. 2, pp. 104–110, 2022.

[9] M. Habeeb, O. Al Imari, and M. N. Meqdad, "US Department of Agriculture and Rural Development Dataset in MySQL Database Security: Using Sisense Tool," *Int. Res. J. Eng. Technol.*, no. January, 2020.

[10] N. Solanki, D. Shah, and A. Shah, "A Survey on different Framework of PHP," *Int. J. Latest Technol. Eng. Manag. Appl. Sci.*, vol. VI, no. VI, pp. 155–158, 2017.

[11] A. L, "Function Point Analysis FPA on A Team Planning Website Based on PHP and MYSQL," *J. Inf. Technol. Softw. Eng.*, vol. 08, no. 03, 2018, doi: 10.4172/2165-7866.1000237.

[12] J. . Letwoski, "Doing database design with MySQL," *J. Technol. Res.*, vol. 6, no. February, pp. 1–15, 2014.

[13] M. Di Giacomo, "MySQL : Lessons Learned," 2005.

[14] B. Jose and S. Abraham, "Performance analysis of NoSQL and relational databases with MongoDB and MySQL," *Mater. Today Proc.*, vol. 24, pp. 2036–2043, 2019, doi: 10.1016/j.matpr.2020.03.634.

[15] C. Supaartagorn *et al.*, "PHP FRAMEWORK FOR DATABASE MANAGEMENT BASED ON MVC PATTERN Chanchai," *Nucleic Acids Res.*, vol. 38, no. suppl 2, pp. W695--W699, 2010.