



Web-Based And Mobile-Based Information System Of Accompanying Diplomas

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ABSTRACT

A certificate accompanying a diploma is a document that contains information about academic achievements from higher education with a degree, so that it is hoped that it will produce quality graduate students who can be accepted in society and the world of work in the future. From the results of a survey by researchers, currently Pelita Indonesia tertiary institutions are still applying manual certificate companion certificates (SKPI). Therefore the researchers aim to help simplify the process of SKPI data by using web-based information system design and Android mobile. The design design model uses the Unified Modeling Language (UML) and implements the Development Life Cycle System (SDLC). It is hoped that this application can help students and academics in processing SKPI.

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1. INTRODUCTION (11 PT)

The development of information technology is growing rapidly, both developments in the industrial sector and developments in the educational environment. Many facilities can be obtained easily with information technology. The technology that is currently being widely used is web-based technology, also known as online applications, and technology that utilizes smartphones, known as mobile Android.

Android is an operating system for Linux-based mobile devices that includes an operating system, middleware and applications. Android is an open platform that allows developers to create their own applications so that they can be used by various driving devices. This makes it easier for students to access the application which contains a student biodata entry form required for SKPI to fill in student activities, achievements and awards.

This system has been implemented, one of which is research on innovation in the development of Information Systems for Web-Based Diploma Complementary Certificate Processing Information. This research produced a certificate accompanying a diploma that could facilitate Study Programs in making Web-based SKPI reports. (Sugiharto and Irwansyah 2020).

In addition to the research above, research (Defni 2019) from this study found that filling out a diploma accompanying certificate was done manually. The researcher observed that the process of filling out the SKPI form was ineffective and inefficient in terms of time, which had been used for filling out the form, and there was no information about the SKPI certificate. Regarding this matter, the researcher built a web-based certificate information system for accompanying diplomas. The aim of the researcher is to be able to manage student competence and expertise data in the diploma information system using a web service.

2. RESEARCH METHOD

The system development method is a standard process used by the development team to link all the steps needed to analyze, design, implement and maintain an information system. The method

that is still suitable to be used as a guide in system development is the System Development Life Cycle (SDLC), which is a method used to develop and maintain IS. As per the visible image SDLC is also often called the "Waterfall" methodology because it looks more like a waterfall.



Figure 1. SDLC (System Development Life Cycle)

The following is a brief explanation of each phase in Figure 1 above:

Observation Stage

Based on researchers conducted by the author of the system at IBTPI Pelita Indonesia which is currently running, especially on the information system for certificate companion certificates (SKPI) it still runs a manual system, there is no online system to assist students in filling in SKPI data, the impact on students is the difficulty in filling in SKPI data .

Initialization and Planning Stage

After in the first phase an Information System development project was determined, in the second phase an initial action (initiation) was carried out related to the start of development. The initial action is to examine more deeply the problems experienced at IBTPI Pelita Indonesia, the forms of output, forms and types of data, then work methods and information flow, as well as procedures. Then set limits on the scope of the system to be built including data management, distribution, and security of data resulting from the Information System process.

Analysis

In this third phase, it is divided into sub-phases, which consist of a sub-phase of determination or determination of the criteria for a computer-based system to be developed, a structuring sub-phase, and designing an online computer-based system model as an option for universities. Tall. The following is a further description of each of these sub-phases.

a. Requirement Determination (requirements)

As for helping the implementation of this sub-stage, Field Research techniques were used, namely visiting IBTPI Pelita Indonesia Pekanbaru, especially at the BAAK unit to make observations observing ongoing information system activities and collecting data for later analysis and determination of the information system that will be implemented. designed. In addition, more in-

depth interviews were conducted with the end users of the computer-based information system to be designed, especially those related to specifications, working methods, the desired form of data to the criteria for computer application programs to be designed and to find out in detail about the flow of information that occurs. Various types of existing documents, types and types of data processed, personnel related to information system activities and their respective duties, existing tools and working mechanisms.

b. Structuring requirements

This sub-phase activity must be supported by library research techniques, namely by studying books and sources other knowledge in the IBTPI Pelita Indonesia Pekanbaru library, bearing in mind that in the process of analyzing and compiling a system model, in-depth knowledge is needed on how to compile and use other knowledge modeling tools related to research material. In this sub-phase, structuring is carried out on all the results from the first sub-phase, namely by making a graphical model accompanied by a complete explanation of the old system and the one that will be developed. The graphical modeling tools used are information system flow diagrams (ASI), use case diagrams, activity diagrams, state diagrams, object diagrams, class diagrams, sequence diagrams, component diagrams and deployment diagrams.

c. Alternative Generation Design

Creating reliable alternatives or designs according to the user's wishes for further comparison and selection in accordance with existing costs, human and technical resources.

Logic Design

Is a description of all the functions that have been selected at the analysis stage, described separately from certain computer specifications. Related to the functions, detailed specifications of all elements of the system (data, process, input and output). In this logical design, coding or rules are made to determine the personality type and also the appropriate field of work.

Physical Design

At this stage a change is made from the logic design stage to the detailed use of certain technologies such as designing data input forms and user friendly reports such as login forms, data input, and also the reports needed in this system.

Implementation Stage

Implementation can be interpreted as a process to ensure the implementation of a policy and the achievement of this policy. In this phase, system software or operating system installation is carried out, newly created application programs, installation of controller systems, and providing short training to prospective users. In this phase, we will try to implement the system that has been made to the BAAK IBTPI Pelita unit Indonesia, but the time used is still relatively short, so it is necessary to plan for additional time.

Maintenance

At this stage maintenance will be carried out periodically to check whether the system is running as it should. At this stage, process monitoring, evaluation, and changes (improvements) to the system are carried out if necessary. Latest version of software or with updates for documentation, training and support. Changes will be made if there is an error, so that the software and hardware must be readjusted to accommodate the desired changes in requirements.

3. RESULTS AND DISCUSSION (11 PT)

System Characteristics

A system has several characteristics, namely components or elements (component), system boundary (boundary), external system environment (environment), liaison (interface), input (input),

processor (process), output (output), target (objective).), or the goal (goal). (Agus Mulyanto 2009: 2). The characteristics of the system have several components including:

The 9 characteristics contained in STIKOM Pelita Indonesia will be described as follows:

1. Boundary: IBTPI Pelita Indonesia Pekanbaru
2. Environment: Student, Head of Study Program
3. Components: BAAK
4. Input: Student Data, SKPI Data
5. Output: SKPI report
6. Interface: Certificate of Introduction Certificate Form
7. Interrelationship :
 - a. BAAK Student
 - Submit the student SKPI form
 - b. BAAK Head of Study Program
 - Provide valid SKPI report data
8. Constraints: The current system is only limited to SKPI data collection.
9. Goals: Optimizing information services for IBTPI Pelita Indonesia Pekanbaru Students.

Analysis of Information Systems

Analysis of the old information system is an analysis of the processes that are currently running. The process that is analyzed is mainly in the process of processing existing certificate data at BAAK. Retrieval of student data begins when BAAK provides student data forms. BAAK parties collect student data and all student data.

Students receive forms from BAAK Pelita Indonesia officers, students will fill out the SKPI form. After filling out the form, students will send a certificate to the BAAK department to be registered into the system. When the student has filled out the form and submitted the certificate, the student will receive an SKPI Certificate.

Information System Flow Diagram

BAAK Information System Flow Diagram IBT Pelita Indonesia Pekanbaru illustrating the flow process of the BAAK information system submitting the SKPI form to students. Then students fill out the SKPI form data and it will be validated by BAAK. SKPI which has been validated and submitted to the Head of the Study Program to check report data and sign the SKPI certificate. After that students receive a valid SKPI report.

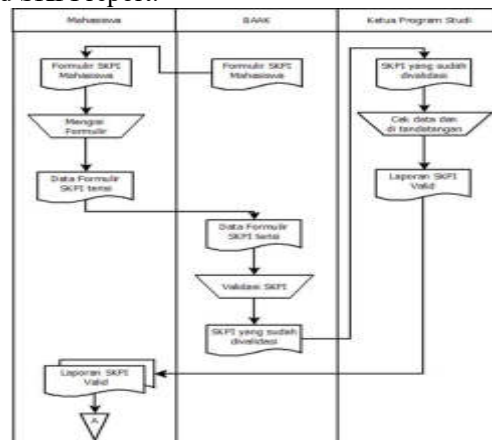


Figure 2. Flow Information System Certificate Companion Diploma (SKPI) IBT Pelita Indonesia Pekanbaru

Use Case Current Diagram

Use Case Diagram of an information system that is currently running at BAAK IBT Pelita Indonesia. In the Use Case Diagram there are actors, these actors will interact with the system. Whatever each interaction is activities where each activity is expressed as a use case (ellipse symbol).

The actors involved in this case are students, BAAK, and the Head of the Study Program. The use case diagram below illustrates students filling out the SKPI form and submitting a copy of the certificate to BAAK, after which BAAK checks the SKPI submitted by students. BAAK submits the correct SKPI to the Head of the Study Program and signs the SKPI. BAAK submits the SKPI validation report to the head of the study program.

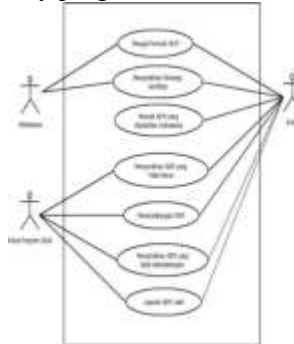


Figure 3 Use Case Diagram of Pelita Indonesia's Old IBT

Activity Diagram Running

Current Activity Diagram Describes the workflow (work flow) or activities that can be carried out by the system, not what actors do.

The old activity diagram depicts students giving data to BAAK. After that BAAK inputs student data, validates student data, and submits student SKPI data to the Head of the Study Program. After that the head of the study program receives the SKPI list data, checks the SKPI data and signatures, and validates the SKPI report.

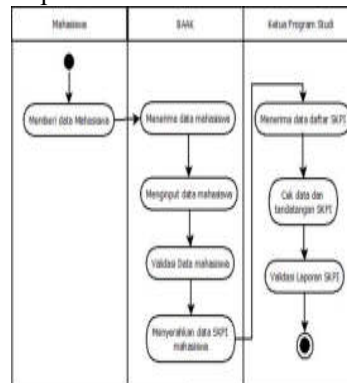


Figure 4 Activity Diagram Running

Object Diagram

The object diagram from BAAK Pelita Indonesia illustrates the objects found during analysis and research, each object is equipped with attributes attached to it and has a relationship with other objects. The objects of this old diagram are student tables, SKPI tables, BAAK tables, study program heads and report tables. 4.3 SWOT Analysis (Strength, Weakness, Opportunity, Threat)

SWOT analysis is a method of analysis to identify internal factors such as strengths, weaknesses, and external factors such as Opportunities and Threats systematically to determine the company's current position.

The results of the Swot Analysis are used as a service provider to determine the next steps in an effort to maximize strengths and opportunities and try to minimize weaknesses and overcome threats.

This process involves setting specific objectives of a business venture or project and identifying internal and external factors that support and do not achieve these goals. SWOT analysis can be applied by analyzing and selecting various things that affect the four factors, then applying them in a SWOT matrix image, where the application is how strengths are able to take advantage of existing opportunities, how to overcome weaknesses (weaknesses) that prevent the advantages (advantage) of existing opportunities, then how strengths (strengths) are able to deal with existing threats (threats), and finally how to overcome weaknesses (weaknesses) that can make threats (threats) become real or create a new threat.

Web-Based And Mobile-Based Information System Of Accompanying Diplomas. (Alfina Tiurmida Sitanggang)

This technique was devised by Albert Humphrey, who led a research project at Stanford University in the 1960s and 1970s using data from companies. The results of the SWOT analysis of the existing system are as follows:

1. Strength (Strength)

- Each division of the Academic and Student Affairs Bureau (BAAK) has its own duties
- Can direct students to choose various types of certificates to be inputted so that students get an overview of the certificate accompanying the diploma.

2. Weaknesses

- Errors often occur when filling out the SKPI form so that form data is inefficient.

3. Opportunity

- Errors often occur when students fill out certificates that are not in accordance with the specified certificates and cause delays in the information and data collection process so that it is improved by completing certificates via the web and mobile so students can fill out and know what type of certificate to input.

4. Threats (Threats)

- Lack of information about SKPI in BAAK.

It is necessary to update the certificate data if there is a new certificate item.

Input Data Master Program for SKPI Applications

Application input listings are all matters related to explanations of how to enter (input) in application programs which consist of saving, editing, deleting and printing. Each 1 (one) image below will explain 1 (one) or more coding / code used on each application page that is displayed.

1. Login Page

This page is used to validate admin and student logins whether the user and password entered have been registered as admin or as a user.

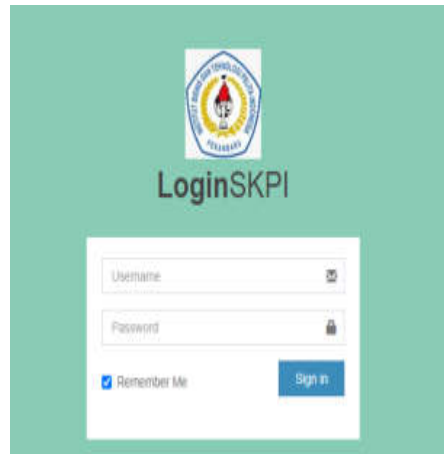


Figure 5 Login page

2. Home page



3. Student Data Input page. Student data is used for inputting category data for saving.

Field	Value
Nim	1810307057018
Nama	Dwi
Tempat Lahir	PEKANBARU
Tgl Lahir	1996-10-01
Tahun Masuk	2018
Fakultas	Ilmu komputer
Jurusan	sistem informasi
No Ijazah	
No Hp	081221000000

Figure 6 Student Data Input Page

4. Student Data Results Page

This student data result page is used to update student data that has been saved. This student data is used for inputting category data to save, edit and delete if there is additional study program data

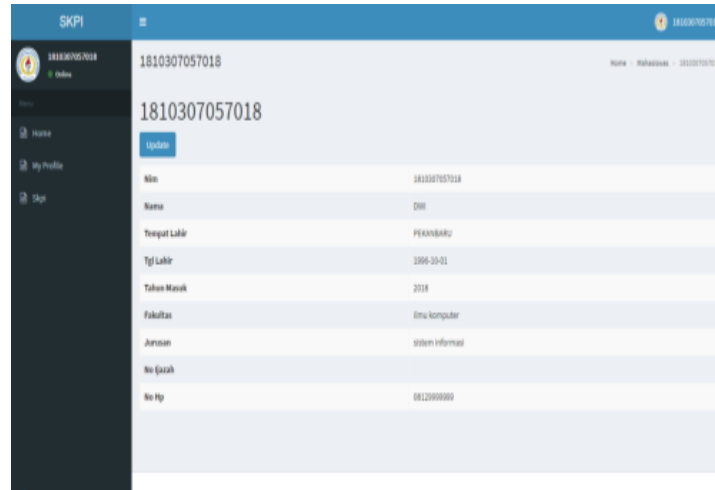
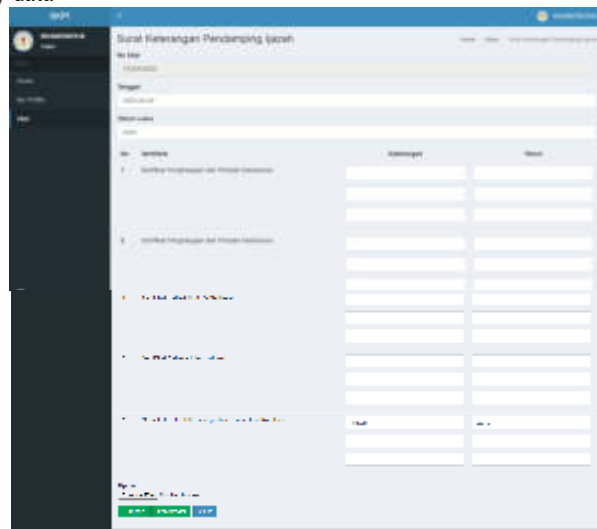


Figure 7 Student data results page

5. SKPI Data Input page

This page is used for inputting category SKPI data for saving, uploading PDF files, and updating if there are additions to category data



Website Program Outputs

In the process of making the program, the output is the end result of the process that has been carried out through a program that is assisted by Hardware. Following are the output results from the Diploma Companion Certificate application program:

1. Student Data Report Page

This page is used to make student data reports on the web that can be used to check student data.

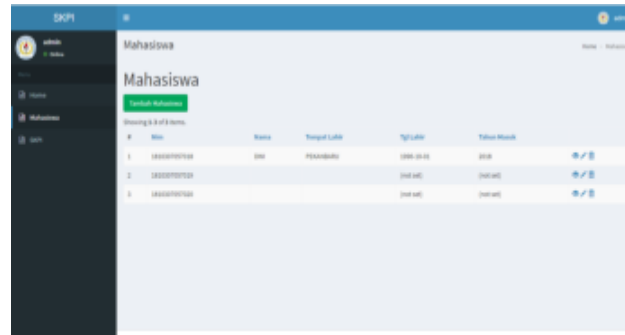


Figure 8 Student Data Report Page

2. SKPI Data Report page

This page is used to make an SKPI data report on the web that can be used to check Student SKPI data.

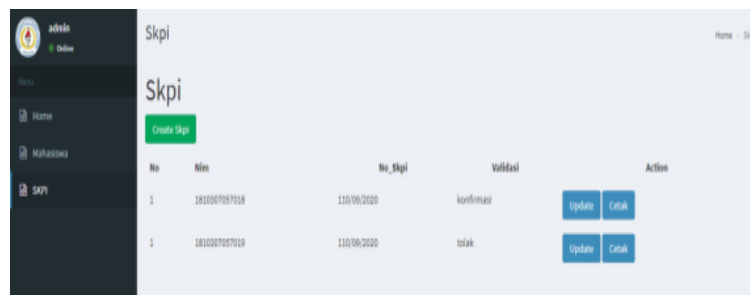


Figure 8 SKPI Data Report page

3. SKPI Results Report

This page is used to view the results of the SKPI data report that is on the web and can be used to print Student SKPI data.



Institut Bisnis dan Teknologi Pelita Indonesia

Surat Keterangan Pendamping Ijazah (SKPI)

No.110/09/2020

Nama : DWI	Fakultas : Ilmu komputer
Nim : 1810307057018	Jurusan : sistem informasi
Tempat Lahir : PEKANBARU	No.Ijazah : 12345
Tanggal Lahir : 1996-10-01	Tahun Lulus : 2020
Tahun Masuk : 2018	

Sertifikat	Keterangan	Tahun
Sertifikat Penghargaan & Prestasi Mahasiswa	penghargaan juara 1	2020
Sertifikat Kompetensi yang dimiliki Mahasiswa	Pemrograman Java	2019
Sertifikat Nasional/Internasional	Pertunjukan Internasional	2019
Sertifikat Pengalaman Organisasi	Pengurus BEM	2018
Sertifikat Bahasa Internasional	B.INGGRIS	2019
Sertifikat Soft Skill Training/Pendidikan Karakter	PELATIHAN sOFTSKILL	2020

Ketua Jurusan

DWI OKTARUNA

Pekanbaru, 2020-09-09

BAAK

ALFINA

Figure 9 SKPI Data Report Results page

View the Andorid Mobile Page

This page is used to see the results of the Android Mobile Display SKPI, the first time the application is installed and the application can be run. The application displays a menu that corresponds to the website that has been designed. The first time the application is run, the application displays the Home menu, the student myprofile menu, and the SKPI menu. This Android Application linking process uses the webview system to open web pages from applications customized for Android devices.



Figure 10 Android Mobile Page Display

Design Implementation and Maintenance

After the program design, it is necessary to design the implementation and maintenance of the system in the future. Where this system will be implemented or entered into a computer that is at IBT Pelita Indonesia and this system can also be operated via mobile android admin and students. At the stage of implementation or maintenance of the system, it can be in the form of repairing the system and software if an error or damage occurs and developing the system in the future.

4. CONCLUSION

Online implementation of SKPI can help students and academics, so there are no difficulties in obtaining data entry, students can more quickly validate data for SKPI. Make it easy to manage student data and the availability of database system features that are built to make it easier to find the data needed quickly, so that the buildup of archives can be reduced and can prevent data loss. With the existence of a website and mobile Android, it can produce output such as SKPI data.

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- Keterangan Pendamping Ijazah Berbasis Web Dan Mobile Android.” *Prosiding SISFOTEK 2017* 1(1): 7–16. <http://seminar.iaii.or.id/index.php/SISFOTEK/article/view/10>.
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