

Web based Registration and Entrance Exam Information System for Islamic Boarding School

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Abstract: Islamic boarding schools are one of the formal educational institutions in Indonesia that combines the general education with Islamic education curriculum. All this time, in many Islamic boarding schools, the registration and entrance tests are still carried out manually and offline. However, Covid-19 changed everything. The Covid-19 pandemic has resulted in the restriction of all offline activities. Registration and entrance examination activities carried out offline at Islamic Boarding Schools have a very high risk of transmitting the Covid 19 virus due to the presence of crowds, making it impossible to carry out. Therefore we need an information system that can accommodate the boarding school's online registration and entrance exams process so that it can break the spread of the Covid-19 virus and simplify the data management process. In designing the information system, the UML (Unified Modeling Language) model which consists of use case diagrams, class diagrams, activity diagrams, and sequence diagrams is used. In coding fase, the PHP programming language with the CodeIgniter framework and MySQL as database management system are used. And the black box method is used as the testing method for this information system. The functionality of this system accommodates only the standard functionality of the registration process and entrance exams. Therefore, future development is quite possible to do such as integration of e-wallet for the payment, variation of question models, and re-registrarion menu for applicants who passed the exam.

1 INTRODUCTION

Islamic boarding schools are one of the formal educational institutions in Indonesia that combines the general education with Islamic education curriculum. In this schools, students or santri live in dormitories and study under the guidance of the Kiai. According to Coordinating Minister for Economic Affairs Airlangga Hartanto (Febriant, 2021), in Q1 2021 there are 31.385 schools scattered throughout Indonesia with the number of students reached 4.29 million people.

All this time, in many Islamic boarding schools, the registration and entrance tests are still carried out manually and offline. Applicants and their guardians come directly to register by submitting the required documents. After going through the administrative process, applicants must take an entrance exam which is usually divided into two parts, namely the written exam and the Quran exam. With the high number of applicants, the process of accepting new students involves many people which is sure to create a crowd.

Before the Covid-19 pandemic, anything that

caused crowds was not a problem. However, Covid-19 changed everything. The Covid-19 pandemic has resulted in the restriction of all offline activities. Everyone who does offline activities must follow the existing health protocols. One of them is limiting the number of people in one place. Registration and entrance examination activities carried out offline at Islamic Boarding Schools have a very high risk of transmitting the Covid 19 virus due to the presence of crowds, making it impossible to carry out. Therefore we need an information system that can accommodate the boarding school's online registration and entrance exams process.

2 RELATED WORKS

So far, the development of new student admission information systems in educational institutions, especially Islamic boarding schools, has focused more on the registration process where entrance exams are still carried out offline at related educational institutions, both manually and

computer-based.

Some of these studies, among others, were carried out by:

1. R. Witanto and H. H. Solihin (Witanto, 2016) that created a web-based information system for new student registration at SMP Plus Babussalam Bandung.
2. S. Lesmono, Ibnu Dwi, and Fahlepi Roma Doni (Lesmono, 2017), built a new student registration website for the Al-Fatah Islamic Boarding School in Cilacap.
3. Rachman, Fergian Pratama, and Dimas Aryo Anggoro (Rachman, 2020), who created a new student registration information system at the Al- Musawwa Student Islamic Boarding School Solo.

Although not much, research on online exams has also been carried out, but most of them are applied to universities that have different exam schemes from Islamic boarding schools. One of them is the research conducted by Novri Hadinata and Devi Udariansyah (Hadinata, 2015) who implemented web engineering methods in the development of new student admission information systems and online exams for Bina Darma University Palembang.

3 METHODOLOGY

This research uses Waterfall software development model. In this model, software development process is divided into four steps (Sommerville, 2016), which are:

1. Analysis of Software Needs
Analysis of software needs is activity of needs collection which is conducted intensively to specify software needed by users.
2. Design
The design of software is activity of designing system to be made, including the interface design, architecture of software, and coding procedure according to device needs that have been analysed before. This activity is needed to ease the next processes
3. Making of Program Code
In this stage, the design that has been made previously is translated into software program so that it results computer program which is in accordance with the needs.
4. Testing
To see whether the program has compatible with the need from logic and functional sides,

then testing is required. Testing stage also conducted to minimize error.

The first two steps will be discussed in this section. While the other two steps will be discussed in the next section.

3.1 Analysis of Software Needs

There are three types of users who can access this system, namely applicants, administrative officers (admins), and teachers. The processes that will be implemented to the system are:

1. Applicants can register via the website.
2. After registering, applicants will get a username and password to login to the web page. After logging in, students enter the personal data of applicants.
3. Applicants can upload documents that are used as registration requirements.
4. Applicants make payments then upload proof of payment
5. Admin will check the registration status of applicants and validate payment receipt that uploaded by the applicants.
6. Admin will determine the exam schedule for applicants.
7. Exam questions are managed by the teacher.
8. Applicants take online written exams (assessed automatically) and upload videos of the Quran recital on the specified schedule.
9. The teacher assesses the applicant's reciting video manually through the system.
10. Exam result announcements will be managed by admin, while students can see grades and result.

3.2 Design

The design of this information system is carried out using object-oriented concepts. System design is done by making use case diagrams, activity diagrams, and class diagrams (Bruegge, 2003). In addition, interface design is also carried out.

3.2.1 Use Case Diagram

Use case diagram illustrates the order of interaction between actors with system to be built. In Figure 1, the use cases diagram shows that the information system has three actors which are applicants, admins, and teachers. The descriptions of the three actors can be seen in Table 1 below.

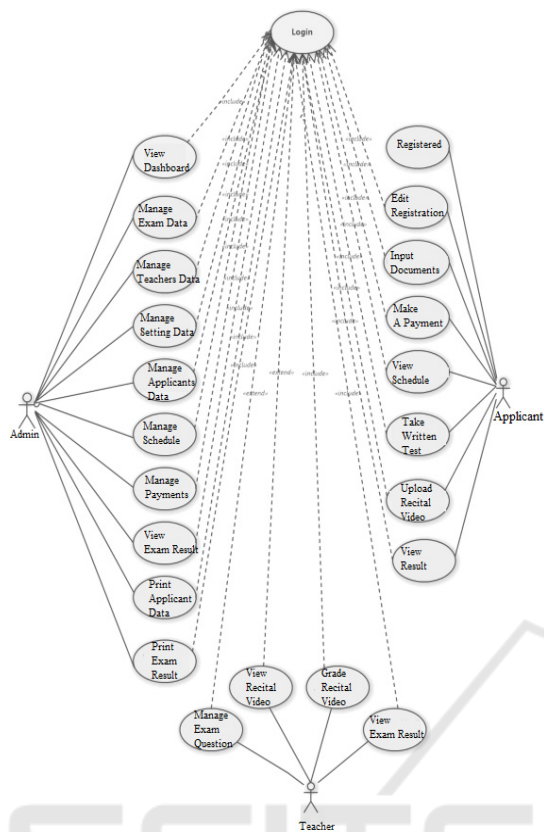


Figure 1: System's Usecase Diagram.

Table 1: Actors Descriptions.

| No | Actor | Descriptions |
|----|-----------|---|
| 1 | Applicant | Actors who have access rights to register, edit registration, input documents, make payments, view schedules, and perform oral and written tests. |
| 2 | Admin | Actors who have access rights to manage the entire designed information system and are responsible for processing the existing master data. |
| 3 | Teacher | Actors who have access rights to manage exam questions, provide video assessments of the Al-Quran recital, and view exam result. |

3.2.2 Activity Diagram

Activity diagrams describe the activities that occur in the system. This diagram shows the steps of the system work process. In this information system,

there are three activity diagrams that represent the activities of each actor. The diagrams can be seen in the Figure 2,3, and 4 below.

In Figure 2, it can be seen that admin have to login before entering the system. Once the login is successful, then admin can manage the data according to the access rights that he has by selecting each menu that has been provided by the system

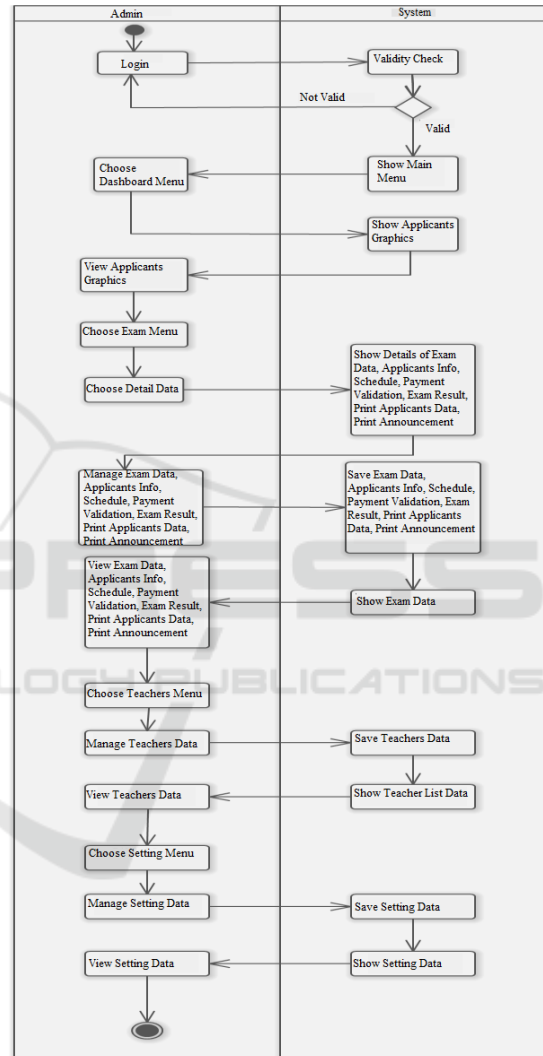


Figure 2: Admin's Activity Diagram.

Figure 3 portray the applicants activity diagram. Applicants should registered first to get access to the system. In their individual account, applicants can manage their data by selecting each menus that have been provided to be accessed by them. Applicants will take a written test and upload Quran recital video according to their schedule. Applicants also can view their exam result once the the assessment process is complete.

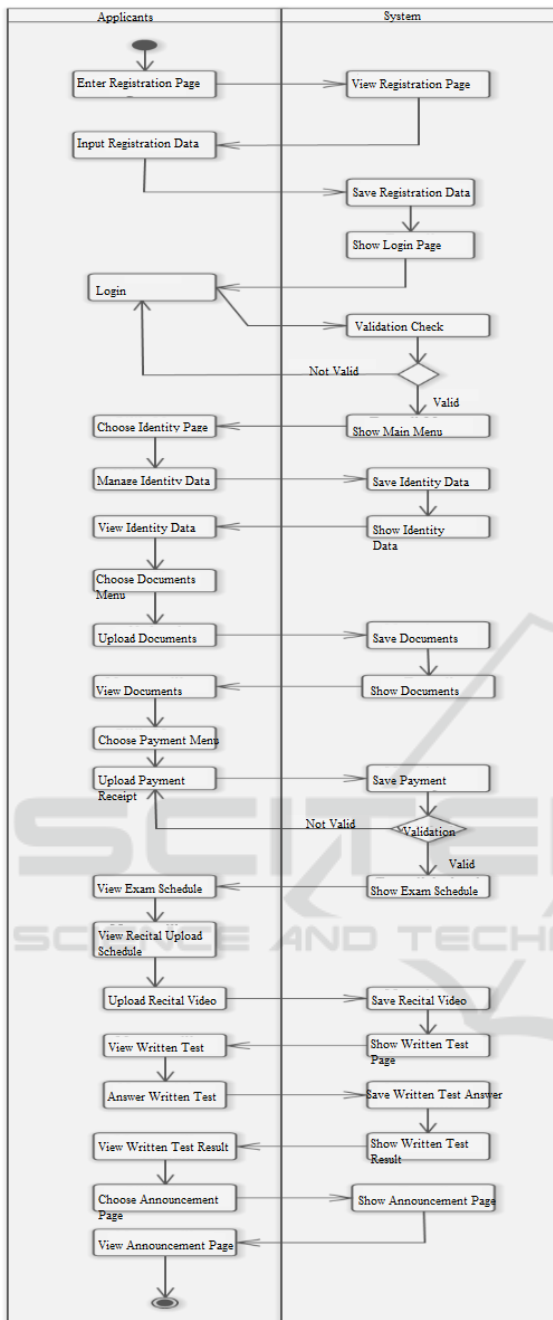


Figure 3: Applicants Activity Diagram.

Figure 4 show the activity diagram for teachers. Teachers have an access rights to do some activities such as viewing exams, manage exam questions, view and grade applicants Quran recital, and also view applicants exam result.

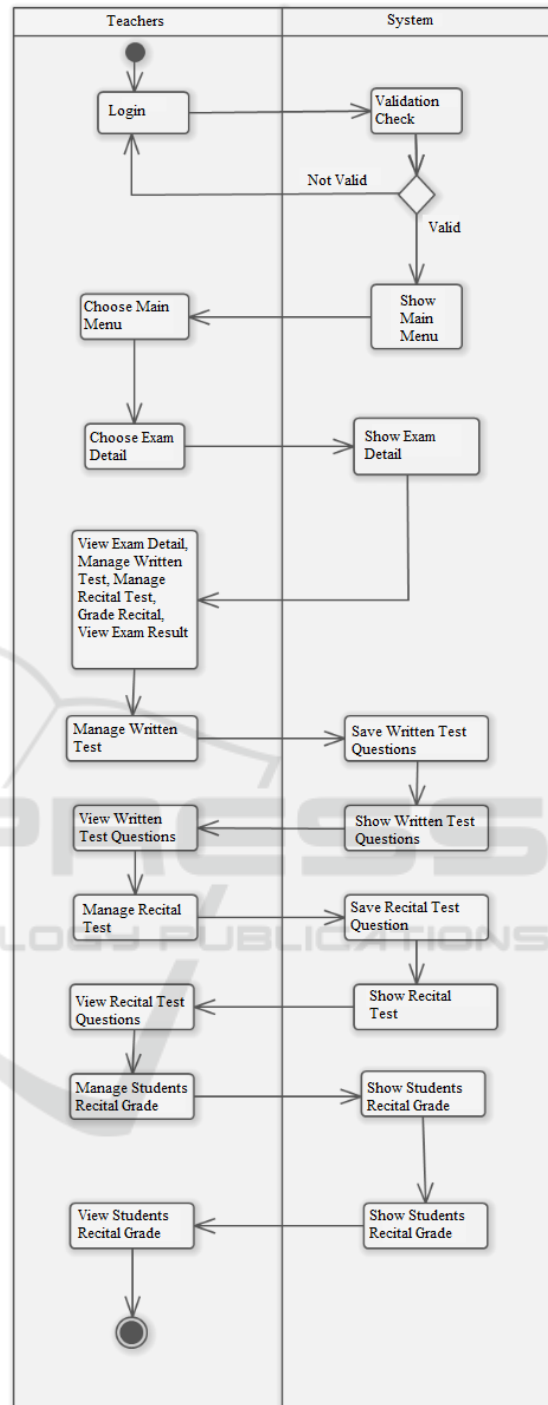


Figure 4: Teachers Activity Diagram.

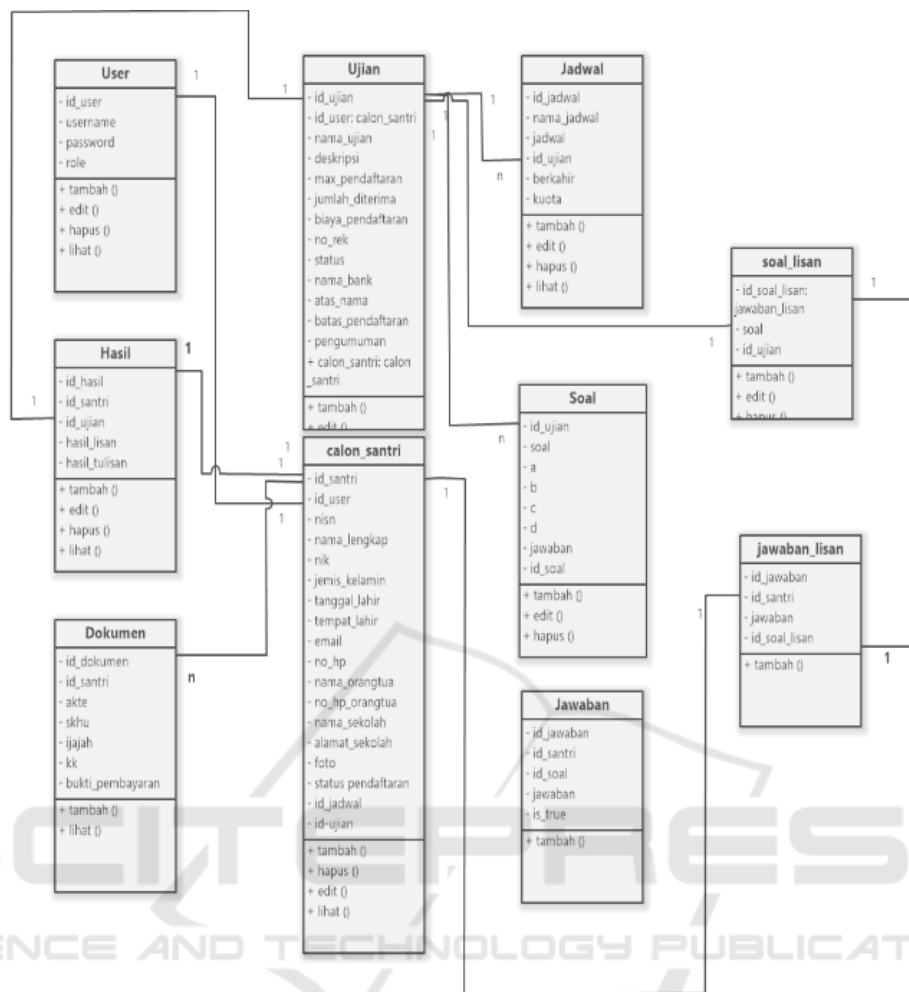


Figure 5: Systems Class Diagram.

3.2.3 Class Diagram

Class Diagrams are static, showing a set of interface classes, collaborations, and relationships. Class diagrams also describe the relationships between classes. In the system’s class diagram there are ten classes namely users, results, documents, exams, prospective students, schedules, questions, answers, oral questions, oral answers. This class diagram also displays the attributes and operations that will be used by the system. The class diagram can be seen in Figure 5.

3.2.4 Interface Design

This design is used as a guide for the layout and appearance of the information system interface. Examples of the interface designs produced at this stage are shown in the following figures.

1. Applicants registration page (Figure 6)
2. Online written test page (Figure 7)
3. Quran recital upload page (Figure 8)
4. Exam result page (Figure 9)

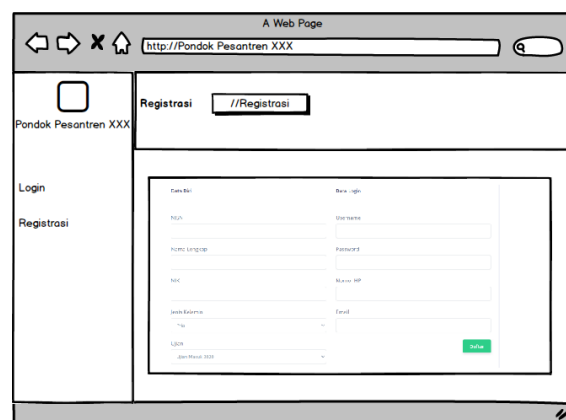


Figure 6: Applicant Registration Interface Design.

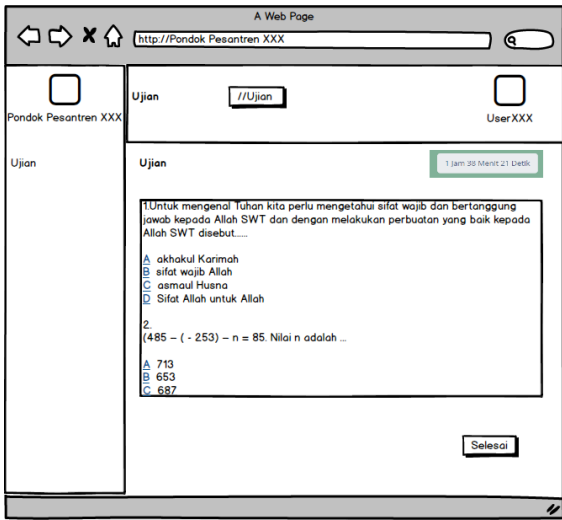


Figure 7: Online Written Test Interface Design.

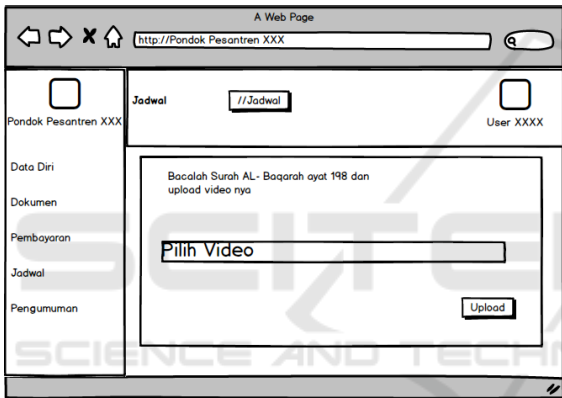


Figure 8: Quran Recital Upload Interface Design.

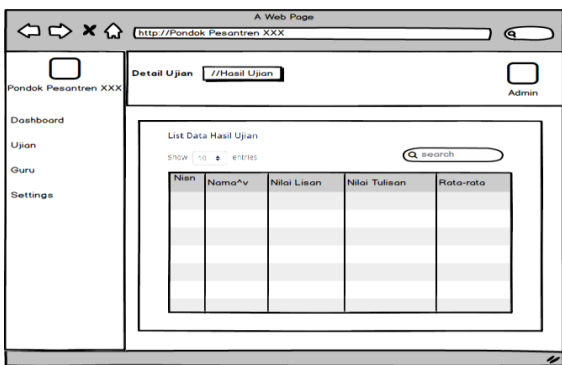


Figure 9: Exam Result Interface Design.

namely:

1. Text editor : Sublime Text 3
2. Server tool : XAMPP 3.2.2
3. UI/UX designer : Balsamic Mockups
4. Framework : CodeIgniter
5. DBMS : MySQL

By using the software above, the Web Based Registration and Entrance Exam Information System for Islamic Boarding School were successfully created. Some of the system interfaces can be seen in the following figures.

Figure 10, 11, and 12 shows the example system pages for applicants which are personal identity page, exam schedule page, and exam result page.



Figure 10: Applicant Personal Identity Page.

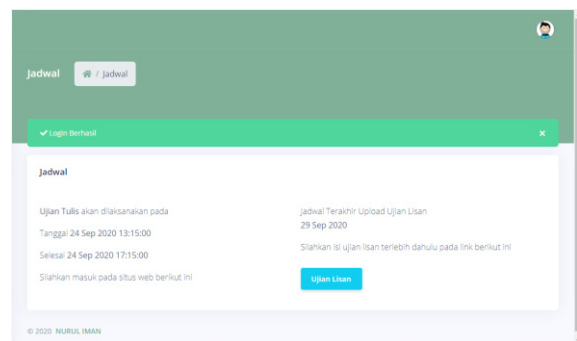


Figure 11: Exam Schedule Page.

4 RESULT AND DISCUSSION

To implement the designs that have been generated in the previous phase, several software are used,

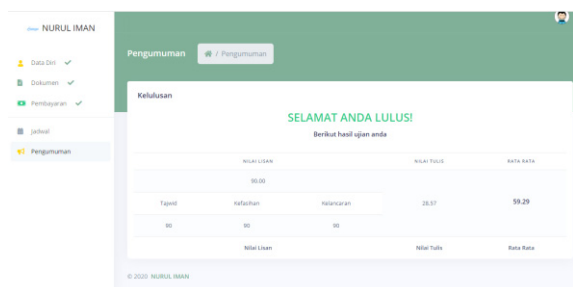


Figure 12: Exam Result Page.

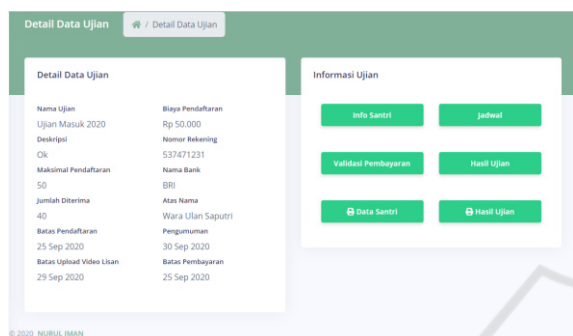


Figure 13: Applicants Detail Information Page.

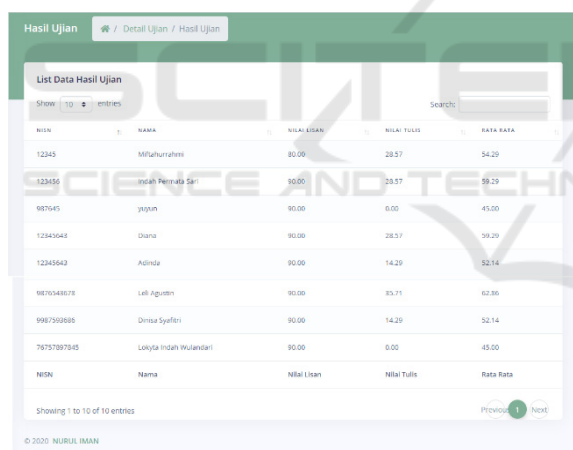


Figure 14: All Participants Exam Result Page.

Meanwhile, in the admin side, detail information about the applicants can be view by admin (Figure 13). And finally, the exam result of all participants is shown in Figure 14.

Information system testing is carried out using the black box method where all system functionality is tested to ensure the information system runs properly and correctly.

5 FUTURE WORK

The Web Based Registration and Entrance Exam Information System for Islamic Boarding School has been successfully built. The functionality of this system accommodates only the standard functionality of the registration process and entrance exams. Therefore, future development is quite possible to do. Some of these developments include:

1. Integration of e-wallet on the payment method so that applicants can directly make payments through the system.
2. Adding variations to the written question model, which is not only multiple choice, but can also be used in other models such as essays or short answers.
3. The re-registration feature for applicants who have passed the exam needs to be added.

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