

Design Of Industrial Practice and Thesis Monitoring Information System (SIPIKRI) In Informatics Engineering Study Program, State University of Surabaya

Ronggo Alit
Informatic Engineering
State University of Surabaya
Surabaya, Indonesia
ronggoalit@unesa.ac.id

Agus Prihanto
Informatic Engineering
State University of Surabaya
Surabaya, Indonesia
agusprihanto@gmail.com

Aditya Prapanca
Informatic Engineering
State University of Surabaya
Surabaya, Indonesia
adityaprapanca@unesa.ac.id

Abstract— Industrial Practice Activities are a place for students to gain experience in the world of work and research experience in the form of a thesis by practicing the theories they have learned in lectures. In addition, it is also a place where students express their ideas, scientific ideas and produce research results and products before they become a Bachelor. The mechanism for appointing supervisors and examiners as well as scheduling Industrial Practice and thesis in the Informatics Engineering study program is carried out by the study program through the administration while the schedule and examination team are informed via messages to each examiner. Previously, there was a system that only solved the problem of industrial practice activities, namely the Web-based Industrial Practice Monitoring Information System, which is a system that can provide information about industrial practice programs online. This system has advantages in terms of the speed of presenting the information produced. In addition, this system is web-based so that it can be accessed at any time. This process takes a long time and good management, so that students get supervisors who are in accordance with their fields of expertise and the right exam schedule so that it does not interfere with the lecture schedule and lecturer schedule, but the same problem arises related to student thesis activities. then a system is needed that can solve problems that arise related to thesis activities. The conclusion that can be drawn in this study is the production of the Industrial Practice and Thesis Monitoring Information System (SIPIKRI) which can help the Informatics Engineering study program, Faculty of Engineering, Surabaya State University to run smoothly. In addition, it is hoped that this information system can assist the work of informatics engineering study program managers in carrying out the administration of these activities.

Keywords— Information systems, Industrial Practice and Thesis, Monitoring



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I. INTRODUCTION

Along with the rapid development of Information and Communication Technology, the development of hardware and software will also develop rapidly. Various institutions compete to invest in infrastructure, hardware and information systems with the aim of keeping up with technological developments in order to support the operational activities of the institution (Setemen, 2009). The rapid development of information technology has affected many fields, including the world of business, services, education and others. The world of education, especially higher education, is one of the fields that is strongly influenced by the development of information technology. According to (Choldun, 2006) Globalization in the field of education requires universities to be able to manage information well, so that the information needs of each interested party can be met quickly and accurately.

Industrial practice is a temporary work placement of students in a company that can have a positive impact on both parties, namely the company owner and students as students. With the industrial practice program, students can gain direct field experience related to the competencies learned during the lecture process, adjust to the climate in the world of work and train responsibility in the work sector entrusted to them. (Gamboa et al., 2013)

A thesis is a scientific work written by undergraduate students that discusses a particular topic or field based on the results of a literature review written by experts, the results of field research, or development results (Huda, 2011). According to (Adiwinata, Sarwoko, & Indriyati, 2012) The Final Project Information System and Field Work Practice

that can help the process of final project courses and field work practices in the Environment of the Informatics Engineering study program at Diponegoro University can run smoothly. In addition, with this information system, it is hoped that it can help the work of each thesis coordinator and Field Work Practice which is then referred to as PKL in administering the course. Students and lecturers of the Informatics Engineering study program can also use this information system as a source of information and journal data about TA and PKL courses. Thesis is a compulsory course for students to graduate from a university. For most students, thesis is the biggest challenge during their studies. In writing a thesis, students are required to be able to develop their thinking and reasoning skills in writing a thesis. In addition, students are also required to have perseverance and tenacity in writing a thesis. There are many obstacles that students will face in writing a thesis, one of which is the difficulty of meeting a supervisor who is very busy with his schedule. This will have an impact on student motivation which is getting weaker, resulting in the student's study period getting longer. To overcome this, a system is needed that can monitor the progress of the thesis work, so that if there are obstacles for students, the academic party can find solutions to overcome these obstacles.

According to Kushwaha Software Development Life Cycle (SDLC) is a process that describes methods and strategies on how to develop designs and maintain software applications so that goals, objectives, functions, and user needs are met. SDLC must produce quality software, meet user expectations, meet deadlines and cost estimates, and be completed effectively and efficiently. (Arora et al., 2016).

The definition of Laravel Framework according to (Naista, 2017) is a basic conceptual structure used to solve or handle a complex problem. In short, a framework is a container or framework for a website to be built. By using this framework, the time used to create a website is shorter and makes it easier to make improvements. There are many advantages to using a framework in building a website. One of these advantages is providing a good structure in the program created because the framework has a library or function that can be used directly. In addition, the framework makes it easier to work on programs as a team because in building a website you have to make adjustments to the style of the framework used. One of the frameworks widely used by programmers is the Laravel framework. Laravel is a PHP-based framework that is open source, and uses the concept of model - view - controller. Laravel is under the MIT License using Github as a place to share code. In December 2013, Laravel was the most popular framework. In its use, Laravel has several shortcomings, one of which is the file size is quite large. In Laravel there are default files such as vendors. The file should not be deleted carelessly so that the size of the website created is quite large. In addition, an internet connection is needed for installation and downloading the laravel library, and PHP at least version 5.4 to run it.

II. METHOD

The method in this study uses a survey method with quantitative descriptive analysis. The methodological design

used in the implementation consists of 4 (four) stages, namely the preparation stage, the implementation stage and the analysis stage, and the follow-up evaluation stage which are completely summarized in Fig 1. The waterfall method is one type of application development model and is included in the classic life cycle, which emphasizes sequential and systematic phases. For its development model, it can be likened to a waterfall, where each stage is worked on sequentially from top to bottom. So, each stage should not be worked on simultaneously. Thus, the difference between the waterfall method and the agile method lies in the SDLC stages. This model is also included in software development which is considered less iterative and flexible. Because, the process that leads in one direction only is like a waterfall. In its development, the waterfall method has several sequential stages: Requirements (needs analysis), Design (design), Implementation, Verification (trial), Maintenance (maintenance).



Fig .1. The waterfall Method

- a. Requirements (needs analysis).
At this stage, the analysis process will be carried out on the functional needs of the industrial practice monitoring information system design. The results of the analysis at this stage will be used as input for the next stage.
- b. Design (system design)
From the Requirements process above, functional needs will be produced that can be put forward as a study in the Software development module design process
- c. Implementation
This stage will translate the design into a module that is integrated into a tool that can accommodate the design plan in the previous stage
- d. Verification (Test)
At this stage, the tools produced are tested into unit testing units so that accurate results will be produced

- e. Maintenance (Maintenance)
aintenance here is the availability of documentation from the application being developed along with the results of the tests that have been carried out.

III. RESULT AND DISCUSSION

A. Flowchart

From the results that have been obtained to create a product of the Industrial Practice and Thesis Monitoring Information System Application (SIPIKRI), producing an application that is used as a media for monitoring industrial practices and theses also provides convenience to managers of the Informatics Engineering S1 Study Program in supervising the implementation of industrial practices and theses. In Figure 2 and Figure 3 we can see the Flow of the SIPIKRI applicationFlowchart

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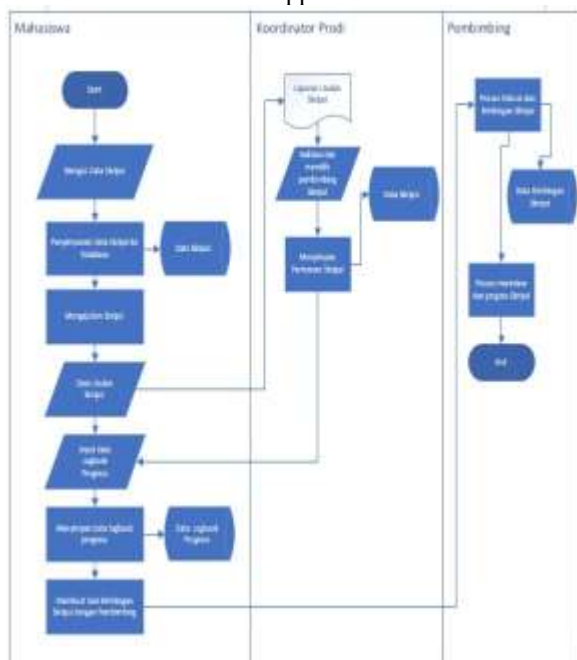


Fig.2. Flowchart SIPIKRI (Industrial Practice)

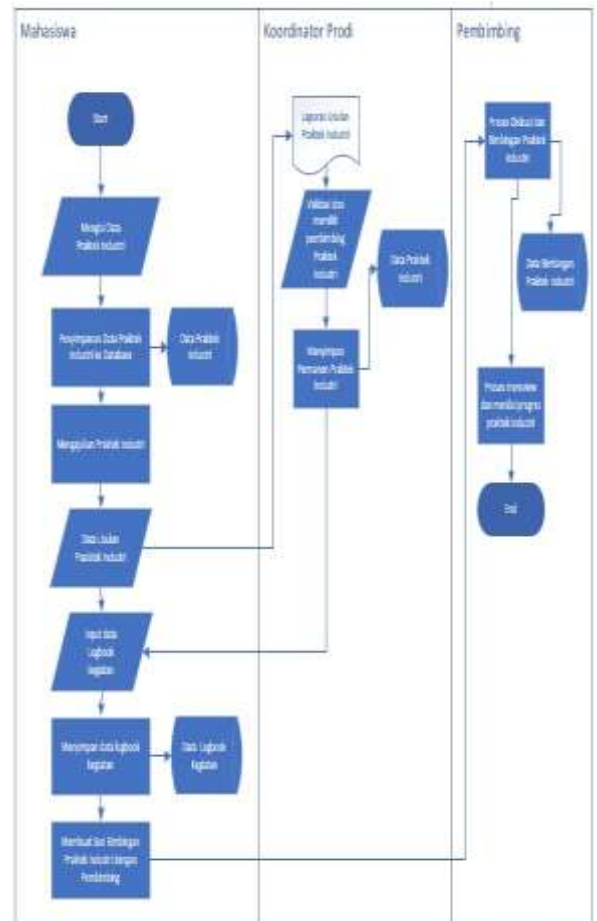


Fig.3. Flowchart SIPIKRI (Thesis)

In Figure 2 and Figure 3 above, it is explained that there are 3 users involved in the system, such as:

1. Study Program Coordinator, users can monitor activity logs, review final reports and input scores.
2. Supervisors, users can monitor activity logs, review final reports and input scores
3. Students, Users can submit proposals, input field supervisor data, input activity logs, input final reports.

B. Web Design

Website design is done with the aim of obtaining initial ideas for a product or system design that will later be developed. In general, a prototype design is made to describe a design according to creativity and exploration as an alternative design. In this study, there is a prototype design in the form of a wireframe, which is a framework for arranging an item on a website or application page. A design prototype is an initial picture or representation of a product, system or application. A prototype is created to provide a rough idea of how the product or system will function, look and interact with the user. In this study, the prototype design used is a wireframe design. A wireframe is a framework of several items on a website or application page with the aim of creating a structural

UI/UX design. The following is the wireframe design of this research website:

1. Login Page

The login page contains information about who has the right to enter the application according to their access rights, including the Study Program Coordinator, Supervisor and Students. The following is the login page display:

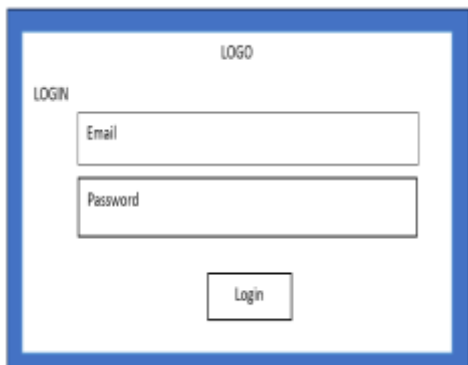


Fig.4. prototype design login

After successfully entering the application, the industrial practice menu, Thesis Menu and master menu will appear, for the master menu there are Lecturer masters, Student masters, Supervisor masters, Company mater and mater implementation period of practical activities and Thesis periods. In the master menu there are actions, namely add, edit data and delete data, there is also an export menu. The appearance of the master menu is as follows:

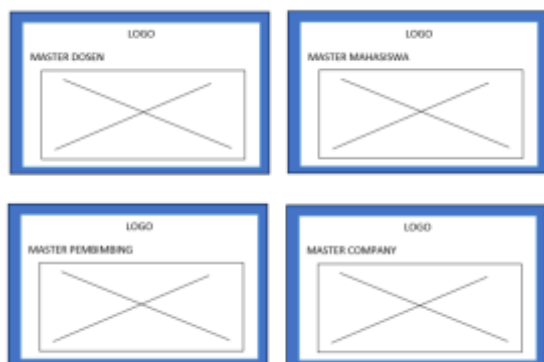


Fig.5. prototype design Form Master

Below is a display of the SIPIKRI application, there are:

1. Login Page

The login page contains information about who has the right to enter the application according to their access rights, including Admin, Head of Study Program, Supervisor, and Student. Here is the display of the login page:

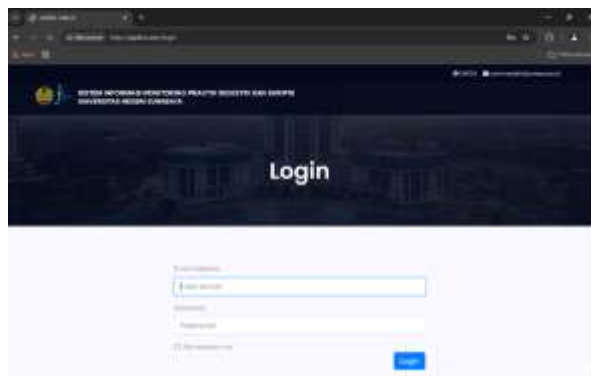


Fig. 6. Login Page SIPIKRI

After successfully entering the application, the industrial practice and Thesis menu and data menu will appear, for the data menu there are Lecturer masters, Student masters, User masters, Company masters and implementation period masters. In the data menu there are actions, namely add, edit data and delete data, there is also an export menu. The data menu display is as follows:

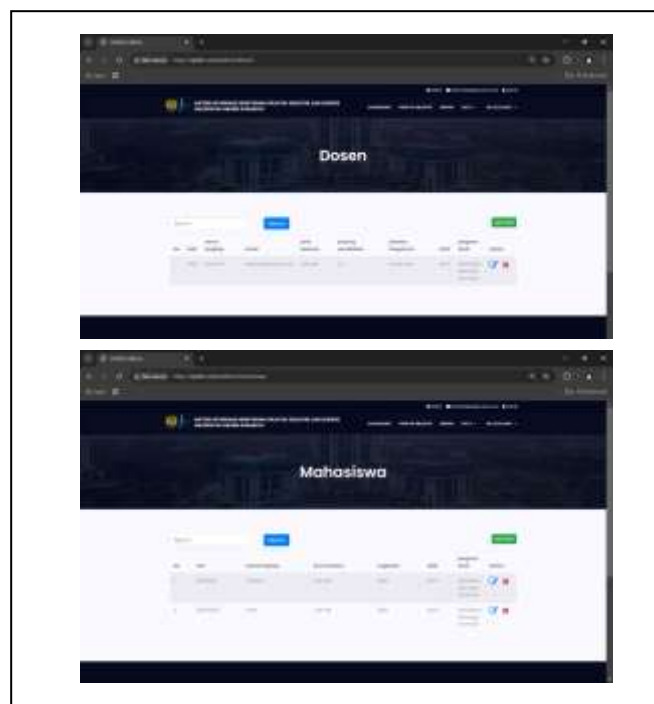


Fig. 6. Master Dosen and Mahasiswa Page SIPIKRI

In the image 6 above, the Student page display has a menu to add students. If we click the add new button, the page to add lecturer or student data will appear.

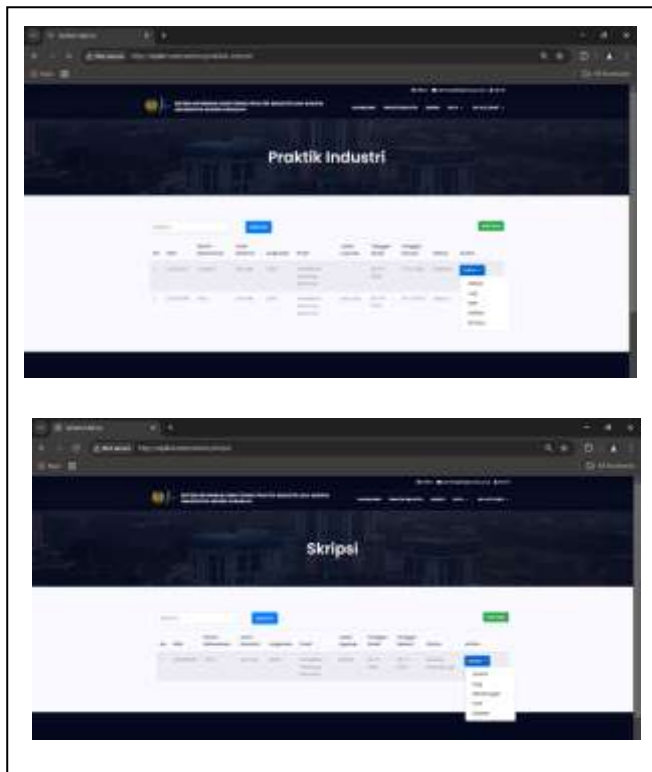


Fig. 7. Industrial Practice and Thesis Page SIPIKRI

The image above shows the Industrial Practice page display, where on the page there is a menu to add, as well as an action menu consisting of details, log, Edit, Delete and approve.

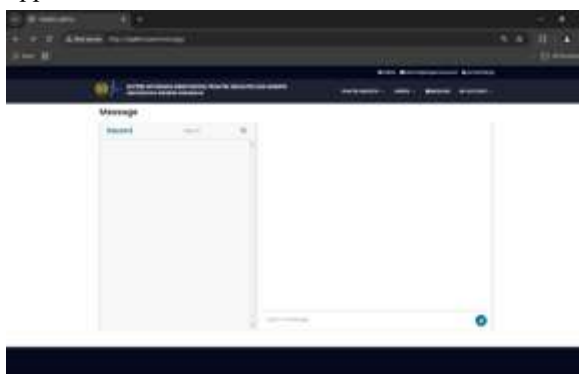


Fig. 8. Message Page SIPIKRI

The image above is a display of the Message page, where on this page lecturers and students can communicate directly with each other. Lecturers and students can also directly attach files when carrying out the mentoring process.

IV. CONCLUSION

The conclusion shows that the research has succeeded in developing an Industrial Internship and Thesis Information System that supports the smooth running of the management process of these activities in the Informatics Engineering study program, Surabaya State University. This system is expected to not only simplify the administration process, but also increase the efficiency and effectiveness of the implementation of industrial work practices, while supporting the management of theses. The implementation of this system also provides benefits for the department in carrying out related administrative tasks in a more organized and systematic manner.

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