# Design of Online Exam Applications during the National Preparation Pandemic

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## ABSTRACT

This research is carried out to analyze and design a website which is a technology that is very influential on education science during the current pandemic is needed a technology that can support the course of learning and exams. One of them is about the technology of Exam Preparation Application using Web-based Random Methods at SMA Negeri 1 Pantai Cermin. The exam itself is an activity that is carried out routinely to measure the achievement of student competencies after completing one or more basic competencies. The research method used consists of several stages of research, namely data collection, system analysis and software design. The data collection method used is observation and literature study. The method of analysis and design of the system used is Rapid Application Development (RAD) using Unified Modeling Language (UML) and user interface design system design. Applications are created on two sides, namely admin applications and user applications. The programming language used for software development is PHP and for servers using MySQL as a database. The result of this study is an application based on an online exam website for national exam preparation and using random methods that can later be used by teachers and students. The application of this application can provide convenience for teachers and students in the process of working on exam practice questions in a computerized manner and can immediately see the results of the exam quickly.

*Keywords:* Online Exam Application, Website, UML, RAD, PHP

#### **INTRODUCTION**

The National Exam at the High School level is an activity carried out by the education unit to measure the achievement of student competencies as a recognition of learning achievements and or completion from the school. In preparation for the exam requires paper in the implementation of the exam, as well as conducting a manual assessment audit that is usually done by the teacher, so that the standard application of the exam can be a long process to cost a lot of money. Computer technology developed very rapidly with the advent of the internet where computers can be connected to each other forming a very wide network consisting of thousands of computers around the world. Anyone who has access to his network can exchange information on various forms of text data, images, sounds, files and so on. More than that, this network can be accessed for 24 hours. The purpose of this research is to produce an online exam training design that can be used by students in the face of computer-based national exam preparation. The benefits of this research are to make it easier for teachers to monitor student preparation ahead of national exams and help teachers in achieving student grades for the preparation of national exams and make it easier for students to master the online exam system and make it easier to do it.

### **RESEARCH HYPOTHESIS**

This research is to make it easier for teachers to monitor student preparation ahead of national exams and help teachers in achieving student scores for the preparation of national exams and make it easier for students to master the online exam system and make it easier to do it.

# **RESEARCH METHODS**

Using a grounded theory approach, researchers conduct research that focuses on a series of individual or collective events, actions, or activities that evolve over time in a given context. Grounded theory is useful in situations when very little is known about a particular topic or phenomenon. In general, the purpose of grounded theory is to build new theories, although it is often also used to expand or modify existing theories. This research uses a type of qualitative research.

Qualitative research aims to gain a general understanding of social reality from the participants perspective of through descriptive data. Understanding is not determined in advance, but obtained after conducting an analysis of social reality that is the focus of research, then a conclusion is drawn in the form of a general understanding of reality. Qualitative research focuses more on observation and natural atmosphere. The researcher acts as an observer. He simply created a category of behavior, observed symptoms and recorded them in his observation book. Qualitative research uses theory as a reference or guideline in conducting research, not testing theory as in quantitative research.

# **RESEARCH PROCEDURES**

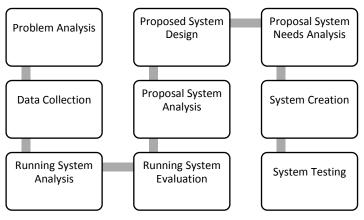


Fig.1. Research Procedures

# **APLICATION RESULT VIEW**

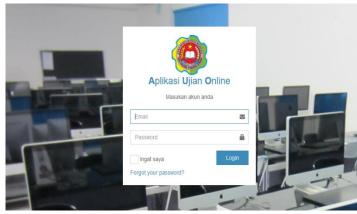
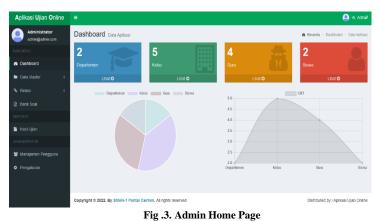


Fig.2. Login Page

The login page appears on the first page of the application which displays the username and password filling form. This login page is used by all students, teachers and operators. After the user enters the username and password and is declared successful, then the system will be redirected to the dashboard page or the user's main page. Here's what the login page looks like.



The admin or school operator's main page will appear after the user with admin or operator access successfully signs in. This page will show at a glance the data about the amount of teacher data, the amount of student data, the amount of class data and also a graph of each data. Here's what the admin's main page looks like.

Aplikasi Ujian Online				💄 HLA	vdmik
Administrator admin@admin.com	Mata Pelajaran	Data Mata Pelajaran		🏟 Beranda > Mala Pelajaran > Data Mata Pela	ajaran
	Master Data Mata P	elajaran			-
Dashboard	+Tambah Data 🔺 Imp	rt C Reload		CP Edil 🍵 Delo	10
🖿 Dala Masler 🗸 🗸	Show 10 v entries		Copy Print Excel PDF	Search	
	No.	Mata Pelajaran		11 D	
O Tahun Ajaran O Master Kelas	1	Bahasa Indonesia			
O Master Mata Pelajaran	2	Bahasa Inggris			
	3	Matematika			
	4	Pancasila			
% Relasi ∢	5	Pendidikan Agama Islam			
Bank Soal	No.	Mata Pelajaran			
	Showing 1 to 5 of 5 entrie	5		Previous 1 Net	ot
📑 Hasii Ujian					

Fig.4. Lesson Data Master Page

This lesson data master page is used to record all the subjects in the school. The data displayed is in the form of learning data, add data buttons, edit data, delete, and export. Here is the master page of lesson data.

Aplikasi Ujian Online										🧕 Hi, Adr
Administrator admin@admin.com	Siswa	a Data Siswa							🏚 Beranda >	Siswa 🕗 Data Sis
IAN MENU	Maste	er Data Siswa								-
B Dashboard	+Tam	bah 🕹 Import	2 Reload							t Delete
🖿 Data Master 🗸 🗸	Show	10 v entries	5		Copy Print	Excel	PDF		Search:	
O Master Departemen	No.	NIS	Jà Nama	lt	Email	lt	Kelas 🕼	Jurusan 🔅	Aksi	
D Tahun Ajaran D Master Kelas	1	12183018	Muhammad Ananda		m.ananda@gmail.cor	n	12.1E.13	SMA	2	
O Master Mata Pelajaran	2	1630511000	Suheri		suheri@gmail.com		12.1E.13	SMA	2	
O Master Guru	No.	NIM	Nama		Email		Kelas	Jurusan	Aksi	

#### Fig.5. Student Data Master Page

The student data master page is used to record all students in the school. This page will display student data in the form of NIS, Name, Email, and Class, as well as data buttons just add data, delete data, and export data. Here's a look at the student data master page.

Aplikasi Ujian Online	Ξ			🤮 HI, Adrifs
Administrator admin@admin.com	Soal Bank Soal			🏟 Beranda > Soal > Bank Soa
MAIN MENU	Bank Soal			-
B Dashboard	Bulk Delete		Semua Matkul	+ Grup Soal + Buat Soal CReload
🖿 Data Master 🧹 🤇	Show 10 ∨ entries		Copy Print Excel PDF	Search:
∿ Relasi <	No. Guru	🕼 Mata Pelajaran 🕼	Soal	.↓† Tgl Dibuat .↓
Bank Soal REPORTS	🛛 1 Nurhanima	Bahasa Inggris	Ujian UAS Semester Ganjil 2021/2022	2022-03-30 20:27:07
🔓 Hasil Ujian	2 Supina Batut	iara Matematika	Ujian UAS Semester Ganjil 2021/2022	2022-03-30 20 26 28
ADIINISTRATOR	3 Suheri	Bahasa Indonesia	Ujian UAS Semester Ganjil 2021/2022	2022-03-28 09:43 54

Fig.6. Master Teacher Data Page

This teacher data master page is in the form of a display of teacher data including NIP, Name, Email and Subjects, as well as system buttons in the form of Add data, delete data, Change Data and also export data. Here's what the teacher data master page looks like.

Aplikasi Ujian Online		💄 Hi, Admin
Administrator admin@admin.com	Soal Bank Soal	🏚 Beranda > Soal > Bank Soal
MAIN MENU	Bank Soal	-
Dashboard	Bluk Delete Semua Malkul 👻	+ Grup Soal + Buat Soal CReload
🖿 Data Master 🛛 🤇	Show         10         v         entries         Copy         Print         Excel         PDF	Search:
% Relasi <	🗌 No. Guru 🕼 Mata Pelajaran 🕼 Soal	🕼 Tgi Dibuat 🗍 Aksi
Bank Soal	1 Nurhanima Bahasa Inggris Ujian UAS Semester Ganjil 2021/2022	2022-03-30 20:27:07
REPORTS		@ Edit
🔓 Hasil Ujian	2 Supina Batubara Matematika Ujian UAS Semester Ganjil 2021/2022	2022-03-30 20:26:28
ADMINISTRATOR	3         Suheri         Bahasa Indonesia         Ujian UAS Semester Ganjii 2021/2022	2022-03-28 09:43:54
· manajemen Pengguna		13 EUR

Fig 7. Question Bank Data Page

This question bank data page is a list page of questions that have been filled in by the teacher in each subject. On this page in the form of bank data questions include teacher name, lesson name, question title, create date, add data button, change data, data details and delete data. Here's the bank data page.

Aplikasi Ujian Online																🧕 Hị, A
Administrator admin@admin.com	Uj	jian	Hasil Ujian											đ	e Beran	ta > Ujian > Hasil
	н	łasil U	jian													
Dashboard		C Reloa	d													
Data Master <	5	Show	10 v entries					Сору	Print	Excel	PDF			Se	arch:	
� Relasi <		No.	Nama Ujian	Į1	Mata Palajaran	lt	Gu	ru .lt	Jumla	ih Soal	lt	Waktu	l1	Tanggal	lt	Q
Bank Soal		1	Test Pertemuan 1		Bahasa Indonesia		Sut	neri	2			20 Menit		2022-03-25 10:27:06		Q Lihat Hasil
		2	UT		Bahasa Indonesia		Sut	neri	2			20 Menit		2022-03-26 10:25:44		Q Lihat Hasil
🗎 Hasil Ujian		No.	Nama Ujian		Mata Pelajaran		Gu	ru	Jumia	ih Soal		Waktu		Tanggal		۹
	6	Showing	1 to 2 of 2 entries												Pre	vious 1 Next
🗑 Manajemen Pengguna																

Fig.8. Exam Results Page

The exam results page is a page that displays the data of exam results that have been done by students. On this page I can see exam results, see details of exam results and also print exam results. Here's a look at the exam results page.

Aplikasi Ujian Online				🧕 Hi, Suhêrî
90698721 sutheri@gmail.com	Dashboard o	ata Aplikasi		🏚 Beranda 🕞 Dashtoard 👂 Data Aplikasi
	Informasi Akun		Pemberitahuan	
Dashboard	Nama	Suheri	Aplikasi Ujian Online Sekolah	
Bank Soal	NIP	90698721		WILLT
😁 Ujian	Email	suheri@gmail.com		
	Mata Pelajaran	Bahasa Indonesia		
	Daftar Kelas	1. 12.1A.10		
Hasil Ujian	-			Shu I PANTALO
			×	
	Copyright © 2022. B	y SMAN-1 Pantai Cermin. All r	iahts reserved	Distributed by   Aplikasi Ujian Online

Fig. 9. Teacher's Main Page

The teacher's main page is the first page that appears when the teacher successfully logged in on the login page. On this page will be displayed account information that is logged in welcome to the online exam application. Here is the view of the teacher's main page.

Aplikasi Ujian Online	=												🧕 Hi, Suhên
90698721 suheri@gmail.com	Soal Bank Soal											<b>8</b> Be	rranda > Soal > Bank Soal
MAIN MENU	Bank Soal												-
Dashboard	Bulk Delete			Bahasa I	Indonesia								Buat Soal
Bank Soal	Show 10 v ent	ries			Сору	Print	Excel	PDF				Search:	
😡 Ujan	🗌 No. Guru 🗎	Mata Pelajaran 👫	Soal							11	Tgl Dibuat	1F	Aksi
REPORTS	1 Suheri	Bahasa Indonesia	Dalam se	buah cerita	a fiksi, hal	-hal ap	a saja ya	ng harus	di perhatikar	1?	2022-03-30 20	40:40	Detail     Z'Edt
🔓 Hasil Ujian	2 Suheri	Bahasa Indonesia	Sebutkan	pengertia	n dari kali	mat Uta	ıma dalar	n sebuał	cerita fiksi!		2022-03-28 09	43:54	Detail     Cr Edit
	🗌 No. Guru	Mata Pelajaran	Soal								Tgl Dibuat		Aksi
	Showing 1 to 2 of 2 er	tries										F	revious 1 Next
		MAN-1 Pantai Cermin.	-					_	_		D	istributed	1 by   Aplikasi Ujian Online

Fig. 10. Bank Data Page About Teachers

This question bank data page is a list page of questions that have been filled in by the teacher in each subject in accordance with the lesson taught by the teacher. On this page in the form of bank data questions include teacher name, lesson name, question title, create date, add data button, change data, data details and delete data. Here is the bank data page about teacher access rights.

90698721									
suheri@gmail.com	Ujiar	<b>n</b> Data U	ian				<b>a</b> E	Beranda > Uj	ian > Data I
	Data	ı Ujian							
Dashboard	∎Bu	ilk Delete						🖹 Ujian Baru	2 Reloa
Bank Soal	Show	10	✓ entries				Searc	h:	
) Ujian		No. 🐙	Nama Ujian 🕸	Mata Pelajaran 🕼	Jumlah Soal 🕼	Waktu	Acak Soal 🕼	Token	Aksi
		1	Ujian UAS Semester Ganjii 2021 2022	Bahasa Indonesia	2	2022-03-26 10:25:44 (120 Menit)	acak	UNMFE	0 🔽
Hasil Ujan		2	Ujian UAS Semester Genap 2021 2022	Bahasa Indonesia	2	2022-03-25 10:27:06 (120 Menit)	acak	ANBDA	00
		No.	Nama Ujian	Mata Pelajaran	Jumlah Soal	Waktu	Acak Soal	Token	Aksi
	Show	ring 1 to 2	of 2 entries					Previous	1 Next
	-								

Fig.11. Exam Data Teacher Page

The exam data page on the teacher's access rights is a page that displays data on exams that can be carried out by students. On this page the teacher can add exam data with data from the question bank. Here's the view of the exam data page.

Aplikasi Ujian Online												🥚 Hi, Suhi
90698721 suheri@gmail.com	Ujian	Hasil Ujian								8	Beranda	> Ujian > Hasil Uji
	Hasil	Ujian										-
Dashboard	@Relo	pad										
🖻 Bank Soal	Show	10 v entries		Сору	Print	Eu	el PDF			Sea	irch:	
🕑 Ujian	No.	Nama Ujian	44	Mata Palajaran 💷	Guru	11	Jumlah Soal	11	Waktu 🔄	Tanggal	11	۹
	1	Ujian UAS Semester Ganjil 2021 2022		Bahasa Indonesia	Suheri		2		120 Menit	2022-03-26 10:	25:44	Q Lihat Hasil
Hasil Ujian	2	Ujian UAS Semester Genap 2021 2022		Bahasa Indonesia	Suheri		2		120 Menit	2022-03-25 10:	27:06	Q Lihat Hasil
	No.	Nama Ujian		Mata Pelajaran	Guru		Jumlah Soal		Waktu	Tanggal		Q
	Showin	ng 1 to 2 of 2 entries									Previo	us 1 Next
	Copyrig	ht © 2022. By SMAN-1 Pantai Cermin.	All ris	abls reserved						Distrit	wheel her I	Aplikasi Ujian Onl

Fig.12. Exam Results Teacher Page

The exam results page is a page that displays the data of exam results that have been done by students. On this page the teacher can see the exam results, see the details of the exam results and also print the exam results. Here's a look at the exam results page.

Aplikasi Ujian Online	=									🧕 Hi, Suheri
90698721 suheri@gmail.com	Ujian Detail Has	il Ujian						🏟 Beranda	Ujian >	Detail Hasil Ujian
	Detail Hasil Uji	an								-
Dashboard	<b>♦</b> Kembali <b>C</b> R	eload								⊖ Print
Bank Soal	Nama Ujian	Ujian UAS S	emester Genap 202	21 203	22	Mata Pelajara	n	Bahasa Indonesia		
🧿 Ujan	Jumlah Soal	2				Guru		Suheri		
	Waktu	120 Menit				Nilai Terendal	n	50.00		
💾 Hasil Ujian	Tanggal Mulai	Jumat, 25 M	aret 2022			Nilai Tertinggi		50.00		
	Tanggal Selasi	Kamis, 31 M	laret 2022			Rata-rata Nila		50		
	Show 10 v	entries						Search:		
	No. Nan	na 🏨	Kelas	11	Departemen	11	Jumlah Benar	11	Nilai	11
	1 Suh	eri	12.1E.13		SMA		1		50.00	
	No. Nan		Kelas		Departemen		Jumlah Benar		Nilai	

Fig.13. Exam Results Details Page

The detailed page of exam results is a page that displays complete data of exam results that have been done by students. On this page the teacher can see the details of the exam results and also print the exam results. Here is the detailed page of the exam results.

Aplikasi Ujian Online	Ξ			💄 Hi, Arkal
arka@gmail.com	Dashboard Dat	a Aplikasi		֎ Beranda ≥ Dashboard ≥ Data Aplikasi
MAIN MENU	Informasi Akun		Pemberitahuan	
Dashboard	NIS	1630511000	Aplikasi Ujian Online Sekolah	
😗 Ujan	Nama	Arka Arsyika	NN WIYATA A	
	Jenis Kelamin	Laki-laki	$\gamma_{\mu} \star \gamma_{\mu}$	
	Email	arka@gmail.com		
	Jurusan	SMA		
	Kelas	12.1E.13	BURNING MILLION	
	Copyright © 2022. By	SMAN-1 Pantai Cermin. All rights	reserved	Distributed by   Aplikasi Ujian Online

Fig.14. Student Home Page

The student's main page is the page that first appears when students successfully log in on the login page. On the main page of this student in the form of a display of student account information list of menus that can be accessed by students. Here is the student's main page view.

Aplikasi Ujian Online										🤮 HI, Ark
<b>1630511000</b> arka@gmail.com	Ujian	List Ujian							<b>6</b> Ber	anda - Ujian - ListUjir
	Kela	s 🗄	Depar	rtemen	P	Tanggai			Jam	
Dashboard	12.1E	13	SMA			Rabu, 30 M	laret 2022		21:00:28	
D Ujian	List U	jian								-
	ØRelo	pad								
	Show	10 v entries							Search:	
	Show No.	10 v entries Nama Ujian	14	Mata Pelajaran	11	Guru	Jumlah Soal	11	Search:	11 Aksi
				Mata Pelajaran Bahasa Inggris	11	Guru II Nurhanima	Jumlah Soal	11		
	No.	Nama Ujian	2022		11			11	Waktu 2022-03-28 20:54:04	✓ Itut Ujian
	No. 1	Nama Ujian Ujian UAS Semester Ganjii 2021	2022 2022	Bahasa Inggris	11	Nurhanima	2	11	Waktu 2022-03-28 20:54:04 (120 Menit) 2022-03-30:08:30:00	✓ Hut Ujian ✓ Hut Ujian

Fig. 15. Student Exam Page

The student exam page is a page on student access rights that is useful for viewing a list of what exams students can take. The exam list is the exam data that has been inputted by the subject teacher. When there is a list of exams on the list page of this student exam, students can take the exam by pressing tomol Take the Exam which is on the right of the exam list. Here is the view of the student exam list page.

<b>Jjian</b> Token Ujian		🍪 Home > Ujian > Token Ujian	
Peraturan Ujian!			
Konfirmasi Data			
Kommasi Data			
Nama	Arka Arsylka	Waktu boleh mengerjakan ujian adalah saat lombol "MULAI" berwarna	
Guru	Nurhanima	hijau.	
Kelas/Departemen	12.1E.13 / SNA		
Nama Ujian	Ujian UAS Semester Ganjil 2021 2022	🔗 Mulai	
Jumlah Soal	2	Ø 09 Hari, 23 Jam, 50 Menit, 43 Detik	
	120 Menit	Batas waktu menekan tomboi mulai.	
Waktu			
Waktu Terlambat	09 April 2022 20:54:14		

Fig. 16. Student Exam Confirmation Page

The student exam confirmation page is a page that appears after students press the Take the Exam button on the exam data list page above. On the exam confirmation page, students will be asked to enter the exam Token number. The Token Number of this exam is obtained from the teacher according to the subject to be tested. On the confirmation page of this exam also displays the time of the exam to be carried out and the information that the exam can be carried out or not. Exam information cannot be carried out if the date specified by the teacher when filling in the exam data does not match the date the student presses the ijian button, so students are expected to take the exam in accordance with the provisions set by the teacher or school administration. Here is the student exam confirmation view.

The exam sheet page is a page that displays a list of questions that students will answer. On this page, students can answer questions. After all questions are answered, students can press the Finish button. In this case, you can also see the navigation of the problem, which is the display on the left of the page to display the entire number of questions and questions that have been answered which are marked in green and unanswered questions that are marked in white.

2 OLTEST Arka Arsylka - 12.1E.13		Selesai Ujian 1630511000 👻
Ujian Lembar Ujian		🏟 Home – Ujian – Lembar Ujian
Navigasi Soal –	(Soul 12)	(Sisa Wakta 01:58:37) -
1. C 2. C	Ujian UAS Semester Ganjil 2021/2022	
	a a	
	b b	
	¢ 0	
	a d	
	e e	
	Kagu Selesal	
	C Bars Roga G Seesa	
L <b>OLTE</b> ST Arka Arsyika - 12 1E 13		Selesai Ujian 1630511000
L OLTEST Arka Arsyña - 12 1E 13 Ujian Lembar Ujian		Selesal Ujan 1630011000 🝙 Home - Ujan - Lenbar Uj
Ujian Lembar Ujian		<b>&amp;</b> Home ≻ Ujian ≻ LembarUji
Ujian Lembar Ujian Navigasi Soal –	Court Pitr : The French homework is really hard. I don't feel like to do it. Rahmat :	<b>&amp;</b> Home ≻ Ujian ≻ LembarUji
Ujian Lembar Ujian Navigasi Soal –	Court Pin : The French homework is really hard. I don't feel like to do it. Rahmat : to help you? Pin : it sounds great. Thanks, Rahmati	<b>&amp;</b> Home ≻ Ujian ≻ LembarUji
Ujian Lembar Ujian Navigasi Soal –	Fin: The French homework is really hand. I don't feel like to do it.           Railmant	<b>&amp;</b> Home ≻ Ujian ≻ LembarUji
Ujian Lembar Ujian Navigasi Soal –	Fin: The French homework is really hard. I don't feel like to do it.           Rahmat:	<b>&amp;</b> Home ≻ Ujian ≻ LembarUji
Ujian Lembar Ujian Navigasi Soal –	First: The French homeseonk is really hand. I don't feel like to do it.           Rufmat : bindby yur?           Firs: it sounds great. Thanks, Rahmat!           Which of the following offering expressions best fill the blank?           a         Would you like me           b         Do you mind fil	<b>&amp;</b> Home ≻ Ujian ≻ LembarUji

Fig. 17. Student Exam Sheet Page

# CONCLUTION

This research was conducted to produce an online exam training design that can be used by students in facing the preparation of the Computer-Based National Exam can make it easier for teachers to monitor student preparation ahead of the national exam and help teachers in achieving student grades for the preparation of the National Exam and make it easier for students to master the online exam system and make it easier to do it.

## ACKNOWLEDGEMENT

The result of this study is an application based on an online exam website for national exam preparation and using random methods that can later be used by teachers and students. The application of this application can provide convenience for teachers and students in the process of working on exam practice questions in a computerized manner and can immediately see the results of the exam quickly.

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Informasi, STMIK Sinar Nusantara, Surakarta.

- Wildan Setyo Pribadi, 2014, MOBILE COMPUTER BASED TEST MENGGUNAKAN METODE ITEM RESPONSE THEORY UNTUK EVALUASI PEMBELAJARAN BAHASA ARAB, Tugas Akhir Skripsi, Jurusan Teknik Informatika, Fakultas Sains dan Teknologi, Universitas Islam Negeri Maulana Malik Ibrahim Malang.
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