Diversifying Quranic revision methods using gamification-based teaching material for *tahfiz* education

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Article Info

ABSTRACT

This study discusses the development procedure of the global *tahfiz* game (GTG) as a teaching aid for the Quranic revision subject for *tahfiz* students based on the gamification concept. Comprehensive design and development research (DDR) was used as the research method. The analysis includes conceptual and material development, expert evaluation, testing, and the final product. The development of concepts and materials used in this gamification was based on the theoretical framework of mechanics, dynamics, and aesthetics (MDA), with the application of *tahfiz* education elements. To examine the ability of GTG prototype to tackle the users' needs, we have conducted the usability analysis. The expert teacher's mean score for the trial run on this gamification was high at 4.85. The trial run score for student participants was also high (4.45). The result demonstrated that most of the constructs are perceived at a high level by respondents. Thus, this indicated the high usability of GTG to be used as a teaching aid for a Quranic revision subject. The gamification of Quranic *tahfiz* based on board games has been finalized through recommendations and improvements based on the evaluation. The study findings are expected to be useful for educational institutions or researchers in developing teaching materials using the MDA framework for gamification, particularly in the field of Islamic education.

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1. INTRODUCTION

Tahfiz refers to the activities of memorizing 30 sections or parts of the Quran. Memorizing the Quran has challenges and difficulties that require a systematic, effective and continuous repetition technique to prevent the memorizer from forgetting [1], [2]. Because of that, Prophet Muhammad SAW gave great emphasis to this aspect in a hadith which means preserve (memorize) the Quran. For the sake of our soul that is in His (God) power, indeed the Quran is faster to disappear from memory than a camel is released from its tether [3]. Therefore, one of the responsibilities of a person who memorizes the Quran is to be consistent in reciting and finishing the reading of the Quran to ensure the memorization of the Quran [4].

Previous empirical studies, however, reveal a very concerning situation. According to Misnan *et al.*, not all students enrolled in *tahfiz* education were able to retain their memorization [5]. Furthermore, *tahfiz* Quran students have only a moderate level of repetition in their memorization, even though it is paramount for retaining their memorization [6], [7]. Among the causes of students' failure in memorizing and maintaining good memorization is the lack of motivation and an ineffective repetition system [8].

Furthermore, the weakness was also identified as being caused by the lack of *tahfiz* learning style strategy, where students do not fully implement *tahfiz* learning strategies proposed by scholars in this field [9].

In addition to these factors, other general factors identified as the cause of weaknesses in *tahfiz* achievement are weaknesses in *tahfiz* teaching methods and teachers who still use traditional methods [10], which are limited to just attendance record, tasmi' record book, and the Quran [11]. According to previous study, the level of teaching aids use is still moderate [12]. However, they believe that the use of teaching aids and technology could improve the quality of Quranic memorization [12]. Azmil suggested that traditional methods of *tahfiz* education, which have been practiced previously, should be strengthened, and enhanced by adapting to contemporary teaching and learning technologies [9]. Therefore, we hope that the creation of this Global *Tahfiz* Game (GTG) will be beneficial to *tahfiz* student, by diversifying Quranic repetition method in a fun and interesting method by using gamification concept.

Currently, gamification-based education is one of the innovations created to improve the quality of teaching and learning in this age of technological development and research. Researchers of gamification methods have presented various definitions that mostly touch on the same concept, which involves game adaptation. The word gamification is derived from two English components, game and -ification, which are combined to form gamification. The term "gamification" was coined in 2002 by a British game designer named Nick Pelling, and it became more popular in 2010 [13]. Gamification refers to the process of extracting game design elements in non-game contexts [14]. It also refers to the effort to turn an activity into a game to make the activity more interesting and fun [15], [16], which leads to the learners' willingness to learn, and to be active and take responsibility upon their learning [17].

Gamification in education can be defined as the process of using game elements to impart knowledge to students. Gamification is a technique that uses game elements in a subject to create a pleasant feeling and enjoyable playing experience. The game approach or technique is an attempt to improve educational quality and student transformation from a learning perspective. However, the learning games must be designed in accordance with the gamification framework that is used in the components of an educational subject. Gamification is a concept widely accepted by many due to its ability to yield a positive teaching or learning outcome [18].

According to Hunicke *et al.* [19], the gamification framework of video games is a dynamic system, and the use of the mechanics, dynamics, and aesthetics (MDA) framework can stimulate the desired behavior through the developed gamification. However, the concept that exists is intended for entertainment rather than education. The MDA framework consists of three main components, namely mechanics, dynamics and aesthetics. The mechanical component describes the rules of the video game specifically through programming, data representation and algorithms. The dynamic component is related to the response of the video game mechanism component in real time which is completely dependent on the input from the player and the resulting output. The aesthetic component is the internal and external emotional response that results when players interact with digital games. Table 1 shows the translation of components and elements in the MDA framework.

There are several important components in *tahfiz* education that must be addressed before the developed gamification can be implemented. The main component must be the memorization of the Quran, which is the mainstay of this subject, whether it is all 30 sections of the Quran or a part of it. To preserve the memorization of the Quran, Sulaiman suggested that it could be done according to the person's performance [20]. Individuals who have not memorized the 30 sections must repeat the old memorization before memorizing new verses. Repetition can be done alone, in prayer, with friends, in front of the teacher, listening to Quranic recordings, listening to other students' memorization, or participating in any competition that encourages students to always repeat Quranic memorization. The theoretical framework for the method of memorizing the Quran is shown in Figure 1. Furthermore, tajwid is an important and vital component in reciting the Quran, whether by memorization or reading by looking at the mushaf. This is due to the fact that it is a unique reading method for the Quran as revealed to the Prophet SAW [21], [22].

In this regard, this research was carried out within the framework of developing the GTG as a teaching aid for the Quranic memorization subject based on the MDA framework, with the application of components and theories in Quranic memorization. The development of gamification contributes to the diversification of teaching aids in *tahfiz* education by considering the changing times in the education system, such as the 21st century pedagogy (PA21) and industrial revolution 4.0. This encourages educational practitioners to introduce new approaches and innovations in the teaching and learning process.

Unfortunately, there is no specific gamification available thus far that focuses on the *tahfiz* education especially in Malaysia. Therefore, this study aims to fill the practical gap by taking this opportunity to develop the gamification using a physical game board. The objective is to make Quranic revision learning fun and joy. In parallel, this research attempts to combine Quranic knowledge with gamification elements as an innovation that would be beneficial to Muslim community.

Table 1. The MDA framework [19]

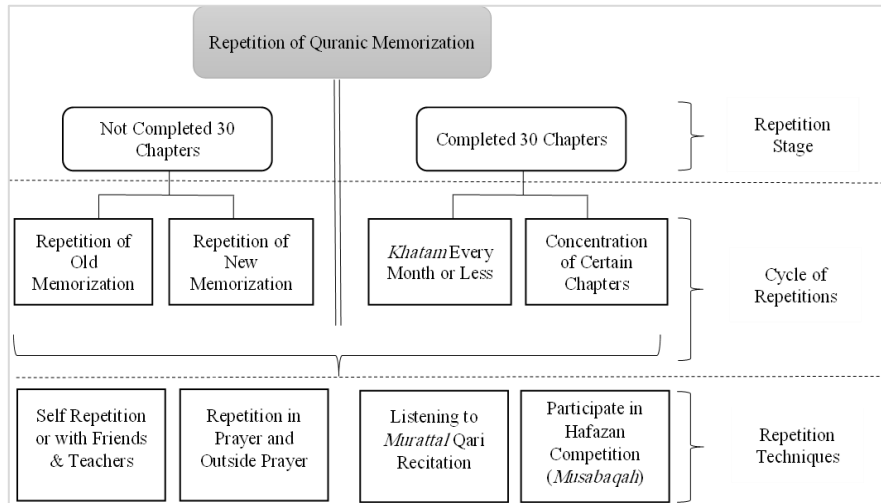| Mechanics	Dynamics	Aesthetics
Points	Reward	Satisfaction
Level	Status	Fun
Challenge	Achievement level	Jealousy
Virtual items	Self-expression	Honor
Leader board	Competition	Relationship
Badge	Altruism	
Gifts and charity		

Figure 1. Quranic memorization repetition theoretical framework [20]

2. RESEARCH METHOD

As shown in Figure 2, this study employs the comprehensive design and development research (DDR) as the methodology for developing the GTG. DDR is a systematic study of design, development, and evaluation processes with the purpose of establishing an empirical basis for the creation of products, tools and new or enhanced models that govern their development [23]. DDR is used in this study because it allows researchers a pathway to test theory, models, frameworks and to substantiate practice. In developing this product, this methodology employs five research phases: analysis, design, development, implementation, and evaluation.
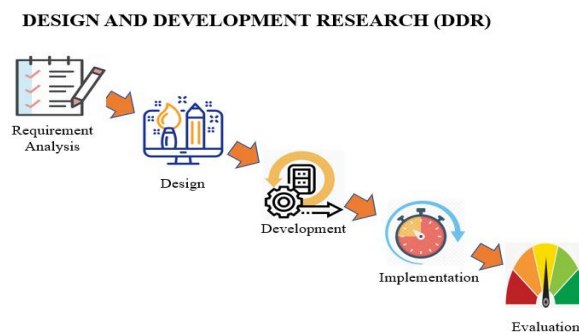

Figure 2. DDR

The study began the analysis phase by analyzing documents and literature on the memorization curriculum syllabus for Malaysian *tahfiz* schools. This aims to determine the true requirements of the GTG content, which will be developed to include different kinds of school memorization syllabi. Furthermore, during this phase, the researchers conduct literature research on the key components of *tahfiz* that will be used in the gamification that will be developed. In this phase as well, the study has conducted a requirement analysis with the clients (potential users), and they have presented what they expect from the gamification.

The design phase began with the identification of the appropriate gamification platform to apply the MDA framework and the repetition component of Quranic memorization by adapting the Malaysian *tahfiz* school syllabus, as well as the determination of the game's difficulty level. During the development phase, the identified design is translated by creating a gamification prototype based on a physical game board. Following that, the developed prototype goes through a trial and implementation process to obtain expert feedback from experienced *tahfiz* teachers and *tahfiz* students at various levels of study. The evaluation responses of the teachers and students are considered in the process of improving the prototype.

3. RESULT AND DISCUSSION

3.1. Needs analysis phase

This study began with a needs analysis phase, which was carried out through a literature review of the issues that arise in *tahfiz* education in Malaysia. The research group conducted a search on literature studies written in the last 15 years using the keywords "repetition of Quranic memorization", "achievement of *tahfiz* students", "*tahfiz* education problems", and "*tahfiz* teaching aids". The data discovered was thematically analysed based on the topic of reciting the Qur'an and teaching aids. Table 2 contains a summary of the needs analysis performed.

The study discovered a need for developing a teaching aid based on gamification to create motivation and fun for students memorizing the Quran, for diversifying learning techniques and strategies, and for developing teaching aids that are in line with the latest learning concepts for the subject of Quranic memorization. In addition to these thematic studies on literature, the study has conducted a requirement analysis with the *tahfiz* teachers (prospective users), and they have presented what they expect from the gamification. This includes the behaviors, features, and contents that should be provided by the GTG in the design and development phase.

Table 2. Thematic needs analysis of literature studies

Aspect	Needs analysis	Source
Quranic memorization repetition	Lack of motivation among students.	[8]
	No effective repetition system.	[8]
	No specific reference was used to overcome the difficulty of memorizing the *mutashabihat* verses	[24], [25]
	The level of the Quranic memorization repetition is at a moderate level.	[6]
	Deficiencies in *tahfiz* learning style strategies.	[9]
Teaching aids	The use of teaching aids and technological tools among *tahfiz* lecturers is at a moderately low level.	[11], [12]
	Teachers still use traditional methods.	[9], [10]

3.2. Design phase

The GTG design phase starts with determining the gamification concept and the content to be used. This study has referred to previous gamification models in Islamic and language studies, such as Global Zakat Game (GZG), Global Halal Game (GHG), Global Faraidh Game (GFG), and Global Arabic Game (GAG). This gamification has adapted some of the concepts that have been used in these previous models namely, game board, answers and questions, and edutainment concepts that involve information, rewards, and penalties.

Even though gamification also exists in both analogue and digital forms, allowing educators to adopt and adapt this concept based on their teaching agenda [18], the concept of a physical scientific game board was chosen for this study. In comparison to the development of gamification based on digital applications, which is limited by the need for computers or gadgets and the internet, the development of physical gamification can provide an easier and more comprehensive space for any school, teacher, and even students to use in most of the *tahfiz* schools in Malaysia. Essentially, this study was developed with the basic concept and framework of MDA, which consists of three main components: mechanics, dynamics, and aesthetics, with minor modifications to meet the needs of this gamification.

The researchers decided that the gamification developed should include a memorization aspect covering 30 sections of the Quran, with the concept that each section can be selected separately to allow students to play this gamification based on their respective memorization levels. This concept is a manifestation of the theory of Quranic repetition, which was previously explained in Figure 1. This GTG's revision concept is based on random questions covering three levels of question difficulty. The challenge theory in the MDA framework can be translated into the developed gamification through random questions and the diversity of these levels. The level of difficulty is shown in Table 3 [26].

This study decided to use sunnah food items such as dates, pomegranates, honey, figs, raisins, and Zamzam water as reward points. The use of these items as rewards is thought to be more compatible with

Islamic-themed gamification. Within the MDA framework, the concept of level and status is also applied in this gamification through the victory of the student who successfully collects the most reward points or can reach the end square first.

The researcher also agreed to apply the rules of tajwid in this game, which is one of the most important and mandatory components of reciting the Quran. Furthermore, issues concerning the safety, health and education management of *tahfiz* schools were added to diversify students' knowledge. It is an important issue that must be emphasized in *tahfiz* education because it has an indirect effect on school performance excellence and can influence student achievement and excellence [27]–[29]. The elements of prizes and fines are also included in the developed gamification to further improve the aesthetic aspects such as the nature of satisfaction, fun, relationship and jealousy among students. The winner can be determined in two ways: by the player who reaches the finish box first or by the player who collects the most points.

Table 3. Difficulty level of Quranic memorization questions

Difficulty level	Item types	Description
Low	The beginning of chapter, the beginning of section, top of page, beginning *maqra'*.	Common verses that started with it.
Medium	Middle of page, mid-*maqra'*.	Verses asked from the middle of memorization.
High	End of page, the end of the chapter or section, the end constituents and sentence bases which are almost the same.	Verses at the end of memorization or have similarity with other verses.

3.3. Development phase

The GTG design is realized through the development of a prototype that includes the elements listed in Table 4. The designed and printed GTG game board, reward management card and game cards are shown in Figures 3 and 4. Meanwhile, Figure 5 illustrates the flowchart of this gamification.

Table 4. GTG prototype game tool list

Matter	Description
Game board	The board measures 49 cm x 49 cm, displaying various boxes that need to be passed in GTG from the beginning of the game to the end. The boxes include the starting box, *tasmik* 1, *tasmik* 2, *tasmik* bonus, order, gift, fine and check tajwid. It is printed with different colors to represent each desired function.
Tasmik cards	GTG contains 330 question cards, with 10 cards representing each section of the Quran and an additional 30 cards containing bonus questions. Each card contains two questions of varying difficulty levels (low, medium, and difficult). The total number of questions contained in all these cards is 660.
Offense warrant cards and orders	GTG also includes 25 Offense Warrant Cards and 25 Command Cards, which contain various instructions and information about fines and rewards.
Tajwid check cards	GTG includes 25 cards that contain information about the law of tajwid as well as laws related to Quranic verses.
Reward management cards and marker pen	GTG includes four plastic laminated Reward Management Cards on which players can record the number of rewards earned during the game using the special pen provided. The plastic-laminated feature allows the reward notes on this card to be erased and written on repeatedly, allowing it to be reused.
Pawns and dice	GTG includes four different colored pieces that represent the four players, as well as a dice that is used to determine the number of steps obtained by the player throughout the game.
Game manual	This booklet contains the GTG introduction, objectives, game manual, and game rules.

Figure 3. GTG game board and reward management card
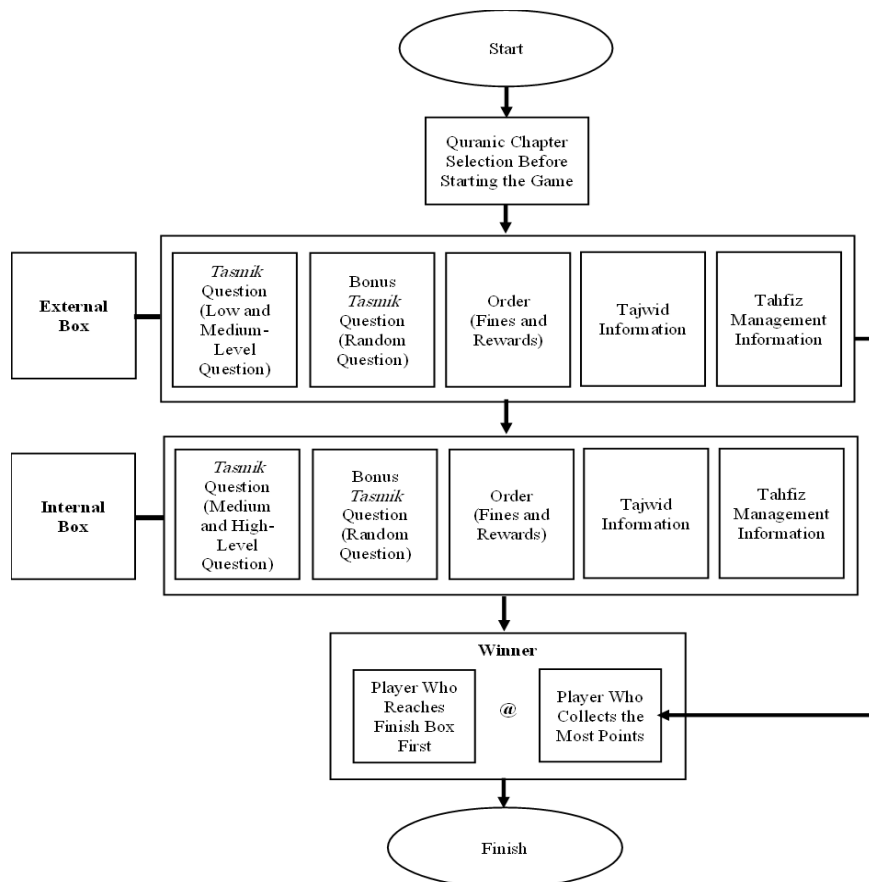
Figure 4. Game cards

Figure 5. The flowchart of GTG

3.4. Implementation and evaluation phase

This study conducted a pilot test of the GTG prototype in three *tahfiz* institutions representing primary, secondary, and higher education. This test involves five expert *tahfiz* teachers who have more than five years of teaching experience and 15 students as respondents. After conducting the trial process, the responses, and opinions of both the *tahfiz* teachers and students were recorded for evaluation and improvement purposes.

The evaluation set used is a modified questionnaire to elicit feedback from participants [30]. This modified version of the questionnaire contains 14 and 13 items for students and teachers, and is divided into five constructs: creativity and innovation, design and technical, content, teacher effectiveness, and student effectiveness. This questionnaire employs a Likert scale with a score range of 1 to 5, with 1 representing strongly disagree and 5 representing strongly agree. The research instrument then was validated by an expert at Universiti Kebangsaan Malaysia (UKM) in the field. The Cronbach alpha score for the instrument is high at 0.83. The collected data was analyzed by using the SPSS statistics 20 software. A descriptive analysis was performed to characterize the behavior of each variable measured. Tables 5 and 6 depict the evaluation set for students and teachers. Meanwhile, the evaluation questionnaire was analyzed using the mean score table shown in Table 6, and the mean score level was evaluated based on nunally as shown in Table 7 [31].

Table 5. GTG usability assessment set for students

Construct	Item
Creativity and innovation	GTG uses a creative learning approach
	GTG is an innovation that is relevant to current needs
Design and technical	GTG game materials are neat and organized
	GTG contains clear graphics and illustrations
	GTG game is easy to use
	GTG's game duration is ideal
Content	The content of GTG is in accordance with the *tahfiz* curriculum syllabus
	GTG content includes various levels of memorization questions
	GTG content helps students review tajwid knowledge
	GTG content adds to students' general knowledge of *tahfiz* institution management
Effectiveness for students	GTG increases student motivation to repeat memorization
	GTG helps students improve their Quran memorization performance
	GTG involves students actively in learning
	GTG creates a healthy competition between students to repeat the memorization of the Quran

Table 6. GTG usability assessment set for teachers

Construct	Item
Creativity and innovation	GTG uses a creative learning approach
	GTG is an innovation that is relevant to current needs
Design and technical	GTG game materials are neat and organized
	GTG contains clear graphics and illustrations
	GTG game is easy to use
	GTG's game duration is ideal
Content	The content of GTG is in accordance with the *tahfiz* curriculum syllabus
	GTG content includes various levels of memorization questions
	GTG content helps students review tajwid knowledge
	GTG content adds to students' general knowledge of *tahfiz* institution management
Effectiveness to teachers	GTG is suitable for use as a teaching aid
	GTG diversifies teaching and learning methods
	GTG helps teachers in teaching and learning

Table 7. Mean score analysis

Mean score range	Level
4.01-5.00	High
3.01-4.00	Medium high
2.01-3.00	Medium
1.01-2.00	Low

Based on the analysis, it was discovered that the usability of GTG is high for each evaluated construct as shown in Table 8. This indicator's overall mean value is 4.65. The creativity and innovation score are 4.70, indicating that GTG is a creative approach for Quranic memorization learning and a relevant innovation to be used in line with current needs. The design and technical aspects also received a high score of 4.66, indicating that it has clear graphics and illustrations, as well as game materials such as boards, cards, dice, pawns, and others that are neatly arranged. Furthermore, the GTG content aspect received a high score

of 4.54, indicating that the GTG memorization questions cover the syllabus of the Quranic memorization curriculum and contain questions of varying levels, in addition to helping students to review tajwid knowledge and increasing students' general knowledge of institutional management *tahfiz*. This analysis also found that this GTG is effective for teachers' teaching in terms of the development of teaching aids and the diversity of teaching and learning methods, with a mean score of 4.87. Furthermore, student feedback demonstrated that GTG has an effective impact on their learning through increased motivation to repeat their memorization, improved memorization performance, student involvement in learning, and increased healthy competition among students to always maintain memorization of the Quran, with scores for these aspects totaling 4.55.

The result demonstrated that most of the constructs are perceived at a high level by respondents. Thus, this indicated the high usability of GTG to be used as a teaching aid for Quranic revision subject. In addition to the score feedback based on this questionnaire, there are some suggestions for improvement made by the teachers, such as corrections to some Quran verses printed on the question cards related to the validity and completeness of the verses.

Table 8. GTG usability mean score

Construct	Student score (Mean)	Teacher score (Mean)	Average (Mean)
Creativity and innovation	4.50	4.90	4.70
Design and technical	4.43	4.90	4.66
Content	4.32	4.75	4.54
Effectiveness to teachers	-	4.87	4.71
Effectiveness for students	4.55	-	
Average mean	4.45	4.85	4.65

4. CONCLUSION

Global *Tahfiz* Game is an effort by the researchers to develop teaching aids in the field of *tahfiz* education to meet the shortage of and need for teaching aids in this field. The novelty of this study is in the aspect of the new Quranic revision learning method using fun and interactive physical gamification board. Despite the previous products has similarities with GTG in terms of the use of the game board, answers and questions and edutainment concepts, the scope of the previous gamification contents is different, which are related to Arabic language and sharia fields such as zakat, *faraidh* (distribution of the deceased Muslim's assets) and halal. As a result, this GTG is distinguished from previous models by its content which covers the revision of the 30 sections of the Quran, the application the rules of tajwid and additional information related to *tahfiz* management. Hence, we filled this gap by proposing the GTG, that will be beneficial for education, especially for learning the Quranic revision subject.

This GTG prototype was created through a systematic process involving comprehensive DDR. A pilot test and usability analysis of this prototype was conducted to ensure that the gamification meets the needs of its potential users. The results of feedback from respondents among teachers and students show that the developed GTG achieved a high score in every aspect covering creativity and innovation, design and technical as well as the content. It also achieved a high score in terms of the effectiveness of teacher teaching and student learning. However, there remains room for many improvements. Further enhancement can be made by providing more questions for each section. In addition, this gamification can be upgraded using digital application platforms in the future. To summarize, the main goal of this study is to create a gamification with a high usability value that can be used as a teaching aid in *tahfiz* education in Malaysia to assist *tahfiz* teachers and increase student motivation in improving the quality and memory performance.

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