

Application of Academic Potential Test for New Student Admission Using Fisher-Yates Shuffle Algorithm

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Abstract. The selection process of new students in educational institutions, such as in Sekolah Menengah Kejuruan (SMK) Wisata Indonesia which still uses conventional methods using paper, has several challenges. One of the main challenges is test cheating, where prospective students may try to manipulate their test results to increase their chances of being accepted. In addition, another challenge faced by SMK Wisata Indonesia is that when the number of prospective students who register is very large, managing answers and exam results can become more complicated. This research aims to design and build an Android-based Academic Potential Test application by applying the Fisher-Yates Shuffle algorithm to randomize the order of questions. This research also uses the RUP (rational Unified Process) system development technique which has several phases, namely the Inception phase, Elaboration phase, Construction phase and Transition phase. The validation testing carried out obtained overall valid results so that the application that has been designed is in accordance with user needs. Meanwhile, usability testing in the Academic Potential Test Application using the SEQ method resulted in an average Likert score for students of 6.63 with a user-friendliness percentage of around 94%. As for teachers, the Likert average score is 6.53 with a percentage of ease of use of around 93%. This shows that the Academic Potential Test Application that has been built is EASY TO USE.

Keywords: Android, Fisher-Yates Shuffle, RUP, SEQ, Validation Testing

1 Introduction

Education is "a conscious and planned effort to create a pleasant learning and learning atmosphere so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves and society". Education includes the provision of learning special skills, and also something that cannot be seen but is more profound, namely the provision of knowledge, judgment and wisdom [1]. The development of information and communication technology has had a major impact on the world of education. Technology applications have enabled simplification, increased efficiency, and improved validity in various aspects of education, including student selection.

The selection process of new students in educational institutions, such as in Sekolah Menengah Kejuruan (SMK) Wisata Indonesia which still uses conventional methods using paper, has several challenges. One of the main challenges is test cheating, where prospective students may try to manipulate their test results to increase their chances of being accepted. Test security is an issue that needs to be addressed as it can reduce the validity of the selection process. Academic potential test applications that use technology can overcome some of the challenges associated with cheating and non-objective measurement. For example, the use of the Fisher-Yates Shuffle algorithm in a test application can automatically randomize the test questions for each prospective student, making each test unique. This can reduce the risk of collusion or cheating in the test.

Some previous research that is relevant in this problem such as a journal written by Najibullah. In that study, the Fisher-Yates Shuffle Algorithm applied to randomize exercise questions in learning media applications is very effective because after testing the application, the questions that appear vary marked by the absence of the same sequence of questions between one user and another [2]. Another research is research conducted by Irfansyah. In this research, the application of the Fisher-Yates Shuffle algorithm can be applied to randomize exam questions implemented in E-learning with multiple choice question types so as to produce a different sequence of questions for each student and there is no repetition of the same sequence of questions again [3]. In addition, other research is research conducted by Santoso and Gunawan. In this study, the Fisher-Yates Shuffle Algorithm was successfully used in the 'Basic Programming' learning application and after repeating the quiz

100 times with 20 questions per session, it produced a sequence of questions that varied and did not repeat [4]. Then Tri Sugihartono and Rendy Rian Chrisna Putra in their research used the Fisher Yates Shuffle algorithm to reduce fraud in the journalist competency test. The result is that the Fisher-Yates Shuffle algorithm has a success rate of 100% in randomizing the order of questions[5].

In addition, another challenge faced by SMK Wisata Indonesia is that when the number of prospective students registering is very large, managing exam answers and results can become more complicated and time-consuming which requires more manual work in data management. The Online Exam Information System will easily access the information needed in processing, inputting and generating student exam reports [6]. The system also allows schools to speed up the processing of exam data [7].

By understanding the challenges in student selection and technological advances in education, the development of academic potential test applications with the Fisher-Yates Shuffle algorithm is relevant and can provide solutions to improve the student selection process at SMK Wisata Indonesia. This also underlies the researcher to design and build an academic potential test application with the title "Application of Academic Potential Test for New Student Admission Using Fisher-Yates Shuffle Algorithm".

The purpose of this research is to Design and build an Android-based Academic Potential Test application and to Analyze the use of the Fisher-Yates Shuffle algorithm in the development of academic potential test applications to reduce the risk of cheating in tests. besides that, another goal is to increase the ease of data management by using technology and applications that can better process and store prospective student test results.

2 Literature Study

2.1 Application

Applications are software created with various attribute components suitable for users to help them process the entire data to produce input and output [8]. Applications are a subclass of computer software that directly uses the computer's capabilities to perform a user's desired task. Application software is often compared to system software that integrates various computing capabilities but does not directly apply these capabilities to perform tasks that benefit users [9].

2.2 Android

Android is a Linux-based operating system developed by the Open Handset Alliance which includes software, hardware and providers such as Google, HTC, Intel, Motorola, Qualcomm and T-Mobile, with the advantage of the completeness of available applications and the ease of adding applications according to user desires [10]. Cell phones running the Android operating system basically have many advantages, not only transparency (open source) but also appearance, ease of receiving notifications, and multitasking capabilities [11].

With Android, users can access various applications, make calls, send messages, surf the Internet, and perform many other functions on their mobile devices. Android also provides opportunities for developers to create a wide variety of applications, thus providing various features and services to Android users around the world.

2.3 Fisher-Yates Shuffle

The Fisher-Yates algorithm (name based on Ronald Fisher and Frank Yates) is an algorithm used to generate random permutations of a finite set. In short, it is used to randomize the set. If implemented correctly, the results of this algorithm will have an even distribution, so that each permutation has an equal probability of occurring. The Fisher-Yates algorithm is considered an effective way to create random permutations from a finite set of data [9]. The use of the Fisher-Yates Algorithm was chosen because it is a very efficient and suitable method for randomizing numbers, with fast execution time and does not require a long time to perform randomization. A variation of the Fisher-Yates algorithm, known as the Sattolo algorithm, can be used to generate more complex random cycles as an alternative. The Fisher-Yates algorithm has two methods, namely the original method and the modern method. Both methods are used for the same purpose, which is to randomize elements in a set or list. The difference lies in the way the steps are implemented [12].

The implementation stages of the Fisher-Yates Shuffle Algorithm original method are:

- a. Compile a list of numbers from 1 to n.
- b. Randomly select the number x from the list of numbers and insert it into the new number sequence.
- c. Next, remove x from the previous list of numbers.
- d. Repeat the second step until the numbers in the list are exhausted.

- e. The final result is a sequence of numbers that is a random permutation of the original sequence.
- In the Original Method, the selected number (x) is crossed out and inserted into the new number sequence. Meanwhile, the stages of the modern method of Fisher-Yates Shuffle Algorithm are done as follows:
- a. Arrange a sequence of numbers from 1 to n.
 - b. Randomly, select one number, x, from the sequence of numbers that has not been selected before, provided that $1 \leq x \leq n$.
 - c. Then, mark the selected number x and move the position of the last number in the sequence (1 to n) to the selected position (x).
 - d. Continue steps 2 and 3 until all the numbers in the sequence have been selected.
 - e. The final result is a sequence of numbers that is a random permutation of the original sequence.
- Both methods generate random permutations with equal probability for each possibility. In the development of this application, the researcher chose to apply this algorithm with modern methods. The selection of modern methods is because these methods are specifically designed for randomization in a computerized context, which allows the results of randomization to be more varied and better performance.

2.4 Rational Unified Process (RUP)

Rational Unified Process (RUP) is a software engineering method developed by combining various best practices in the software development industry. One of the main characteristics of RUP is the use of a use case-based and iterative approach in the software development cycle. RUP adopts object-oriented concepts and emphasizes modeling using the Unified Modeling Language (UML). This method provides a well-defined framework for the software project life cycle [13]. RUP is not a single process with specific rule entities, but a process framework that is adaptable and intended to be adapted by development organizations and software project teams, who will select process elements according to their needs [14].

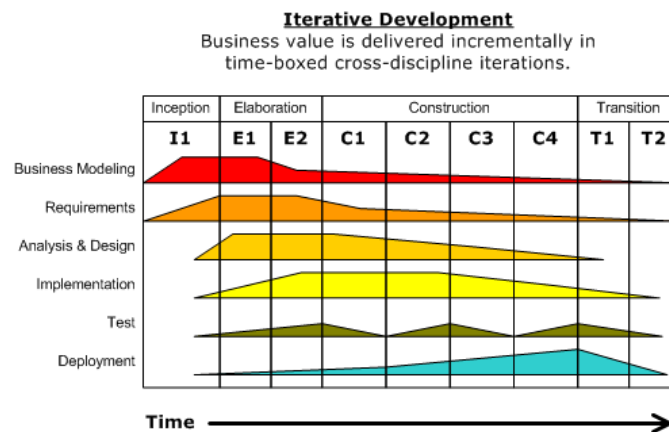


Figure 1. Phase in Rational Unified Process

The explanation of the Rational Unified Process (RUP) phase (1) Inception; This stage is modeling the necessary business processes and determining the needs of the system that needs to be built. This stage is focused on understanding the scope of the software project, including aspects of cost, time, needs, and risks. (2) Elaboration; The Elaboration phase is more focused on planning the system architecture. This stage also serves to identify whether the desired architecture can be realized. During this stage, system analysis and design are worked on, as well as implementing system prototypes. (3) Construction; The Construction stage focuses more on developing system components and features. This stage also involves implementing and testing the system with a focus on writing software code. (4) Transition; The Transition stage is focused on implementing or deploying the system so that it can be used by users. Activities in this stage include user training, maintenance, and testing to ensure the system meets user expectations.

3 Research Method

The research design in this research is a very crucial initial stage in the course of this research. In this study, researchers will use the Rational Unified Process (RUP) method as a system development framework that will be applied. The use of RUP will help in designing, developing, and testing application systems with a systematic and structured approach.

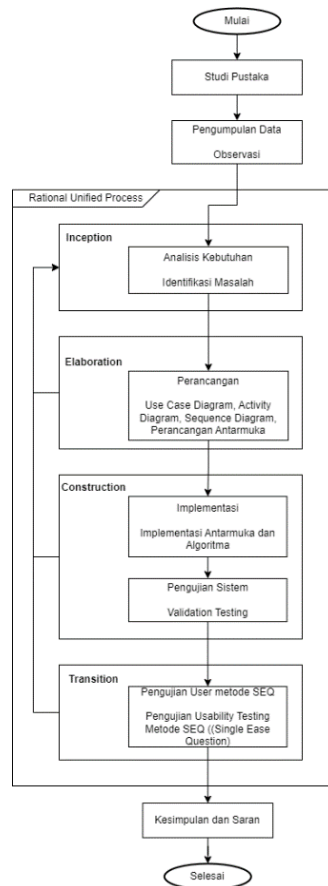


Figure 2. The Research Design

In the Inception phase, the problem identification focused on the fact that the new student admission test at SMK Wisata Indonesia still uses the conventional method using paper, so it often faces several challenges. One of the main challenges is test cheating, where prospective students may try to manipulate their test results to increase their chances of being accepted. To overcome the problem, solutions are sought by referring to relevant reference sources.

The next step is the Elaboration phase, where a system design is created according to the identified problems. After designing a suitable system, the Construction phase involves the implementation of the designed system, including the application of the Fisher-Yates Shuffle algorithm to reduce the possibility of cheating at SMK Wisata Indonesia. In the Construction phase, system testing is carried out using the validating testing method to ensure that the application built is in accordance with the needs of the existing problems.

The next phase is the Transition phase, in this phase testing is carried out aimed at users who will use the application using the SEQ (Single Ease Question) usability testing method. The SEQ method is used to assess the level of user satisfaction based on their experience in carrying out certain tasks or scenarios. This method focuses on the user's perception of the application usage experience after completing various given tasks.

3.1 Inception Phase

In the Inception Phase, problems that occur at SMK Wisata Indonesia are identified according to the observations that have been made. The problems that have been identified can be seen in Table 1 below:

Table 1. Identification Problems

Problem identification	Requirements
The new student admission test process still uses conventional methods, namely by using paper, so it takes time, cost and space because the questions are stored in hard copy.	By replacing conventional methods that involve printing and distribution of physical questions, test applications can save time and costs associated with test preparation and administration.
The existence of cheating in tests, where prospective students may try to manipulate their test results to increase their chances of being accepted.	The designed application should be able to reduce the level of cheating such as using the Fisher-Yates Shuffle Algorithm.
How can the ease of the new student selection process be improved through the use of this technology?	The designed application can improve the efficiency of time, cost as well as place.
The problem of complex data management, especially when the number of applicants is very large	The application should allow the storage of questions and student data in a digital format that is easy to manage and access.

3.2 Elaboration Phase

In this phase, the system design is made in accordance with the problems identified using several types of diagrams in the Unified Modeling Language (UML), namely Use Case Diagrams, Activity Diagrams and Sequence Diagrams.

a. Use Case Diagram

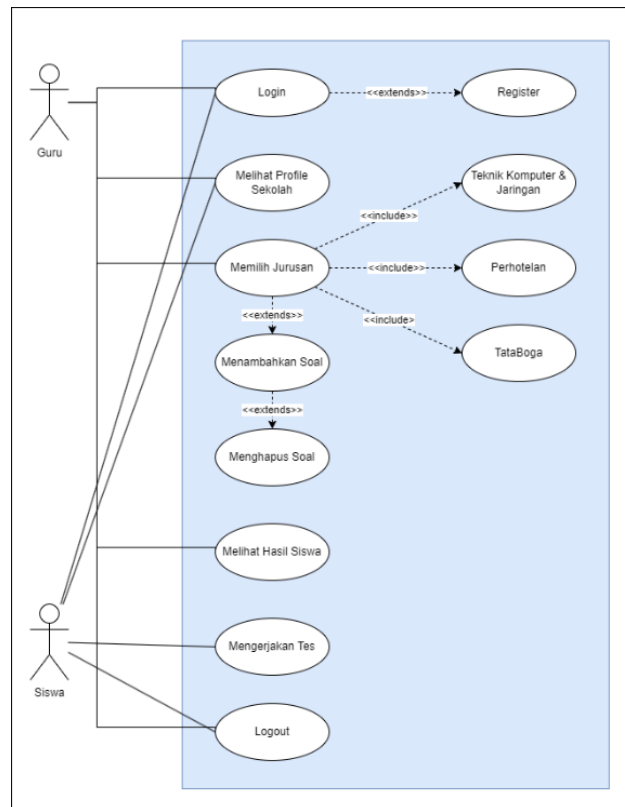


Figure 3. Use Case Diagram

b. Activity Diagram

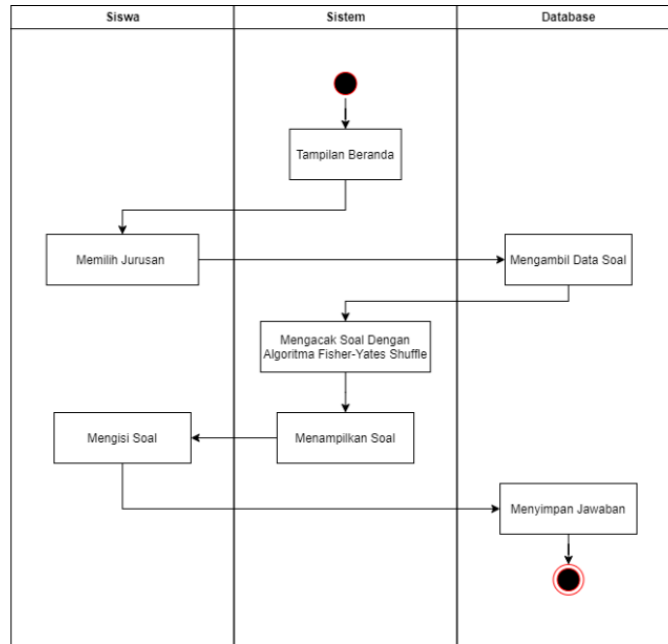


Figure 4. Activity Diagram

c. Sequence Diagram

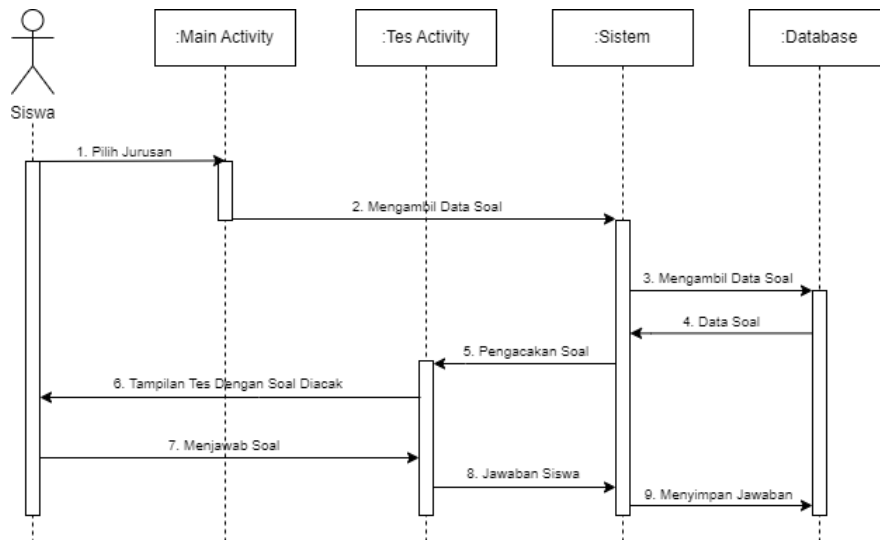


Figure 5. Sequence Diagram

4 Result and Discussion

4.1 Construction Phase

In the construction phase, the system that has been designed in the Elaboration phase is implemented and also tested using validating testing. In this phase, the Fisher-yates shuffle algorithm is also implemented to shuffle the questions in the database.

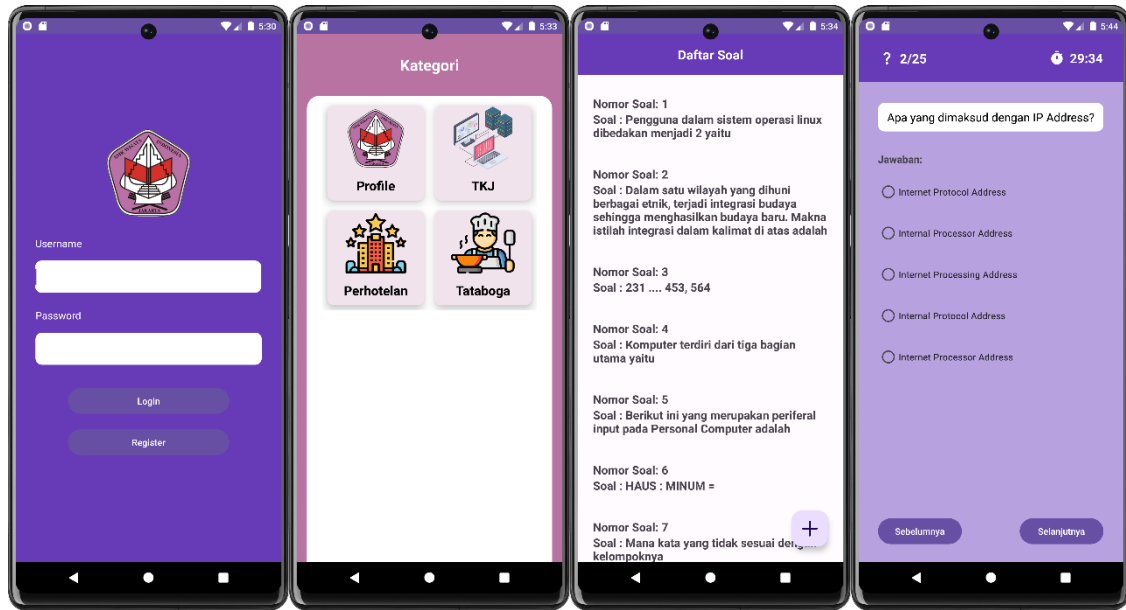


Figure 6. Interface Display

4.1.1 Fisher-Yates Shuffle Implementation

In the application of the Academic Potential Test for SMK Wisata Indonesia, the researcher chose to use the modern method of the Fisher-Yates Shuffle Algorithm to randomize the order of questions to be worked on by students. This is done with the aim of reducing the potential for cheating in the selection process for new student admissions. The stages of the modern method of the Fisher-Yates Shuffle Algorithm can be seen in the process below:

- Arrange a sequence of numbers from 1 to n.
- Randomly select a number, x, from the sequence that has not been selected before, provided $1 \leq x \leq n$.
- Then, mark the selected number x and move the position of the last number in the sequence (1 to n) to the selected position (x).
- Continue steps 2 and 3 until all the numbers in the sequence have been selected.
- The final result is a sequence of numbers that is a random permutation of the original sequence.

From the Fisher-Yates Shuffle randomization process step above, here is an example of manual calculation in the randomization.

- ArraySoal = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25}
- Select a random number (x) where $1 \leq x \leq \text{ArraySoal}$, let's say the selected x is 9.
- Swap the position (x) with the last number in the range 1 - ArraySoal, then from {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25} to {1, 2, 3, 4, 5, 6, 7, 8, 25, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24}
- since ArraySoal > 0, then steps 2 and 3 are repeated until ArraySoal runs out and produces a new sequence of numbers. For more details, it can be seen in table 2 below:

Table 2. manual calculation of Fisher-Yates Shuffle algorithm

Range	Roll	Scratch	Result
		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	
1 – 25	9	1 2 3 4 5 6 7 8 25 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	9
1 – 24	4	1 2 3 24 5 6 7 8 25 10 11 12 13 14 15 16 17 18 19 20 21 22 23	4 9
1 – 23	12	1 2 3 24 5 6 7 8 25 10 11 23 13 14 15 16 17 18 19 20 21 22	12 4 9
...

1 - 2	1	13	1 25 11 20 18 19 23 17 21 8 22 5 6 24 3 15 10 14 7 16 2 12 4 9
		permutation result	13 1 25 11 20 18 19 23 17 21 8 22 5 6 24 3 15 10 14 7 16 2 12 4 9

From the table above, the permutation results of randomization using the Fisher-Yates Shuffle algorithm get results that are {13, 1, 25, 11, 20, 18, 19, 23, 17, 21, 8, 22, 5, 6, 24, 3, 15, 10, 14, 7, 16, 2, 12, 4, 9}. So, it can be seen that the Fisher-Yates Shuffle Algorithm is an algorithm that can be used to randomize questions on the Academic Potential Test Application at SMK Wisata Indonesia.

The following is the code used to implement the Fisher-Yates Shuffle Algorithm in the application:

```
private List<Integer> fisherYatesShuffle(int n) {
    List<Integer> shuffledOrder = new ArrayList<>();

    //STEP 1:
    for (int i = 1; i <= n; i++) {
        shuffledOrder.add(i);
    }

    //STEP 2-5:
    for (int i = n - 1; i > 0; i--) {
        //STEP 2:
        int randomIndex = (int) (Math.random() * (i + 1));
        int x = shuffledOrder.get(randomIndex);

        //STEP 3:
        shuffledOrder.set(randomIndex, shuffledOrder.get(i));

        //STEP 4:
        shuffledOrder.set(i, x);
    }
    return shuffledOrder;
}
```

Furthermore, the results of randomization using the Fisher-Yates Shuffle algorithm are stored in the database. The randomization results obtained from the implementation of the algorithm can be seen in table 3 below:

Table 3: Fisher-Yates Shuffle Implementation

User	Hasil
1	20, 22, 7, 33, 27, 2, 28, 10, 11, 21, 34, 35, 9, 23, 1, 29, 19, 3, 26, 17, 12, 24, 15, 18, 5
2	9, 5, 25, 31, 8, 10, 34, 14, 13, 26, 28, 17, 7, 11, 33, 35, 32, 6, 27, 4, 23, 16, 30, 21, 12
3	15, 5, 27, 24, 20, 25, 30, 19, 9, 2, 6, 11, 31, 12, 17, 18, 8, 13, 7, 10, 34, 14, 33, 23, 29
4	35, 12, 2, 21, 15, 10, 14, 6, 24, 9, 19, 18, 16, 20, 34, 22, 32, 11, 30, 13, 26, 8, 1, 31, 23
5	26, 18, 16, 27, 28, 15, 12, 8, 22, 3, 6, 1, 17, 14, 32, 34, 35, 5, 13, 9, 2, 23, 4, 21, 11

In Table 3 above, it can be seen that the randomization results were carried out by 5 different users. The first to fifth users each get a unique question sequence after the randomization process. This shows that the Fisher-Yates Shuffle algorithm has succeeded in effectively randomizing the order of questions, so that each user gets a different order of questions.

4.1.2 System Testing

After the system is implemented, the next step in the Construction phase is testing. In this research, the test carried out is validation testing. The purpose of this validation testing is to ensure that the system can operate as expected and meet the functional requirements that have been set.

Table 4. Result Validation Testing

Testing Code	VT-09
Testing Case Name	Testing Students take the test
Scenario Code	Scenario 1
Testing Purposes	Ensure the system performs the functions for working on the questions including the next button, previous button and saving the results in the database.
Test Case	Students take the test on the Academic Potential Test Application
Test Procedure	<ol style="list-style-type: none"> 1. Students open the Academic Potential Test Application 2. Students log into the application 3. Students choose the major category 4. Students press the start button 5. Students take the exam 6. Students press the previous button to return to the previous question 7. Students press the next button to go to the next question 8. Students take the test until completion
Expected Results	The system can execute the function for the test and save the students answer data and results to the database.
Status	Valid

Based on the results of testing in scenario 1 for validation of test work by students, the system successfully carries out the function of working on questions, including the functioning of the next button and the previous button, and saves the results of work into the database in accordance with established procedures. This test aims to ensure that the system can respond correctly when students take the test after logging into the application and selecting the appropriate major category. The test results show that the system can carry out the test processing function effectively, allow students to use the next button and the previous button, and successfully save student answer data and results into the database. Therefore, the test status is valid.

4.2 Transition Phase

The next phase is the Transition phase. In this phase, testing is carried out aimed at users who will use the application using the SEQ (Single Ease Question) usability testing method to assess the level of difficulty or ease of use of the application that has been built.

In this study, researchers used Google Form to collect respondent data at SMK Wisata Indonesia which involved 16 students and 4 teachers as users to test the academic potential test application that had been built. In the following figures 6 and 7 are data on student and teacher respondents who have been taken at SMK Wisata Indonesia.

	B	C	D	E	F	G	H
1	Email Address	Nama Lengkap	Jenis Android yang digun	Seberapa sulit menurut A	Seberapa sulit menurut B	Seberapa sulit menurut C	Seberapa sulit menurut D
2	faridmarwanfarid@gmail.com	Farid Marwan	realme 10	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
3	shakaatallahputra@gmail.com	Shaka athallah putra	Redmi 9A	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
4	rulidayat20@gmail.com	Sahrul Hidayat	Oppo A57	7 (Sangat Mudah)	6 (Mudah)	6 (Mudah)	7 (Sangat Mudah)
5	pawwazpajri@gmail.com	Fajri Muhammad Fawwaz	Samsung Galaxy A14	7 (Sangat Mudah)	7 (Sangat Mudah)	6 (Mudah)	7 (Sangat Mudah)
6	dhitaazzahraa3@gmail.com	Dhita Azzahra	Redmi note 10s	7 (Sangat Mudah)	7 (Sangat Mudah)	6 (Mudah)	6 (Mudah)
7	arulodon3@gmail.com	sahrul romadhon	redmi 5	7 (Sangat Mudah)	7 (Sangat Mudah)	6 (Mudah)	7 (Sangat Mudah)
8	mohammadripad2@gmail.com	Mohammad Rizky Fadilla	infinix hot 8	7 (Sangat Mudah)	7 (Sangat Mudah)	6 (Mudah)	6 (Mudah)
9	dzakiyamate@gmail.com	Dzaki akram	Infinix hot 11s nfc	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
10	yajidrisqi9@gmail.com	Yazid Rizqi	Vivo Y91C	6 (Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
11	nandagendut098@gmail.com	Anugrah Usmananda	INFINIX HOT 10	6 (Mudah)	6 (Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
12	triandaru26@gmail.com	Tri Andaru	Redmi note 8	6 (Mudah)	6 (Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
13	arielwisaputra42@gmail.com	Ariel Dwi Saputra	Redmi Note 12	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	6 (Mudah)
14	hamudhabibi039@gmail.com	falthan Anwar	infinix 11 hot nfc	6 (Mudah)	6 (Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
15	ihamalimsyh988@gmail.com	Ilham Muhammad Alamsyah	Infinix Zero 5G	6 (Mudah)	6 (Mudah)	6 (Mudah)	6 (Mudah)
16	fkri250705@gmail.com	Salman Syaifikri	Redmi 12c	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
17	ikbalridwan4012006@gmail.com	Raynan iqbal ridwan	Xiomi redmi note 8	6 (Mudah)	6 (Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)

Figure 7. SEQ Student

	B	C	D	E	F	G	H
1	Email Address	Nama Lengkap	Jenis Android yang digun	Seberapa sulit menurut A	Seberapa sulit menurut B	Seberapa sulit menurut C	Seberapa sulit menurut D
2							
3							
4	deyarsmkwi@gmail.com	Deyar Cipta Rizky	Samsung galaxy A80	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
5	srindriani0312@gmail.co	Sri Indriani	Redmi 8	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
6	saidahsalsa19@gmail.co	Saidah	Oppo Reno 10	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)	7 (Sangat Mudah)
7	favina6031@gmail.com	Ulfa Nurvina	Redmi Note 10 5G	5 (Cukup Mudah)	6 (Mudah)	6 (Mudah)	6 (Mudah)
8							
9							
10							

Figure 8. SEQ Teacher

To determine ease or difficulty with SEQ, it is done by calculating the average of the Likert scale on all tasks or scenarios that have been completed by respondents [15]
 So the mathematical formula used is:

$$SEQ = \frac{\text{total average Likert score}}{\text{total tasks done}} \times 100\%$$

Table 5. Result SEQ Student

SEQ Variable	Average Likert Score	Persent (%)
Task 1	6,62	94%
Task 2	6,62	94%
Task 3	6,62	94%
Task 4	6,75	96%
Task 5	6,62	94%
Task 6	6,5	92%
Task 7	6,68	95%
Total SEQ	6,63	94%

Based on the calculation of Student SEQ, the researcher concludes that students find the use of the Academic Potential Test Application EASY TO USE. Analysis of the average Likert score of each scenario or task run shows an average Likert score of 6.63 with a percentage of user convenience of around 94%.

Table 6. Result SEQ Teacher

SEQ Variable	Average Likert Score	Persent (%)
Task 1	6,5	92%
Task 2	6,75	96%
Task 3	6,75	96%
Task 4	6,5	92%
Task 5	6,25	89%
Task 6	6,75	96%
Task 7	6,25	89%
Total SEQ	6,53	93%

Based on the test results using the SEQ (Single Ease Question) method involving 4 teachers at SMK Wisata Indonesia, it can be concluded that the teacher also gave an assessment that the Academic Potential Test Application is EASY TO USE. Analysis of the average Likert score of each task shows that the average SEQ value is 6.53 with a percentage of ease of use of around 93%.

5 Conclusion

This research findings indicate several noteworthy conclusions based on the conducted stages. Firstly, the successful design and development of an Android-based Academic Potential Test application has streamlined user access and facilitated the selection process for new students at SMK Wisata Indonesia during the Academic Potential Test. Secondly, the implementation of the Fisher-Yates Shuffle Algorithm in the development of academic potential test applications has proven effective in randomizing the order of questions. This ensures that each student experiences a unique question order, thereby mitigating the risk of cheating in the admission tests for new students.

Furthermore, the application contributes to improved data management and enhances the processing and storage of prospective students test results. The validation test results affirm the overall validity of the designed application, aligning well with user needs. Finally, Usability Testing conducted on the Academic Potential Test Application, utilizing the SEQ method, reveals positive feedback. Students provide an average Likert score of 6.63, reflecting a user convenience rate of around 94%. Similarly, teachers provide an average Likert score of 6.53, indicating an ease of use percentage of approximately 93%. These results collectively demonstrate that the Academic Potential Test Application is user-friendly and EASY TO USE for both students and teachers.

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