Implementation of Spaced Repetition Using the SuperMemo 2 Algorithm in Memorizing Qur'anic Verses

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By memorizing the verses of the Al-Qur'an a Muslim can get many virtues. However, there is one of the problems experienced by memorizing the Al-Qur'an, namely forgetting. The forgetting curve can show how quickly people forget information if they do nothing to retain the memory of the information. SuperMemo 2 is an algorithm that applies the concept of repetition and gives a certain time interval in remembering information. With the aim that the information is entered into long term memory. In the process of collecting data in this research, literature study is carried out, namely data collection techniques carried out by seeking information and knowledge sourced from books, scientific journals and other literature related to research. Based on the results of the discussion and trials that have been carried out, it is concluded that the implementation of spaced repetition using the SuperMemo 2 algorithm can run well. With the help of the Dart programming language and the Flutter SDK framework, SuperMemo 2 can be implemented and built into an application on the Android operating system. The Dart programming language is used to implement the SuperMemo 2 algorithm in the program so that it can generate interval values. Determining the interval value by the SuperMemo 2 algorithm can run well because of the influence of the ease factor which makes the interval dynamic. This allows the interval to change and adjust its value to the user's memorization ability. The interval value generated from the SuperMemo 2 algorithm will assist application users in scheduling an effective time for memorizing verses of the Qur'an.

Keywords: Al-Qur' an, Flashcard, SuperMemo 2, Spaced Repetition, Forgetting Curve, Dart, Flutter.

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1. Introduction

The Qur'an was revealed by Allah SWT to humans as a guide to achieving salvation, happiness in this world and the hereafter [1]. By memorizing the verses of the Al-Qur'an, a Muslim gets several advantages, such as the Al-Qur'an being a helper, raising one's rank in heaven, being accompanied by angels, getting special awards from the Prophet Muhammad SAW and the parents of those who hafiz the Koran will receive glory. Other virtues are mentioned in the following hadith:

اقْرَءُوا الْقُرْآنَ فَإِنَّهُ يَأْتِى يَوْمَ الْقِيَامَةِ شَفِيعًا لأَصْحَابِهِ

Meaning:
Diligently read the Quran, for it will intercede for its memorizers on the Day of Resurrection[2].

The forgetting curve is a concept from psychology that shows how quickly people forget something if they do nothing to retain it. The first version of the forgetting curve was defined by Hermann Ebbinghaus, but it has been further developed by researchers who combine it with psychological factors [3]. Ebbinghaus studied the memorization of nonsense syllables, such as "WID" and "ZOF" (CVCs or Consonant–Vowel–Consonant) by conducting repeated tests over several periods of time. Ebbinghaus recorded the results. He plotted these results on a graph now known as the "Forgetting Curve."

SuperMemo 2 is an algorithm that applies the concept of repetition and spaced information apart to memorize it. The goal is for the information to enter long-term memory. In this study, the information in

question was verses from the Quran [4]. In their research, Stephen Colbran et al. demonstrated that the SuperMemo 2 algorithm resulted in better student learning outcomes compared to the Leitner System, as measured by overall assessment results. Sixty percent of the overall results were obtained through a final exam (theory test) [5].

Flashcards are cards with words, numbers, or images displayed briefly (such as by a teacher to a class), usually as a learning aid ([6]). Both sides of a flashcard contain information: one side contains a question and the other side contains the answer. Flashcards are said to improve verbal skills. Golding et al. found that regular use of flashcards in a basic psychology course can lead to higher test scores [7]. When memorizing verses from the Quran, one of the problems experienced by memorizers is frequent forgetfulness [8]. Based on the background of the problem above, the author decided to conduct research with the title Application of Spaced Repetition Using the SuperMemo 2 Algorithm in Memorizing Al-Quran Verses.

2. Literature Review

The concept of spaced repetition is grounded in cognitive psychology, particularly in the theory of memory retention and the *forgetting curve* introduced by Ebbinghaus, which demonstrates that information decays over time without reinforcement [9]. Spaced repetition systems aim to counteract this decay by optimizing review intervals so that information is revisited just before it is likely to be forgotten, thereby strengthening long-term memory consolidation [10]. The SuperMemo 2 (SM-2) algorithm is one of the most widely used implementations of this concept, dynamically adjusting review intervals based on user performance through parameters such as ease factor, repetition count, and recall quality [11]. Empirical studies have shown that spaced repetition techniques outperform traditional memorization methods, including static flashcards and the Leitner system, in improving retention and learning efficiency [12]. Furthermore, the integration of flashcards as a learning medium has been proven to enhance recall ability and test performance due to active retrieval practice [13]. In the context of Qur'anic memorization (tahfidz), these methods are particularly relevant, as memorization requires not only initial encoding but also long-term retention and regular revision [14].

Despite the theoretical and empirical support for spaced repetition and SM-2, there remains a gap in their application specifically tailored to Qur'anic memorization, especially in mobile-based learning environments that adapt to individual memorization abilities [15]. Existing studies have focused on general educational contexts or language learning, with limited attention to religious text memorization that involves unique cognitive and motivational factors. Moreover, conventional memorization practices often rely on fixed schedules and lack adaptive mechanisms to address individual differences in retention and forgetting rates. Therefore, this study formulates the research problem as follows: *How can the implementation of the SuperMemo 2 algorithm in a mobile-based application optimize the memorization and retention of Qur'anic verses through adaptive spaced repetition?* This problem statement highlights the need to evaluate whether algorithm-driven interval scheduling can significantly improve memorization effectiveness compared to traditional methods. For quantitative validation, this study may further test the hypothesis that the use of SM-2–based spaced repetition significantly enhances retention performance and memorization consistency among users [16].

3. Methods

Research Location and Time

This research will be conducted at the State Islamic University of North Sumatra (UINSU) Medan. The implementation schedule for the study, "The Application of Spaced Repetition Using the SuperMemo 2 Algorithm in Quran Memorization," will be from January 2022 to April 2022.

Research Materials and Tools

During the research, the author required several tools and materials to support data collection and completion. The materials and tools used in this research consisted of hardware and software that the author had determined.

Hardware

The hardware used in this research was a laptop used to create and implement spaced repetition using the SuperMemo algorithm for Quran memorization, as follows:

1. Intel Core i3-6006U Processor (2.0 GHz, 3MB L3 Cache),
2. 8GB RAM,
3. 240GB SSD Storage.

Software

The software used in this research was as follows:

1. Microsoft Windows 10 Operating System,
2. Visual Studio Code 1.63.2,
3. Firebase.

How it Works

Planning

This stage involves planning the processes that will occur within the system. This application uses the SuperMemo 2 algorithm to implement spaced repetition. First, the user must add the verses they wish to memorize to the application; these verses will be stored in Firebase. The application will then display flashcards on the screen corresponding to the verses previously added. The user will then conduct an initial review, which will then be processed by the SuperMemo 2 algorithm. The output from the first review will become the input for the second review, and vice versa. The RAD model used in application development is used.

Data Collection Technique

Using these sources, the author obtained relevant theoretical references on the Application of Spaced Repetition Using the SuperMemo 2 Algorithm in Quran Memorization. The data collection process involved a literature review, citing sources such as books and journals related to the material used in this thesis. Relevant references are needed to strengthen the problem and serve as a theoretical basis for the research.

Needs Analysis

After completing the planning process, the needs analysis aims to truly understand the requirements of the application to be designed and develop an application that meets user needs. These requirements include hardware, software, user specifications, and system requirements.

Design

This stage involves preparing the application design, analyzing the aspects needed to support the research for the application to be developed. This preparation includes the software and hardware aspects to be used.

Testing

This stage involves testing each function within the application to determine whether it is functioning properly. This is achieved by using debugging techniques to test the application's UI, its functions, and the appropriateness of the application's functional flow. If errors or weaknesses are found in the application, evaluation and improvement will be carried out.

Implementation/Use

In this stage, conclusions will be drawn from the application of Spaced Repetition using the SuperMemo 2 Algorithm in Quran memorization, which has been generated through various stages. For example, the advantages and disadvantages of the application built using this algorithm will be discussed. Using this application begins by inputting the verse to be memorized. The verse will then appear in the application for user review based on the time determined by the SuperMemo 2 algorithm.

4. Result and Discussion

Data Analysis

As humans, we have all experienced forgetting information that we previously remembered. This is something we certainly do not want, especially for information that is important to us. One factor causing this is the absence of active efforts to maintain the information, resulting in it being stored only in short-term memory. Loss of information can be prevented by reviewing or recalling the information so that it can be stored in long-term memory, making it easier to remember later.

For Muslims, memorizing verses of the Qur'an provides many virtues. Therefore, it is appropriate for Muslims to memorize some or even all Qur'anic verses. Based on the analysis of the problem above, the author evaluates the system to be developed and proposes a solution to help Muslims memorize Qur'anic verses by applying spaced repetition using the SuperMemo2 algorithm.

Data Representation

The data used consists of all Qur'anic verses provided by a RESTful API in the form of JavaScript Object Notation (JSON). JSON is used to store, read, and exchange data from the web server so that users can access it. In this application, the data refers to Qur'anic verses that users want to memorize.

The application sends a request to the RESTful API to obtain the verses, which are then stored in Firebase Cloud Firestore. An example response provided by the RESTful API is Surah Yunus verse 2. Only several variables are extracted from the JSON, namely: data-text, data-surah-number, data-surah-englishName, and data-numberInSurah.

Data Analysis Results

The analysis identified 6,236 Qur'anic verses in the RESTful API, consistent with the verses in the Qur'an. When the data is required, the HTTP GET request method is executed to retrieve the data from the RESTful API. A successful request is indicated by a 2XX response code.

Flashcard Addition Process

At this stage, the user inputs the surah number and verse number of the Qur'anic verse they wish to memorize. The flashcard then appears and can be saved. The data is retrieved from the RESTful API and stored in Cloud Firestore.

An additional variable, reviewedDate, is also stored. This variable allows the application to calculate the number of days between the user's last memorization of the flashcard and the day the user opens the application. When this interval matches the interval generated by SuperMemo 2, the flashcard will appear on the user's Android screen.

SuperMemo 2 Algorithm Calculation

There are four variables used as input in SuperMemo 2, namely quality (Q), repetitions (R), ease factor (EF), and interval (I). The value of quality is considered first because the determination of other variables depends on whether $Q \geq 3$ or $Q < 3$.

If $Q \geq 3$, three conditions apply:

1. If $R = 0$ (first memorization/review), then $I = 1$.
2. If $R = 1$ (second memorization/review), then $I = 6$.
3. If $R \neq 0$ and $R \neq 1$, the interval is calculated using $I' = I \times EF$, and the result is rounded.

Next, repetitions are updated using $R' = R + 1$. The ease factor is then calculated using the formula:

$$EF' = EF + (0.1 - (5 - Q) \times (0.08 + (5 - Q) \times 0.02)).$$

If $Q < 3$, then $R = 0$, $I = 1$, and EF remains the same as the previous value. After this, the ease factor is checked again; if $EF < 1.3$, it is set to 1.3. After completing these steps, the SuperMemo 2 algorithm produces outputs in the form of interval (I), repetitions (R), and ease factor (EF).

Design

This design consists of the SuperMemo 2 flowchart design, the application flowchart design, and the flowchart design for all pages and their interfaces.

1. Landing Page Appearance

Figure 1. Landing Page View

On this landing page, users can change the application language. Currently, the available languages are Indonesian and English. To create an account, users can click the "Get Started" or "Sign in with Google" button. However, if they already have an account, they can click the "Sign In" text.

2. Sign Up Page View

Figure 2. Sign Up Page View

On this page, users must fill out several forms to create an account, then click the "Create Account" button.

3. Sign In Page View

Figure 3. Sign In Page Display

On this Sign In page, users must enter the email address and password associated with their previously registered account, then press the "Sign In" button.

4. Home Page Display

Figure 5. Home page display

On the Home page, users can select several buttons: "Start Memorizing," "Add Card," and "Exit." Users will only be able to memorize if a card has been added. Therefore, before pressing the "Start Memorizing" button, users must first add a card by pressing the "Add Card" button. If users wish to log out of their currently signed-in account, they can press the "Exit" button.

5. Add Flashcard Page Display

Figure 6. Add Flashcard page view

On the Add Flashcard page, users can add flashcards to be memorized later. To add a flashcard, users must fill out the "Surah" and "Verse" fields, then press the "View Card" button to display the verse. If the displayed verse is desired to be memorized, users can press the "Add Card" button. Once added, users can immediately memorize the verse by pressing the book icon in the upper right corner of the screen or by going to the Home page first by pressing the three-line icon in the upper left corner of the screen.

6. Study Page View

Figure 7. Study page display (answers and questions)

On the Study page, users can memorize previously added verses. Once they have considered the answer to the question on the card, they can tap the card to reveal the answer. Users can then objectively assess their ability to memorize the verse on a scale of 0 to 5 by pressing the provided button.

Results

Testing

Based on the existing case study, a testing process will be conducted. The object to be tested is the interval generated by the SuperMemo 2 algorithm. The testing process can be seen below:

1. Testing Adding Flashcards

   On the Add Flashcard page, the display appears when adding a flashcard. The user inputs the surah and verse sequences. Then, the user can press the "View Card" button to display the questions and answers. The verse to be added is Surah Yunus, verse 2, which means entering the number 10 in the surah sequence text field and the number 2 in the verse sequence text field.

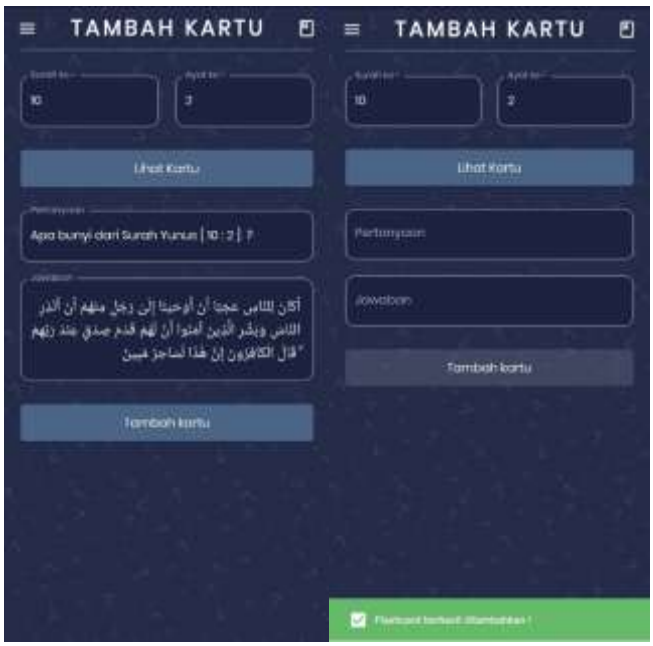

Figure 8. Adding a Flashcard

After the question and answer appear, the user can click the "Add Card" button. By adding the flashcard, the variable values will be set according to the SuperMemo 2 algorithm defaults and will be visible in the Cloud Firestore database. An additional variable is needed to store the date when the flashcard was added or memorized, this variable is called reviewedDate. When adding this flashcard, reviewedDate has a value of 1648955924711 in milliseconds since the epoch, meaning it was added on April 3, 2022.

Figure 9. JSON Data for Surah Yunus: 2

2. Flashcard Memorization Test

After adding a flashcard, the user can memorize/review the flashcard on the Study page. On this page, there are six buttons with values ranging from 0 to 5. These input buttons will allow the user to subjectively assess their level of memorization of the flashcard being memorized. If the user does not remember the memorized text at all, their memorization is scored 0. Conversely, if they can remember it perfectly, their memorization is scored 5. This number will become the quality variable that will be processed by the SuperMemo 2 algorithm. The quality we assign to this flashcard is 3, which means they answered the flashcard correctly but struggled to remember it.

Figure 10. Memorizing Flashcards (question and answer sides)

After the user memorizes a flashcard for the first time, the flashcard variables will change according to the SuperMemo 2 algorithm, based on the quality score the user previously assigned. For this first memorization, the reviewedDate variable changes to 1648955942000, which corresponds to April 3, 2022, because the day the flashcard was added is the same as the day the user first memorized it.

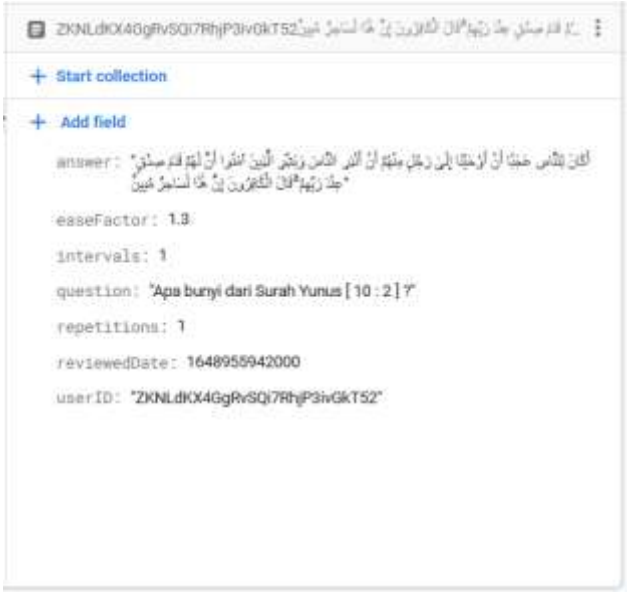

Figure 11. JSON data for Surah Yunus: 2 (after the first memorization)

In the second memorization, the quality was given a value of 5 and was memorized on April 4, 2022 (1649051775000), because the previous interval value was 1.

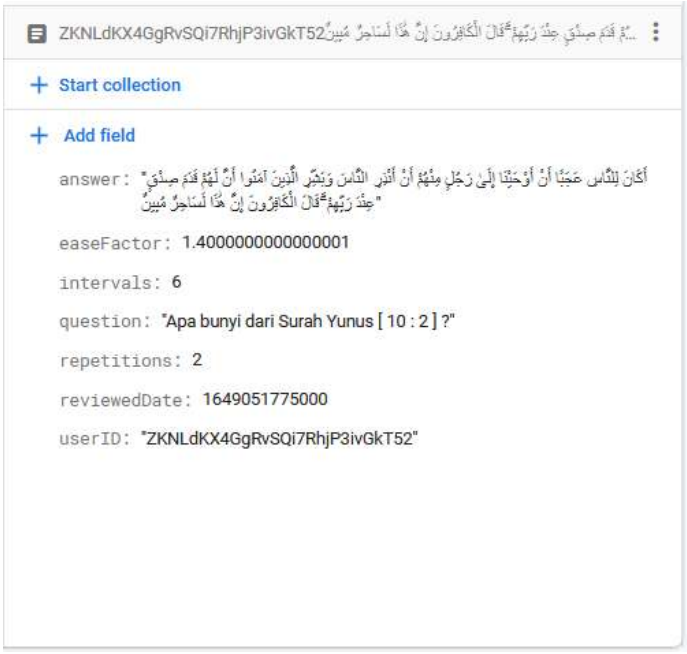

Figure 12. JSON data for Surah Yunus: 2 (after the second memorization)

In the third memorization, the quality was given a value of 5 and was memorized on April 10, 2022 (1649573495000), because the previous interval value was 6.

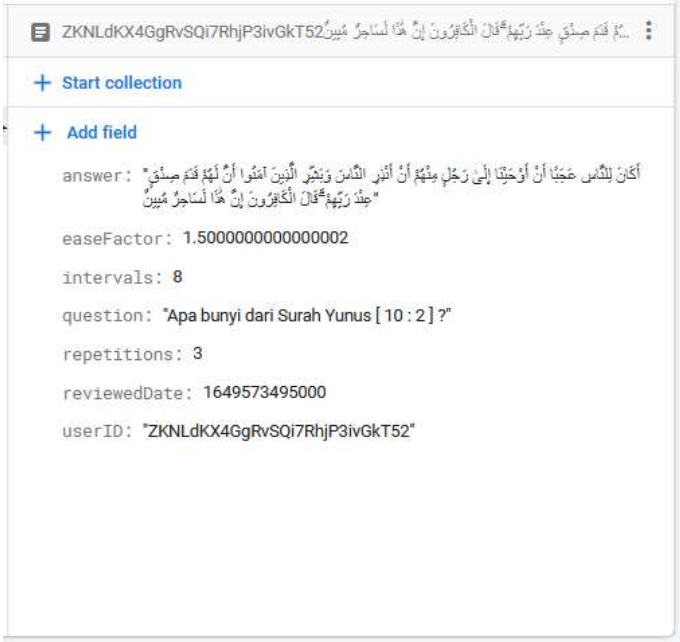

Figure 13. JSON data for Surah Yunus: 2 (after the third memorization)

In the fourth memorization, the quality assigned was 0, and it was memorized on April 18 (1650248434000), because the previous interval was 8.

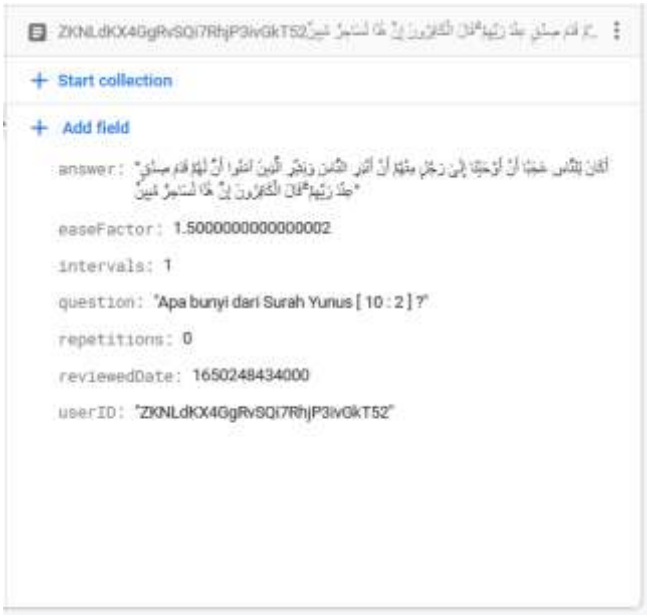

Figure 14. JSON data for Surah Yunus: 2 (after the fourth memorization)

In the fifth memorization, the quality assigned was 1, and it was memorized on April 19 (1650358435130), because the interval was previously 1.

Figure 15. JSON data for Surah Yunus: 2 (after the fifth memorization)

In the sixth memorization, the quality given was 3 and was memorized on April 20 (1650456749121), because previously the interval was 1.

Figure 16. JSON data for Surah Yunus: 2 (after the sixth memorization)

In the seventh memorization, the quality given was 4 and was memorized on April 21 (1650569583620) because the previous interval was 1.

Figure 17. JSON Data for Surah Yunus: 2 (after the seventh memorization)

3. Testing Deleting Flashcards

Deleting flashcards can be done by opening Firestore. There will be an option to delete the entire flashcard or just delete specific fields, as shown in the image below.

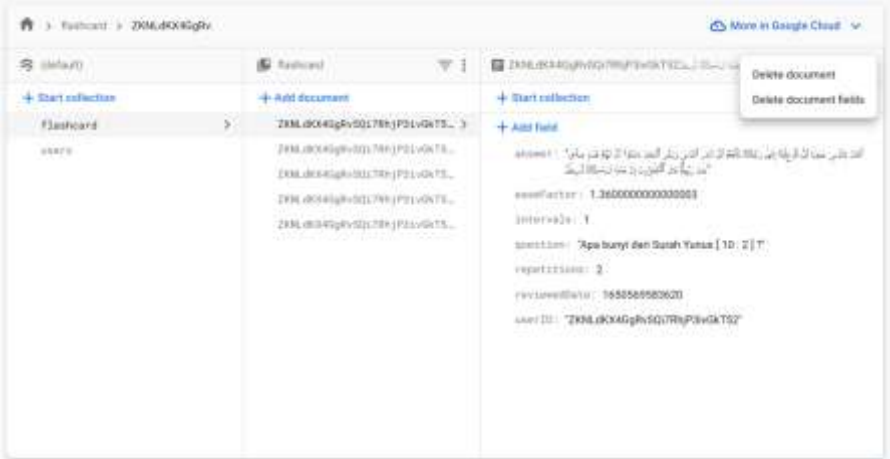

Figure 18. Firestore Database

After pressing this button, a dialog box will appear to confirm deleting the flashcard.

Figure 18. Flashcard deletion confirmation dialog

After confirming the deletion, the flashcard will disappear from Firestore. As shown in the image below.

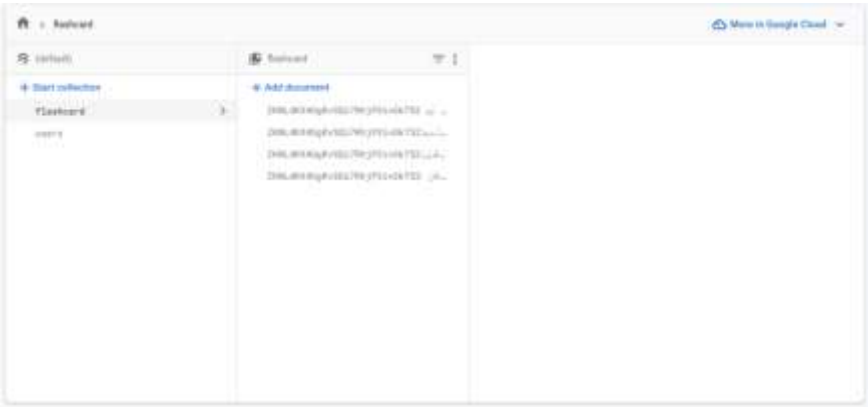

Figure 19. Flashcard has been deleted.

4. SuperMemo 2 Algorithm Calculation

This step will demonstrate the manual calculation of the SuperMemo 2 algorithm based on the previously input quality value. Note that the initial values for the interval, repetitions, and ease factor variables are 0.

For the first memorization, the quality is given a value of 3. The manual calculation is as follows:

1) Repetitions = 1. If the memorization is deemed correct (quality value ≥ 3), the repetitions will be increased by 1.
2) Interval = 1. Since the quality value is ≥ 3 for the first memorization, the interval will be 1.
3) Ease factor = 1.3. Because the calculation result from the Ease Factor formula is below 1.3, its value will be changed to 1.3. The calculation is as follows:

$$EF' = EF + (0{,}1 - (5 - Q) * (0{,}08 + (5 - Q) * 0{,}02))$$
$$= 0 + (0{,}1 - (5 - 3) * (0{,}08 + (5 - 3) * 0{,}02))$$
$$= -0{,}14$$

Next, for the second memorization, the quality score is 5. The manual calculation is as follows:

1) Repetitions = 2. As before, if the memorization is deemed correct (quality score ≥ 3), the repetitions are increased by 1.
2) Interval = 6. This value is already stipulated by the SuperMemo 2 algorithm for the second memorization if the quality score is ≥ 3.
3) Ease factor = 1.4. The manual calculation is as follows:

$$EF' = EF + (0{,}1 - (5 - Q) * (0{,}08 + (5 - Q) * 0{,}02))$$
$$= 1{,}3 + (0{,}1 - (5 - 5) * (0{,}08 + (5 - 5) * 0{,}02))$$
$$= 1{,}4$$

For the third memorization, the quality score is also 5, so the ease factor will not decrease. Here's the manual calculation:

1) Repetitions = 3. As before, if the memorization is deemed correct (quality score ≥ 3), the repetitions will be increased by 1.
2) Interval = 8. When the repetitions value is not 0 or 1, the interval value will be determined using the following formula and rounded up:

$$I' = I * EF$$
$$= 6 * 1{,}4$$
$$= 8{,}4 = 8$$

3) Ease factor = 1.5. Here is the manual calculation:

$$EF' = EF + (0{,}1 - (5 - Q) * (0{,}08 + (5 - Q) * 0{,}02))$$
$$= 1{,}4 + (0{,}1 - (5 - 5) * (0{,}08 + (5 - 5) * 0{,}02))$$
$$= 1{,}5$$

For the fourth memorization, the quality score is 0. A quality of 0 indicates the worst memorization performance. When this occurs, the values of all variables, except the ease factor, decrease. The explanation is as follows:

1. Repetitions = 0. As before, if memorization is deemed incorrect (quality score <3), repetitions will be assigned a value of 0.
2. Interval = 1. This value is a requirement of the SuperMemo 2 algorithm if the quality score is <3.
3. Ease factor = 1.5. When the quality score is <3, the ease factor remains the same as the previous memorization score.

For the fifth memorization, the quality score is assigned a value of 1, so the ease factor remains unchanged. Here's the explanation:

1. Repetitions = 0. As before, if the memorization is deemed incorrect (quality score <3), the repetitions will be worth 0.
2. Interval = 1. This value is determined by the SuperMemo 2 algorithm if the quality score is <3.
3. Ease factor = 1.5. When the quality score is <3, the ease factor will remain the same as the previous memorization score.

On the sixth memorization, the quality score is 3, so the ease factor will decrease. Here's the manual calculation:

1. Repetitions = 1. If the previous repetition score is 0 and the quality score is ≥3, the next repetition score is 1.
2. Interval = 1. If the previous interval score is 0 and the quality score is ≥3, the next interval score is 1.
3. Ease factor = 1.36. Here's the manual calculation:

$$EF' = EF + (0{,}1 - (5 - Q) * (0{,}08 + (5 - Q) * 0{,}02))$$
$$= 1{,}5 + (0{,}1 - (5 - 3) * (0{,}08 + (5 - 3) * 0{,}02))$$
$$= 1{,}36$$

For the seventh memorization, the quality score is 4. The manual calculation is as follows:

1. Repetitions = 2. As before, if the memorization is deemed correct (quality score ≥ 3), the repetitions are increased by 1.
2. Interval = 6. This value is already determined by the SuperMemo 2 algorithm for the second memorization if the quality score is ≥ 3.
3. Ease factor = 1.36. The manual calculation is as follows:

$$EF' = EF + (0{,}1 - (5 - Q) * (0{,}08 + (5 - Q) * 0{,}02))$$
$$= 1{,}36 + (0{,}1 - (5 - 4) * (0{,}08 + (5 - 4) * 0{,}02))$$
$$= 1{,}36$$

The following are the results of the variable values generated by the SuperMemo 2 algorithm from the first to the seventh memorization.

Table 1. Variable Values

Memorize to	Quality	Repetitions	Ease Factor	Interval
1	3	1	1,3	1
2	5	2	1,4	6
3	5	3	1,5	8
4	0	0	1,5	1
5	1	0	1,5	1
6	3	1	1,36	1
7	4	2	1,36	6

The values of the variables above obtained from manual calculations are in accordance with the calculations carried out by the SuperMemo 2 algorithm. Thus, the application can be stated to be running well. To strengthen the validity of the results, this study compares its findings with several previous studies that implemented spaced repetition and the SuperMemo 2 algorithm in different learning contexts. Research by [17] demonstrated that the SuperMemo 2 algorithm produced better learning outcomes compared to the Leitner system, particularly in structured academic environments. Similarly, [18] emphasized that optimized spaced repetition significantly improves long-term retention by predicting optimal review intervals based on memory decay patterns. In addition, [19] implemented the SuperMemo 2 algorithm in a mobile-based application for learning Japanese characters and found that adaptive interval scheduling improved memorization efficiency. The findings of the present study are consistent with these results, as the SuperMemo 2 algorithm successfully generated dynamic intervals that adapt to user performance, thereby supporting effective memorization. However, unlike previous studies that focused on general education or language learning, this research specifically applies the method to Qur'anic memorization, which involves repetitive, structured, and long-term retention processes [20].

Furthermore, when compared to studies on flashcard-based learning such as [21], which reported improved recall performance through active retrieval practice, this study also confirms that combining flashcards with spaced repetition enhances memorization outcomes. Nevertheless, a key difference lies in the integration of religious content and user-centered memorization goals, where motivation and consistency play a significant role. Some variations in results can be attributed to differences in research context, data characteristics, and user interaction patterns [22]. For instance, while previous studies often relied on controlled experimental settings, this study incorporates real user input through subjective quality assessments, which may introduce variability in interval calculations [23]. Despite these differences, the overall pattern remains aligned with theoretical expectations of the forgetting curve and spaced repetition principles [24]. Therefore, this study not only reinforces existing findings but also contributes a novel application by demonstrating the effectiveness of the SuperMemo 2 algorithm in supporting Qur'anic memorization within a mobile learning environment [25].

5. Conclusion

Based on the discussion and testing results, it was concluded that the implementation of spaced repetition using the SuperMemo 2 algorithm performed well. When given the same quality score (memorization ability level), the interval scores (the distance between each memorization in days) obtained from the manual SuperMemo 2 calculations and the testing also yielded the same results. The quality scores, ordered from the first to the fourth memorization, were 3, 5, 5, and 0. The interval scores, ordered from the first to the fourth memorization, were 1, 6, 8, and 1. The interval scores generated by the SuperMemo 2 algorithm will help app users schedule effective Quran memorization time.

With the help of the Dart programming language and the Flutter SDK framework, SuperMemo 2 can be implemented and built into an application on the Android operating system. Dart is used to implement the SuperMemo 2 algorithm in the program, resulting in interval scores. The interval value is adjusted based on the ease and difficulty of the flashcard being memorized. The SuperMemo 2 algorithm's determination of the interval value works successfully thanks to the ease factor, which makes the interval dynamic. This allows the interval to change and adapt its value to the user's memorization ability.

This study has several limitations that provide opportunities for future research. First, the testing is limited in scale and relies on subjective user assessments (quality scores). Future studies should involve larger and more diverse samples, as well as incorporate objective measures such as memorization accuracy and retention rates. Second, this research only uses the SuperMemo 2 algorithm. Further research is recommended to explore more advanced or hybrid algorithms, as well as additional features like gamification, user analytics, and personalized feedback to enhance learning effectiveness. Additionally, comparative and longitudinal studies are needed to evaluate long-term retention and compare different spaced repetition methods.

6. References

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