



## Building Al-Shatiby learning system of Holy Quran services both Combination and Individual recitation

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### ABSTRACT

Quranic databases management grants researchers, scientists and all Muslims access to all of the information about the Quran in an organized, indexed, documented and in comprehensive way. Quran Readings Science is very broad. The Individual (Ifrad) was the origin of the readings and later it became a facilitator to those who learn the Quran's readings in Combination (Jam'a) - Individuals is a compilation of the similar readings of each verse; however, the different recitations of the Quran are needed by beginners. The authors developed a Computer Software for the Teaching and Training of the Recitations of the Holy Quran using the Seven Recitation Methods of Al-Shatiby covered the first six parts of the Holy Quran. This fact has shed the light on the need to build a system that teaches and recites readings for Individual to be integrated with Combination in order to facilitate the Individual reading of the holy Quran and facilitating searching the rules of Osool for beginners and interested and practicing reciters. This comprehensive system is done through the expansion of the databases management that contain the Combination so that the system includes both the Combination and Individual. The system also includes the link between each Wajeh (way) and Osool that enables searching by a specific Osool (rule) for one or more verses, Sura, chapter, or all the Quran. The databases management system for Individual was designed to utilize the current Combination database without the need to use extra storage space, Osool (rules) relations are added and linked with the existing database to support the search facility. The system is built on two phases : phase 1 where the existing Combination database, which contains Six parts of the holy Quran, is reused by utilizing the texts and audio recording of this system, modifying the needed relations, and linking them to the new relations then update the database to support the Individual recitation and Osool searching. Phase 2 that automatically allows the linking of verses to the relations in the Individual system simultaneously with their insertion in addition the link of the Osool. The system is maintained completely through adding, deleting and editing operations thus allowing the user to obtain both a Combination and Individual systems without the need of doubling the storage area.

**Keywords:** database, computer science, information technology, Seven readings, Individuals, Al-Shatiby.

### 1. INTRODUCTION

It is well known that the best way to learn reading of Quran, is to learn from qualified and authentic scientists (Sheikh's) in one or more of the known narrations. Due to the widespread of the Internet and the ease of use and availability of computers also the daily work of people

hindering them to attend physical learning environments. Nowadays there is an increasing attention to the knowledge of the seven reciting ways, increasing number of authors of contemporary modern books and increasing the number of institutions as well as the spread of the Holy Quran websites. There is an increasing interest of students who wish to learn Quranic information. Despite the spread of sites to learn the seven ways, but they do not link audio recitation with statements explaining the general principles for each of the Imams, narrators and specific words which contain differences in recitation. The science readings were put in poems like: the conservation Shatibiah systems, and Durra, that represents the learning difficulties of the student. The Al-Shatiby , a poem originally named by its author (1400 هـ أبو بكر أحمد) but was latterly called Al-Shatiby to commemorate its author Imam kasem al chatebei, is a long poem in which Imam kasem compiled all the rules of the seven readings in 1173 verses. Imam Kasem derived the rules of the seven readings from the works of Imams Naafi', Ibn Katheer, Abu 'Amr ibn al-'Ala', Ibn 'Amir, 'Asim, Hamzah, and al-Kisaa'i (نافع وابن كثير وأبي عمرو وابن عامر وعاصم وحمة والكسائي). The Osool (Arabic for recitation rules) describes each narrator's recitation mechanism which usually depends on uniform rules special for each narrator and on which his recitation rules are built. Unlike Osool which deals with recitation rules Farsh is a detailed analysis some words' spellings and pronunciations which were disputed upon between readers and are not usually explained by the uniform rules of each reading. The Osool Rule classified according to twenty one unites (themes) and each unit sub themes, and rule (Hokm حكم). Its Divided into three levels unites (themes), sub-themes, and Hokm, more details in (محمد نيهان, 2010).

The reason of this research is to facilitate the link of audio recitation with statements explaining the general principles for each of the Imams, narrators and specific words which contain differences in recitation, and what distinguishes each of the novel and read through Shatibiah, where the use of computers in education and training is very important, and in particular following the significant developments in computational speeds and storage capabilities and the widespread use of Internet. It is a blessing of Allah upon the people that He has enabled the Muslims to contribute in the harnessing of information technology, with particular relevance to the use of computers in the service of the Holy Quran and Sunnah of the Prophet in various ways, both at the hardware and software level.

Most of related sites were interested in the recitations only, without education, and most of the readings programs located were rather about Combination than Individual. IT Research Center for Holy Quran (NOOR) supports developing system called "Development and Implementation of Computer Software for the Teaching and Training of the Recitations of the Holy Quran using the Seven Recitation Methods of Al-Shatiby" project number (NRC1-170) covered the first six parts of the Holy Quran using the Seven Recitation Methods of Al-Shatiby.. The aim of this developing system is to teach recitation of the Holy Quran in seven ways, known as Al-Shatiby's seven methods for reciting the Holy Quran based on the seven Emams: Naafi' , Ibn Katheer, Abu 'Amr ibn al-'Ala' , Ibn 'Amir, 'Asim, Hamzah, and al-Kisaa'i as they took their readings from the Islamic prophet Muhammad (1400 هـ أبو بكر أحمد), (Refeat Hassan, et. al, 2013). The key objective of this application is to combine audio recitation with statements explaining the general principles for each of the Imams, narrators

and specific words which contain differences in recitation, in addition to the evidences from Al-Shatibiah's.

The developed system provides recitations for the readings of the fourteen narrators of the seven Imams. The first of the seven is Imam Naafi, who has two narrators: Qaloon and Warsh. The second Imam is Ibn Katheer, who has two narrators: Al-Bazzee and Qunbal. The third Imam is Abu 'Amrin Al-BaSree Al-Mazinee, who has two narrators: Ad-Dooree. and As-Soosee. The fourth Imam is Ibn Aamer, who has two narrators: Hishaam and Ibn Thakwaan. The fifth Imam is known as 'AaSim, who has two narrators: Shu'bah and Hafs. The sixth Imam is known as Hamzah, who has two narrators: Khalaf and Khallad. The seventh Imam is known as Al-Kisaa'ee, who has two narrators: Al-Layth and Ad-Dooree, This system produced a Combination for the fourteen recitations along with an explanation of the Aya's Osool, Farsh and recitations methods. The system also allows the user to listen to a Combination for each Aya (verse) and can read its Osool and Farsh for all ways (Wajeh), and also allows the user to listen for several specific recitations of the Aya agreed upon by different groups of narrators. The developed system didn't allow the user to listen to the individual recitation for each narrator along with an explanation of its Osool and Farsh for Holy Quran, because the focus was for a Combination rather than the individual recitation. Notice that there are more than fourteen different Wajeh, because some narrators has different ways for his recitation, for example Aya number 282 in Sura Al-Baqra has 35 different Wajehs. Each Wajeh stored in one record, consequently each Aya may have several records according to the number of Wajehs for this Aya. The system displays all those Wajehs for such Aya explaining the Osool for each Wajeh in separate line, enabling the user to listen to the recitation of the this Wajeh. Also the system provide the facility to listen to all the Combination recitations for this Aya for all narrators.

But there is no way to listen to all the Quran for one recitation i.e. only for one narrator. If we need to add this facility we may need to rerecord the recitation at least fourteen times or more (at least one time or more for each narrator, in some cases the narrator may have more than one Wajeh i.e. for Qaloon he has four Wajeh for the same Aya) in addition to recording each explanation of each reading's Osool and Farsh for Holy Quran. This process would take a long time. Consequently this research is to reduce this effort by getting the Individual for all fourteen recitations along with the explanation of its Osool and Farsh for Holy Quran by using the already existing developed system for Combination to extract the Individual recitations for each narrator along with the Osool and Farsh for Holy Quran.

In this paper we first discuss the related research efforts that have been conducted for the Individual and Combination in Holy Quran in section 2. Then we present the developed system for Combination recitations in section 3, and then in section 4 we specify the details of the modified system to support both Individual and Combination. Finally, in section 5 we report our conclusions.

## 2. RELATED WORKS

There are many Arabic references that focus on the Combination of Reading of the Holy Quran and the history and bibliography of each Imam and his narrators (Refeat Hassan, et. al, 2013). The focal point of those references is to make sure that all Imams receive their recitations from Prophet Muhammad PBUH. The second objective of those references is to elucidate the agreement and the differences between the Imams. But we did not find any research related to building the recitations except the internet sites.

The intonation groups in Arabic (Al-Shamayleh, et. al, 2014) hold a research that concerned with intonation groups in Arabic with special reference to the pausing marks in the Holy Quran. This research underlines the distribution of tone- groups in Arabic which could help nonnative speakers of Arabic to learn the similarities and differences between Arabic and their language regarding the distribution of tone-groups. For English people, they will notice the big similarities between English and Arabic in the distribution of tone groups. Tone groups in Arabic correspond to single clause utterances. Arabic speakers can combine two or more clauses in one tone group. Interrelation between syntactic cohesion, significant information units, and semantic considerations organized by some prosodic features as pauses which have been concentrated on in this research; dictate the division of tone groups.

A research regarding The Role of e-learning Software in Teaching Quran Recitation (Yasir mohammed, 2013) is one of the major computer software concerned with the automatic identification/recognition of Quranic voice; this is the Hafs Tajweed Teacher Software. This is done through the monitoring of operational mechanisms and the results of testing of the software were shown before its approval. The experimentation was done in four countries (Egypt, Saudi Arabia, Kuwait, and Libya). Over two hundred users participated in this study under the supervision of professional experts in different disciplines: Administration, Engineering, Language, Tajweed and Education. The statistical results has shown the effectiveness of this software and its featured role in accelerating the student's learning process and increase cognitive learning for the sample of students who were subjected to this pilot study compared to the realizable results of the controlled sample that received the same education in a traditional way .

Another research to develop Virtual Learning System for Quran Recitations memorization and learning for the ten famous recitations and twenty different narrations (Samir Ahmed, et. al, 2013). They have developed a virtual learning system (Electronic Miqra'ah). In this system, the teachers can supervise remotely the registered students and students can interact with the teacher in real time so that they can help them memorize (Tahfeez), guide them for error correction, and give them lectures or lessons through virtual learning rooms. The targeted groups of users can be normal people, blind people, manual-disabled people and illiterate people. They have developed that system such that it takes the commands via voice in addition to the normal mouse and keyboard commands. Users can enter the commands to the system orally and the system recognizes the spoken phrases and executes them. They have developed an efficient speech recognition engine that is speaker independent and accent

independent. The system administrators create several virtual learning rooms and register the licensed scientists. Administrators prepare a daily schedule for each room. Students can register to any of these rooms by pronouncing its name. Each student is allocated a portion of time where he/she can interact directly by voice with the teacher. Other students can listen to the current student's recitation, the error corrections, guidance or lessons from scientists. Other research in the same area presented at Ahmad Adnan, 2013. A research that created a prototype mobile app. for teaching the recitation of the Holy Quran presented by (Mahmoud Elsayess et. al, 2013). A major goal of the cutting-edge Arabic language system is to teach learners in the 81% the proper pronunciation of Arabic words. Their system uses the Arabic version of the Holy Quran according to the rules of Tajweed as its basic teaching resource. The research presented the devolved system, the problems explored when creating its app. and the technical solutions applied to overcome them.

We have searched the internet for sites that took interest in the seven reading and were able to classify them into three main categories. Sites in the first category emphasized gathering the seven readings through Al-Shatiby, Dorra along with their ten readings and providing Audio individuals and Combination recitations of some chapters of Holy Quran (Suras) by a variety of narrators. The sites of the second category, however, have put greater emphasis on explaining Al-Shatiby and reading in the seven readings. As for the third category, its sites further emphasized the differences between the seven readings and explanations linked with evidence from Al-Shatiby for each reading, more details in (Refeat Hassan, 2013).

The following is a summarization of some of those sites:

- Tayser site ([www.taiser.net/quran.php](http://www.taiser.net/quran.php)): This site facilitates the whole ten readings, frequent through Al-Shatiby and al-Durrah. This site contains audio only where Sura is selected and then Sura audio will be heard on the audio or downloaded as mp3. The recitation depends on a repetition of each word in the Sura with different Wajehs without any explanation for each Wajeh for this word inside the text of the Sura. The disadvantages of the work are: It did not attach the text of Sura while the reading, there is no explanation about the differences in the readings and lack of determining the Osool and Farsh. There is no link between the position of readings and Al-Shatiby.
- Islamweb Site (<http://www.islamweb.net/emainpage/index.php>): The site allows the user to listen whole ten readings through twenty narrators (Rawy). You can choose the narrator then choose the reciter (sheikhs) from more than one hundred reciters. The interface supports five languages including Arabic and English. This site contains audio only where Sura is selected and then Sura audio will be heard on the audio or download as mp3. The recitation depends on the repetition of each word in the Sura with different Wajehs without any explanation for each Wajeh for this word inside the text of the Sura. The disadvantages of the work are: It did not attach the text of Sura while reading, there is no explanation about the differences in the readings and lack of determining the Osool and Farsh.
- Disc site or islamcds (<http://www.islamcds.com/>): This is a series of the statements to teach the Quran by several sheikhs. Each sheikh recitation's is printed in a disc. Each disc

contains independent Sheikh recitation's for the Holy Quran. The site represent a collection of different reciters (sheikhs) without any focus to the Combination of the recitation.

### 3. DEVELOPED COMBINATION RECITATIONS SYSTEM

The Recitations of the Holy Quran using the Seven Recitation Methods of Al-Shatiby project [2] is designed to teach recitation of the Holy Quran in seven ways, known as Al-Shatiby. The key objective of the application is to combine audio recitation with statements explaining the general principles for each of the Imams, narrators and specific words which contain differences in recitation, in addition to the evidences from Al-Shatiby. The success of the system and its appeal to, the system is very simple. The information is concise, and the choices are as few as possible. Students who seek to memorize the seven readings of the Quran often find it difficult to fully master them; consequently. This system offered to the reader in addition to a detailed explanation of the Aya's Osool and Farsh, the audio and visual presentations clear and easily accessed through the least number of choices possible in addition to the ability to either hear the Aya recited by all possible readings or choose a specific reading to hear, so that the student can freely choose to repeat what he wants to memorize whether by hearing the Aya recited by every possible form or by hearing the reading and Wajeh he chooses.



Fig 1. Main Screen of the system

To achieve this goal, the work had been divided among three groups. The first group was concerned with preparing all the readings and Wajehs of each Aya along with its Osool and Farsh. The second group, the sound engineering group, first records Combination recitations of all possible readings and forms and makes audio records for all Osool and Farsh then segments the recordings to put each reading Wajeh in a separate file. The third group designed and developed the system on the internet to be accessible by all interested users. Further details on the work of the third group will be latterly given. The main screen of system presented in Fig 1, the system can be reached through the following link:

<http://zad.taibahu.edu.sa/noor/view.aspx>.



The system is designed to provide a unique, accessible and complete environment for the Quran learners; consequently it was decided to design this program as a website in order to make it available to all Quran students including those whose countries lack the capacities or institutions needed for learning the Quran and the seven readings. Because most of these countries are western developed nations where internet access is easy and widespread we found that a website is very suitable.



Fig 2. Screenshot for the Combination recitation

### 3.1 Preparing, Recording and Editing

In this phase, the work team prepared all the readings of each Aya along with its Osool and Farsh to revise them with specialists. This process continued until all Wajeh for this Aya were recorded. Because each Aya may have more than one Wajeh, it was linked with the Al-Shatiby. Furthermore, it is also possible that each verse of the Al-Shatiby linked with more than one Aya. Making a compound audio record of all the Aya's readings along with another audio recording its Osool and Farsh, then segmenting the recordings based on the reading's Wajeh.

### 3.2 Developing the system

Through the former steps we got the Aya recorded with every possible reading (Wajeh) along with its Osool and Farsh; furthermore, we got every reading of the Aya separated as well as the reading's Osool and Farsh; moreover, the verses of Al-Shatiby along with their explanations were written, audio recorded, and linked with the Osool. The architecture for the web application contains three main parts: interface, database, and application server. The interface serves the end user. The main functionality of the system is to help Quran learners. Figure 1 displays the choice of all Wajehs of reading for one Aya. The main system, consists of two parts, the first one support managing the Osool and Farsh through adding modifying or deleting, and the second part for learning the seven readings. In order to enable the student

with better understanding of the explanations of the Osool and Farsh of the Aya, the audio and visual presentations should be clear and easily accessed through the least number of choices possible. The system for learning the seven readings consists of: a- Explanation of how to use the system b- The supporting organization c- bibliography. The user chooses whether to view the Quran as pages or as a tree then the user decides the type of recitation. The database of the seven readings is represented by linking the Aya with the Osool text explaining the general rules of the readings according to the narrator of each reading. In case of group of individual who follow the same rule, the Aya is linked with the chosen Wajeh while each Wajeh has its own Osool text, Farsh text and evidence from Al-Shatiby, see Fig 2 that presents ascreenshot for the Combination recitation.

#### **4. MODIFIED SYSTEM TO SUPPORT BOTH INDIVIDUAL AND COMBINATION**

As a result of analyzing the developed Combination system, we found that it can be adapted easily to support individual recitation and reuse the existing database with some minor modification, and also using the same software program with some minor modification.

##### **4.1 *Modify the Database***

The main focus of our analysis is the Wajeh sentence (that describes the way of recitation) it also linked with Osool (Hokm) through an extensive database encompassing all readings; moreover, a great emphasis was put upon the recitations of Combination table which consists of: The Sura (chapter) number, Aya (verse) and Wajeh (the way of recitation), the name of the Wajeh, the reading's audio file name, and finally textual and audio explanations of Osool and Farsh. One of the most important elements of this table was the Wajeh due to the dependence of the process responsible for identifying individual (ifrad) readings on this record.

The goal of this analysis is to determine the Wajeh's Name and Imam along with the narrator who follows it. We know that there are fourteen narrators, each narrator may has several Wajehs, so we expect that each narrator may have several records for the same Aya in the recitations of Combination table. The information of each Wajeh is embedded in the Osool sentence phrase that represented in Wajeh field in this table (see Fig 2). The way to put this information explicitly in each record can be done through extending this table with fourteen field. Each field can take the name of each narrator. By presenting the Osool sentence phase in Wajeh field for each record we can mark the suitable field(s) of those extended fourteen fields. Notice that each Osool sentence phrase in Wajeh field contains the information about the Wajeh's Name and Imam along with the narrator who follows it, so we can mark the suitable field(s) from those extended fourteen fields that follow this Wajeh. For the Osool Hokm, relations are defined to include all Osool Hokm to be linked with each Wajeh.

##### **4.2 *Modify existing***

For the previous six chapters that already exist in the system to complete the missed information regarding the narrators, we used part of our previous work (Mahmoud M et.al, 2013) by using the sentence phrase Wajeh in each record to determine the narrator(s) of this



Wajeh. This is done by determining the individual narrators from Wajeh sentence phrase using pattern matching. There are three cases for Wajeh sentence phrase. The first case, the phrase contains only one narrator, the second case the phrase contains more than one narrators, and the third one is complicated because it contains the narrator name that is followed by other narrators with different situations. All of those cases maintained by the pattern matching that was explained in our previous work. By determining the narrator(s) for each Wajeh in the record we can easily mark the suitable field(s) to keep this explicit information about each record. Osool Hokm relations are linked with each Wajeh as many to many relations. This enables the user to display any number of Aya(s) that follow this Hokm, also to display all Hokm(s) for such Aya. This will help the user to learn and memorize them through training on the rule of Osool (Hokm).

#### **4.3 Modifying data entry process**

In this phase the data entry for the existing system can be modified to capture the information about the narrator(s) for each Wajeh. This modification is very simple, while entering the Osool sentence phrase for each Wajeh there are fourteen checkboxes which represent the narrators names, the user check the appropriate boxes, then this information is recoded for each Wajeh.

#### **4.4 Modify end user interface**

The current interface as depicted in Fig 2 that presents the Combination also is used to present the individual recitation. To present the individual recitation for such narrator the system will select all Wajehs for a specified narrator that is represented in the same main table that match only records marked for this narrator for such Aya.

### **5. CONCLUSION**

Notably, most websites related to Quranic-sciences were mainly concerned with the audio-recitation only without actual teaching being involved. Additionally, most of the current and relevant software programs were only concerned with the combined recitations without considering the individual. Hence, due to the need for also learning individual recitation, this work has emerged to address this requirement through developing a software program that includes the teaching and recitation of individual by deductions made from the combined Quranic-recitations. It also provides a facility to learn and memorize the rule of Osool (Hokm) through displaying all Aya(s) that follow this Hokm.

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