ITB AAS Indonesia Informatics Study Program Value Information System

1st Nendy Akbar Rozaq Rais ¹Institut Teknologi Bisnis AAS Indonesia ¹Jl. Slamet Riyadi No. 361 Windan, Makamhaji, Kartasura, Sukoharjo, Indonesia ¹ab.terate@gmail.com

Abstract—The Grade Management Information System (SIPAN) is a web-based grade information system in the ITB AAS Indonesia informatics study program which is used to support the activities of lecturers in conveying the grades of the courses taught, administrative officers in terms of grade recapitulation, student grade information which is private, and supports activities of the study program coordinator in monitoring the development of academic activities in terms of grades. The aim and objective of developing SIPAN is to assist higher education institutions in managing student grades. With web-based software, lecturers can submit student grades at any time within a predetermined time period and have an internet connection. Likewise with students, they can see their own grades anytime, anywhere, as long as they have an internet connection. The study program coordinator can monitor the extent to which lecturers at their home base match their grades. The expected final result will be the realization of a well-integrated information technology-based student grades management process, neat record keeping, and integration with the Attendance Information System.

Keywords: information systems, websites, grades, universities.

I. INTRODUCTION

The Grade Management Information System (SIPAN) is a web-based information system that is used to support the activities of lecturers in conveying grades for courses taught, administrative officers in terms of grade recapitulation, student grade information which is private, and supports the activities of study program coordinators in monitoring development of academic activities in terms of values.

The aim and objective of developing SIPAN is to assist higher education institutions in managing student grades. With web-based software, lecturers can submit student grades at any time within a predetermined time period and have an internet connection. Likewise with students, they can see their own grades anytime, anywhere, as long as they have an internet connection. The study program coordinator can monitor the extent to which lecturers at their home base match their grades.

Tino Ferry Efendi previously carried out application creation in the education sector in

2021 with the title E-Learning Application Design at SMK Pelita Bangsa during the Covid-19 Pandemic. The research explains that the importance of technology in the field of education, in this case, is the application of learning during the Covid era. By holding the elearning design, it is hoped that it can help the teaching and learning process between teachers and students so that the learning process runs effectively and efficiently.

The expected final result will be the realization of a student grade management process based on information technology that is well integrated, neatly recorded, and integrated with the Attendance Information System. In this way, the management of student grades becomes more clear and transparent for every university party who needs this information, including students and executive staff. Apart from that, the system is also expected to have a responsive feature where the system will adjust the content display according to the device used by the user.

II. RESEARCH METHODS

The research method used in this research is a prototype method to make it easier to apply to users. The Prototype Method is a software development method that allows interaction between system developers and system users, so that it can overcome incompatibility between developers and users (Pressman, 2012: 50). An image of the prototype method is shown in Figure 2.1 below:



Figure 2.2 Prototype Methode

III. RESULT AND ANALYSIS

The value management information system will be modeled using the UML approach so that in this chapter we will explain Usecase diagrams, Activity diagrams, Sequence diagrams and class diagrams. Furthermore, this chapter will also explain database design using the ER Model along with its table structure and user interface design for the value management system.

3.1 UML (Unified Modeling Language)

In this value information system project there are 4 users who use the system, in accordance with the previous system requirements identification report. Users who use the system are Administrative Officers, Students, Lecturers and Study Program Coordinators who will later be connected to the internet to be interconnected with the Value Information System. Following is the System Architecture shown in the figure 1.3



Figure 3.1 System Architecture

3.2 UseCase

Usecase is a technique used in the development of software or information systems to capture the functional requirements of the system in question. Usecase describes the interactions that occur between 'actors'— initiators of the interaction of the system itself with the existing system. A usecase is represented by a sequence of steps. simple. From the results of the needs analysis carried out in the previous report, the Usecase system diagram is shown in Figure 3.2:

International Journal of Computer and Information System (IJCIS) Peer Reviewed - International Journal Vol : Vol. 04, Issue 04, November 2023 e-ISSN : 2745-9659 https://ijcis.net/index.php/ijcis/index



Figure 3.2 Usecase System **Activity Diagram**

3.3

An Activity Diagram is a diagram that depicts the workflow or activities of a system or business process. Activity diagrams describe system activities not what actors do, so what activities will be carried out by the system. The following is the Activiy login diagram in the value information system and can be seen in Figure 3.3 and figure 3.4. Student activity diagram see grades:



Figure 3.3 Activity Diagram Login User



Figure 3.4 Student activity diagram see grades

3.5 **Sequence Diagram**

A sequence diagram is a diagram that shows or displays interactions between objects in a system that are arranged in a sequence or time series. Sequence Diagrams are used to describe a scenario or series of steps taken as a response to an event to produce a certain output. The following is a system sequence diagram created based on the use case discussed in the previous sub-chapter, which can be seen in Figure 3.5 and figure 3.6:



Figure 3.5 Squence Diagram User Login

International Journal of Computer and Information System (IJCIS) Peer Reviewed – International Journal Vol : Vol. 04, Issue 04, November 2023 e-ISSN : 2745-9659 https://ijcis.net/index.php/ijcis/index



Figure 3.6 Squence Diagram Student

The explanation in Figures 3.5 and 3.6 is that after students have successfully logged in, students will be faced with the main page, then students can choose several menus to access.

3.6 Class Diagram

A Class Diagram is a diagram that shows or displays the structure of a system. The system will display the class system, attributes and relationships between classes when a system has finished creating a diagram. Below we describe the system that runs between entities, which can be seen in Figure 3.7 below:



Figure 3.7 Calss Diagram System

Based on the picture above, it can be explained that there are four users of the system that runs on the value information system, namely the student administration officer, lecturer and the Head of Study Program. there are other classes such as course groups and rooms whose data will later be used to become reference data for classes and schedules which will later become reference data for inputting grades

3.7 Entity-Relationship Diagram (ERD)

Entity-Relationship Diagram (ERD) is a database modeling method used to produce a conceptual schema for a system's semantic data types/models. Based on the Usecase, Activity diagram, Sequence diagram and class diagram described in the previous subchapter, the ERD for the value management information system has identified entities, attributes and relationships which can be seen in Figure 3.8 below:



Figure 3.8 Entity-Relationship Diagram (ERD) In the image above, several attributes are explained, namely:

a. Students with ID and name attributes

International Journal of Computer and Information System (IJCIS) Peer Reviewed – International Journal Vol : Vol. 04, Issue 04, November 2023 e-ISSN : 2745-9659 https://ijcis.net/index.php/ijcis/index

- b. Study program with kdPS attributes and PS name
- c. Courses with the attributes kdMK, credits, hours, MK name and semester
- d. Space with attributes kdRoom and nameRoom
- e. Lecturer with kdLecturer attributes, name, address and telephone number
- f. Rombel with kdRombel and desc attributes

3.8 User Interface Design

A mockup is a visual or preview of a "flat" concept that is given a visual effect so that the result really looks like a real thing, a mockup can provide a real picture of a design concept, how the concept will look later if it has been applied to or into a real object, is it visible? good or not so good.

Mockups can also add visual value to a design concept, for example, if a design is made in a flat version, the design will look ordinary, but by using a mockup, the design will look more attractive and attract the client's attention, of course in a project environment. Mockups are usually used for presentation purposes by designers to clients to later be given to programmers to be converted into a real form, an HTML web version for example.

The Grade Management Information System in the informatics study program at ITB AAS Indonesia is an information system that manages student grade data which will later be used by administrative users, lecturers, students and study program co. In this system, it is hoped that it will provide convenience to each user, of course with different access rights according to their needs. An analysis of both functional and non-functional system requirements has been presented in the previous chapter.

3.9 Administrative Officer User Interface

Administrative officer users are users who manage all data in the academic environment, including student, lecturer, schedule and recapitulation score management. The user interface can be seen in Figure 3.9 to Figure 3.13 below:



Figure 3.9 Login Administreator

~~~~	A Web Page	
	nila.akb.ao.id/administrasi/	•
Akademi Komunitas Neg	geri Putra Sang Fajar Blitar	👌 Nama Pet. Administrasi Keluga
AD MIN MULTIME DIA	Selamat Datang Selamat datang di Sistem Informasi Nilai Akademi Komunitas Negeri Putra Sa	ng Faiar Bitar.
Qek Nilai p Rekap nilai	· · · · · · · · · · · · · · · · · · ·	
Manajemen jadwal 15MM1	Informasi	
15MA2 16MA1 16MA2 P Masajamen data Mata kulah p Dosen p Mahasiawa P Rontei P Katender Akademik p	pentiatlanın bassiawa PPA dövka sampar dengan 15 Mei 2017. buruan dahtar	W TH MAY chain

Figure 3.10 Main admin page

	ai.akb.ac.id/administ	:œsi∕	A Web Pa	9e		
Akademi Komunitas Neger	ri Putra Sang Fajar B	Blitar			🔕 Nama Pet. Administra	isi Keluggi
ADMNI MULTINE DIA C Dastoard Dik Nai Pikap hal Marajemen jokal 15MM1 15MM2 16MM1 16MM2 Marajemen data Mara kulah Dosen Mataisan Rombel Kalender Akademik	() Takiy	USAN2	() TOTAL	USUN2	Nila tekumpul	
						4

Figure 3.11 Accumulated value page

#### International Journal of Computer and Information System (IJCIS) Peer Reviewed – International Journal Vol : Vol. 04, Issue 04, November 2023 e-ISSN : 2745-9659

https://ijcis.net/index.php/ijcis/index

🗘 🖒 🗶 🎧 📖	nilai.akb.acid/a	dministrasi/		A Web Pa	90 			
Akademi Komunitas Neg	jeri Putra Sang	Fajar Blitar				🔕 Nama Pe	t. Administr	asi Kelu
ADMIN MULTIME DIA				Jadwal P	erkuliahan RomBel	16MM1		
Gak Nilai	Show to	- entries				50	arch	
Rekap nilai	HARL UT		JAN AKILIR 🕼	Rombri 11	MATA KULIMI	DOSEN 11	RIMNG 1	aksi 11
Manajemen jadwa 15MM1	serio	1	7	165611	Animasi Digital	HeriPriys Waspards, ST		ge Heous
15MM2	sonin	ā	9	36MM2	Pancesila	Drs. Sugarg Wahyudi, HR.		ett Hepus
16MM1	selator	1	A	16561	Andio Video Faliting	Flat Decembers, Md.		ett Hepus
16MM2 p	r-fm	1	,	MART	Rahass Inggris	Magdalana S, SS.		ett Heous
Manajemen data	robu	3	20	2674942	Femodolan 30	Rofike Akhsoni		sti Heous
Mata kuliah	junist	1	A	16MM	Teknik Videografi dan Video Fil	benomin, SPM		all Haus
Mahasiswa	Stroning 11	of of Section					Freedous	1 Next
Rombel								
,, ,								

Figure 3.12 Schedule Page

	p:/nla.akb.ac.id/admi	nstas/	A Web Page				_
Academi Komunitas	Negeri Putra Sang Faj	ar Bitar				🔕 Nama Pet. Administrasi Kelu	9
ADMIN MULTIME DIA		DATA MAHAS	ISWA			Tambah data	
Qek Nilai		NM	Nesia	amphotos	Rankel	254k 11	
Rekap nilai		10715001	ADE FILITRA PATRIA	707 ft	51.0.11	egt inacus	
15MM1		- 10245003	ASUNUSALISU MANUNANAL	2016	1689/1	ant hacus	
15MM2		10218001	ARDV PRAYOGA	20'6	160031	edit yap as	
10MM1		10716006	TIFFE K IS MAN P. SRATA	20.8	18.9/1	AND TAXABLE	
16MM2 Manajemen data	P	10219007	DENIS TR SLAFRATATA	20/8	1810.01	NOT SAFEK	
Mata kuliah		10216009	DEAN STEELING WATE	20.8	-64531	100 10000	
Dosen	2				1000	100 C CONTRACTOR	
Mahasiswa	(P)	10755010	FARHALFICA FARLTRA	2018	aran	BUE 330.45	
Rombel Kalender Akarlemik	P	10210611	0H4CA.0PAGNO	2010	CMM/	cold (concer	
Carlena and Constanting	<b>*</b>	10218012	GUSTI PLTRAMEGA UTOMO	20:6	161/11/1	21.201.204	
		10715015	HERVALLARARAT	201.6	ALALI	ALL SHEAR	
		HEZILGIG.	INANUE ALAIS CRAIGEMA	2015	7548AM	201011-100	
		10715012	JOHANN TRY FIR DHALLS	70/ K	-	HE 345.45	
		10718015	KARTIKA DAWI	20/ K	-1949.01	ANT NICLA	
		10215020	KURONA SANG	27.6	7545541	and family	
	_	10215620	K,R084 (JA).()	2016	"SAIMT	and and a	

Figure 3.13 Students Page

### 3.10 Students User Interface

Students are users studying in the ITB AAS Indonesia informatics study program. In this system, students are given access rights to see the grades entered by the lecturer.

After students have successfully logged in, the system will display the main page for students as in Figure 3.14 to 3.15 below:



Figure 3.14 Student home page

~~ ~ ~ ~ ^ .			A Web Page					
QQX81	http://ni	lai.akb.ac.id/mahasiswa/						
Akademi Komuni	tas Nege	ei Putra Sang Fajar Blita	r			۸	lama mahasiswa	Kelugy
Mahasiswa & Dashboard	,	Nama Mahasiowa N.M ROMBEL	: Name Mahasiswe . 10215019 . 158/M1	Progres Semed Tekun	n Studi lei Mademik	:	Muthmedia 3 2016/2017	
🖵 Lihat Nilai	_			н	Ilal			
Semester 1		NO LISS KUISS		Na	Nh	Jam	HS X Jam	58.5
Semester 2		1 KMM155001   Bala	na Indonesia	8	в	2	5	2
Semester 4		2 KMM153002   Baho	ise incerto	4	A	3	12	2
		3 KMM155003 I Tekn	ik Animasi SD	3.5	B+	8	28	4
		4 KMMT 52004   Rand	argan Permainan (Game)	3.5	U+		24	4
		5 KMM153005 I Jarin	gan Komputer Dacar	3.5	B+	5	18	3
		6 RMM153006   Pem	rograman Deronentasi Objek	3.5	U+	5	21	3
		7 KMM153007 I Date	n Internet dan Desain Web	3.5	B+	5	17.5	3
		Jumlah				38	125.5	21
		IP Semester					3.15	
		₽				Bilian, 25 Koordin Program	) Januari 2017 elox I Studi Multimedia	
						smanoc	S. Pd	

Figure 3.15 Page to view student grades

### 3.11 Teacher User Interface

Lecturers in this system can manage (insert and update) grades for courses taught in the current semester. The lecturer's main page if you log in successfully is as shown in Figure 3.16 to 3.18 below:

#### International Journal of Computer and Information System (IJCIS)

Peer Reviewed – International Journal

Vol : Vol. 04, Issue 04, November 2023

e-ISSN : 2745-9659

https://ijcis.net/index.php/ijcis/index

∽⇔⊻∧	A Web Page	A Web Page							
	al akb ac ididosen	@	Akademi Komunitas Neg	eri Putra Sang Fajar Blit	r			🔕 Nam	a Dosen Keluga
🚯 Akademi Komunitas Nege	i Puta Sang Fajar Blitar 👸 Nema Do	isen Kelugij	Dosen & Deshoord < Greminal <	<b>Selamat Datar</b> Berikut adalah jadu	<b>1g</b> wal Anda mengajar				
en	Selamat Datang		+ Lhat Jadw ei ∨ Jadw al Mengajar	lihat Jadwal > Jad	wal Mengajar				
Deshtoerd p	Selamat datang di Sistem Informasi Nilai Akademi Komunitas Negeri Putra Sang Fajar Bitar.		Jadw slAkadenik	Semester 1	Mata Kuliah Matematika Diskrit	SKS 3	Ruang J48	Waktu Senin 08.00-10.30	
ntriNtel Y				1	Logika Informatika Manajemen Proyek	3 3	J47 J25	Senin 13.00-15.30 Selasa 08.00-10.30	
Nata Kulah Teknik videografi Rombel 16000 1	Informasi			3	Bahasa Indonesia Penrrograman web	2	J28 J48	Rabu 08.00-10.30 Rabu 16.00-18.30	
Hele Volah Takeholdarwafi	Secera Lakukan Percisian Nilai			Cetak	Akutansi	2	340	Kams 05.00-10.30	
Rombel 16MM 2									
hat Nial (									
Lhat Jadiw al									
			F	igure 3	.18 Sch	edu	ıle v	viewing p	age
			3.12 H	Head of	f Study	Pr	ogr	am user	interfa
			The s is only gi grades pr	study p iven ac	rogram ccess rig d in a d	co ghts ash	ordi s to boa	nator in see the s rd as in 1	this syst summary Figure 3

below:

~~ <b>v</b> ^	1	A Web Page		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	(http://nila	akb ac ididosen		
Akademi Komun	itas Negeri	Puta Sang Fajar Blitar	🔕 Nama Kapitodi	Kelu
aprodi		Selamat Datang		
8 Dashboard		Selamat datang di Sistem Informasi Nilai Akademi Komunitas Negeri Putra Sang Fajar Biltar		
😐 Lhat Niel Rekaptulesi		Informasi		
		Lihat Nilai Rekapitulasi		
	<			



3.13 Web System Creation Strategy

The stage of the system creation process is part of information system development where this activity is the activity of obtaining and integrating physical and conceptual resources that produce a

egeri Putra	Sang Fajar Blitar			🚫 Nama Dosen	Kel
		Form Entri Nilai Akhir	Tengah Semester		
		Mata Kuliah Teknik Videografi	dan Video Ed Rombel 16MN	12	
Entri	<u>Nilai</u>) Mata Kuliah	Teknik videografidan Video Ed Ron	nbel 16M M2		
No	NM	Nama Mahasiswa	Rombel	Nilai	
1	10216002	Sukirman	16MM2		
2	10216002	Juli Suminah	16MM2		
3	10216002	Ratwan F	16MM2		
4	10216002	Joni	16MM2 ·		
5	10216002	Dodo W	16MM2	•	
8	10218002	Vinine	18MM2		
7	10210002	Gabaa	(RMM2		
1	10210002	Gaang Duo	100002		
0	10210002	Didik	100002		
Sir	npan				
	Entri No 1 2 3 4 5 6 7 8 8 S	No NM 1 10216002 2 10216002 3 10216002 4 10216002 5 10216002 6 10216002 8 10216002 8 10216002 8 10216002 8 10216002 8 10216002	Peri Para Sing Faja Bitar Form Entri Nilai Akhir Mata Kulah Teknik Videoga fa No NM Nama Mahasiawa 1 0021002 Sukiman 2 1021002 Sukiman 3 1021002 Automan 3 1021002 Automan 3 1021002 Automan 3 1021002 Code W 4 1021002 Dodo W 8 1021002 Galang 8 1021002 Galang 8 1021002 Dodo W 8 1021002 Galang 8 1021002 Dodo W	No Nata Kuliah Teknik Videograf dan Video Ed Rombel 10MJ Entri Naia Mata Kuliah Teknik videograf dan Video Ed Rombel 10MJZ Entri Naia Mata Kuliah Teknik videograf dan Video Ed Rombel 10MJZ No Nut Natra Mataaiswa Rombel 1 10216002 Sukirman 1 10216002 Juli Suminah 16MMZ 2 10216002 Juli Suminah 16MMZ 3 10216002 Joni 16MMZ 4 10216002 Joni 16MMZ 5 10216002 Doto W 16MMZ 6 10216002 Yiniul 16MMZ 8 10216002 Doto W 16MMZ 8 10216002 Doto W 16MMZ 8 10216002 Doto W 16MMZ 8 10216002 Doto K 16MMZ	Commercial

Figure 3.16 Teacher Home Page

A Web Page

3.17 Value input page

working system. Then the system implementation stage is the stage of placing the system so that it is ready to operate. In carrying out these activities several things need to be done, namely:

- a. Data collection (data gathering). The current system is running but is still based on interrelated files. Therefore, it is necessary to collect data and information generated from the existing system. Collection of reports, print-outs, etc., both existing and expected to be in the new system. Interviews and questionnaires of people involved in the system may also need to be conducted.
- b. System Analysis If the data collection stage is carried out involving clients or information system users, then starting from the analysis stage it is mostly carried out by the developers themselves. Analysis of the system currently running and the system to be developed. Defines the objects involved in the system and system boundaries.
- c. System design based on UML, designing a database using the ER-D concept and creating a physical database. Designing the application input output (interface) and determining the forms of each existing module. Design the application architecture and if necessary also determine the application framework. At this stage or previously, the technology and tools that will be used both during the development stage and during implementation are determined.
- d. Writing PHP-based Scripting (web-based applications). This is just one stage of the system development life cycle. This stage is carried out by one or more programmers. If the system analysis and design stages have been carried out well, then the portion of the coding stage is not large.
- e. Testing/testing. This stage is carried out by Quality Assurance from the developer to ensure that the software being built is running as expected. One method is to input some data into the new system and compare the results with the old system. If

necessary, this stage can be divided into two, namely testing by the developer (alpha testing) and testing by the user (beta testing).

- f. Installation for Client-Server application development (online) and then testing again to see if the system is running well.
- g. Training to users. The developer provides training for users of this information system application program. The material that will be provided is related to system operations including activities to prepare input, process data, operate the system, maintain and maintain the system.
- h. Maintenance/Maintenance. The aim is to ensure that the system used by the user is truly stable and free from errors and bugs. Maintenance will be carried out for six months.

VI. CONCLUSION

From the results of the previous discussion, several conclusions are drawn as follows:

- 1. The value information system makes it easier for users, namely Lecturers, Students, Admin and Kor.Prodi in processing grades.
- 2. Can help present system flow to programmers in building an accurate and relevant value processing Information System.
- 3. Processing good grades will make decision making easier, thereby improving the performance of future higher education institutions.
- 4. The value information system that the author is designing is expected to minimize weaknesses and provide solutions in building a computerized system for better value data processing activities.

VII. SUGGESTIONS

Suggestions for further research should be carried out to continue this research, namely building a Value Information System based on a website and in the form of a smartphone application.

REFERENCES

- [1] Arihta, Eka Juanda, 2019, Information System for Web-Based Student Grade Data Processing at SMP Negeri 3 Hamparan Perak, Faculty of Science and Technology, Panca Budi Development University, Medan.
- [2] Kasman, Hendra, 2017, Design of a Web-Based Student Grade Information System at SMAN Tunas Bangsa Pulau Burung, Journal of Computer Science and Business, vol 8, no 2, pp. 2001-2013.
- [3] Rais, Nendy Akbar Rozaq, 2021, Designing a School Information System for Promotional Media in the Corona (Covid-19) Pandemic Era Case Study: SMK Pelita Bangsa Sumberlawang, JIKOBIS, Vol 1, No, 1, pp. 032-038.
- [4] Widyastuti, Handini., and Rizat, Sakmir, 2020, Design of a Web-Based Student Score Data Processing Information System, Journal of Industrial Management and Technology, vol 1, no 1, pp. 19-26.
- [5] Muqorobin etc, 2020, Web-Based Krikilan Village Information System, BUDIMAS, vol 2, no 2, Sukoharjo
- [6] Efendi, Tino Feri, etc., 2021, E-Learning Application Design at SMK Pelita Bangsaduring the Covid-19 Pandemic, Turkish Journal of Computer and Mathematics Education (TURCOMAT), vol 12, no 12, pp. 4652-4658
- [7] Rais, Nendy Akbar Rozaq., Kusrini., Eko Pramono., 2018, Evaluasi Implementasi Sistem Informasi Kemahasiswaan di Sekolah Vokasi Universitas Muhammadiyah Surakarta, BISNET, vol 1, no 1, pp. 51-55, http://p3bmii.org/jurnal/vie