DESIGN AND IMPLEMENTATION OF YORUBA LANGUAGE MOBILE TUTOR

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Abstract

Yoruba is a popular indigenous language in Nigeria alongside Hausa and Igbo. English language is however the main medium of communication especially in schools and institutions of learning. Over the years there has been unhealthy rivalry and competition between English language and the indigenous Nigerian languages with the latter struggling for survival. The rivalry is further worsen by the wide adoption of mobile technology which is mostly bundled with resources written in English language. Young Nigerians who have not been exposed to Yoruba language as their native language often find it difficult to speak, read, learn and write Yoruba language. There is the fear of trading Nigerian indigenous languages for English Language as the main means of communication due to modernization. The focus for this work is to present the design and implementation of an interactive mobile application with basic tutorials in the learning of Yoruba language on handheld devices. The system has features that assist users to do basic translation of English to Yoruba and fundamental tutorials that will enable people to learn, write, read and speak Yoruba language fluently. The application was designed and modelled with Unified Modelling Language and developed using HTML5, JavaScript and CSS. The application runs seamlessly on handheld devices which has a deep level of penetration and adoption in Nigeria.

Keywords: Handheld, indigenous language, mobile, Nigeria, tutor and Yoruba.

1   INTRODUCTION

Yoruba is a language spoken natively by about thirty million people in Nigeria and in the neighbouring countries of the Republic of Benin and Togo [1]. English language today however being the major language of communication in Nigeria (particularly in educational institutions) poses great threats to the continued existence of indigenous languages like the Yoruba language [2]. It is not uncommon to find Yoruba homes where the language is hardly ever spoken by parents to their children [3]. Even in schools, the learning and speaking of the language is confined to language classes [4]. In order to ensure its continuity and accessibility to the upcoming generation of Yoruba children, it is important to explore viable media that will foster continuity [5]. Mobile devices (especially the mobile phone) are one such option [6].

Since their introduction into Nigeria in 1998 by President Olusegun Obasanjo, the mobile phone adoption has increased remarkably. Today, mobile phones are ubiquitous devices among the Nigerian populace - young and old; rural and urban dwellers [7]. This motivates the exploration of this medium in this study as an option to preserve the Yoruba language and make it easily accessible to those who also intend to learn the language. This study is however not the first to explore opportunity in mobile devices as means of learning a language. A number of wonderful mobile applications have been developed along this line. They are discussed in the paragraphs that follow:

Learn Basic Yoruba [8] is an Android-based application that provides English to Yoruba translation for basic and common Yoruba words and sentences used daily. It is more like a reference that can be used on the go. Its lack of voice makes it difficult for user to learn the true pronunciations of words - especially given that Yoruba is tonal language [1]. Another mobile application is Yorùbá101 [9]. It is a fun and educative app that gets a user acquainted with Yoruba using a combination of games, voice, text and graphical illustrations. Yorùbá101 mobile application is developed with the belief that the user has no prior knowledge of the language. Each module builds on the other providing the user with an incremental acquisition of the language. It also makes it possible for learners to monitor their learning progress across every module by playing simple interactive games with performance indicators at the end of each helping the learner to realise areas that require more attention. Its draw back however has to do with wrong tonal markings of words which can mislead intending learners. The aim of this paper therefore is to develop a mobile application that will make the learning and speaking of Yoruba

language easy and popular amongst the upcoming generation by making it available on various mobile devices.

2   METHODOLOGY

To realise the aim of this paper, we begin by modelling the proposed mobile application using the Unified Modelling Language (UML). UML is a diagrammatic object-oriented modelling language. It uses diagrams to document an object-based decomposition of systems and to show the interaction between these objects and the dynamics of these objects [10].

The application in this study was developed using tools that will make it run on the various mobile platforms that exist which include: Android, BlackBerry and IOS. HTML5 was used to create the user interfaces for the application [11] [12] [13]. JavaScript was used to handle data transfer from the user interface to the application's storage and to also query requests from the storage to the user interface. Cascading Style sheets (CSS) is used for styling the user interfaces thereby making them aesthetically pleasing to the would-be users of the system. Putting it all together, HTML, CSS, and JavaScript are suitable tools for cross-platform mobile application development because they align with Web paradigms, and then are standardized, popular, reasonably simple but powerful and well-supported [12].

3   RESULTS

3.1   UML Diagrams

3.1.1   Use Case Diagram

Use case diagrams show a system from an outsider (e.g. user) perspective [14]. In other words, it shows the overall functionality of a system from the perspective of a user. The use case diagram for the proposed mobile application is depicted in Fig. 1.
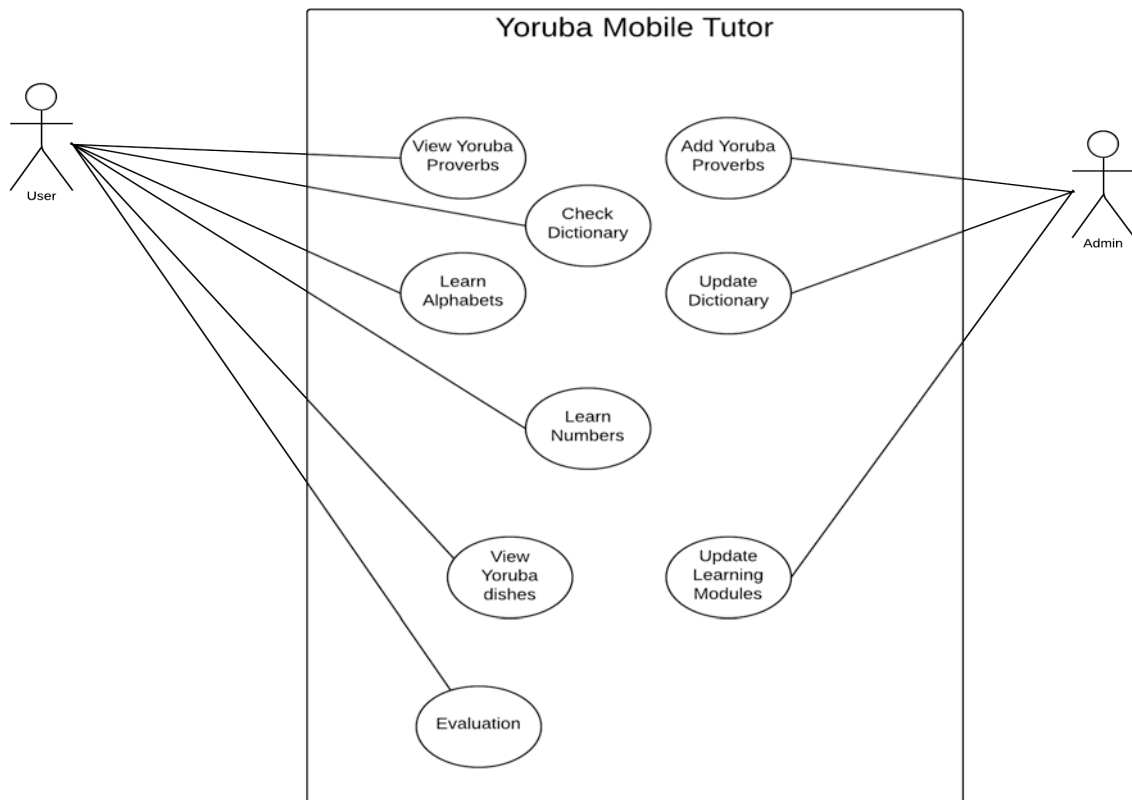

Fig. 1: Use Case Diagram for Yoruba Language Mobile Tutor.

3.1.2 Sequence Diagram

Sequence diagrams are a kind of interaction diagram that shows the sequence of messages exchanged in the context of a specific scenario [15]. The sequence is in time order and is very intuitive and ideal for discussing requirements with clients or to acquire an initial understanding of the system being modelled. The sequence diagram for the application is depicted in Fig. 2.
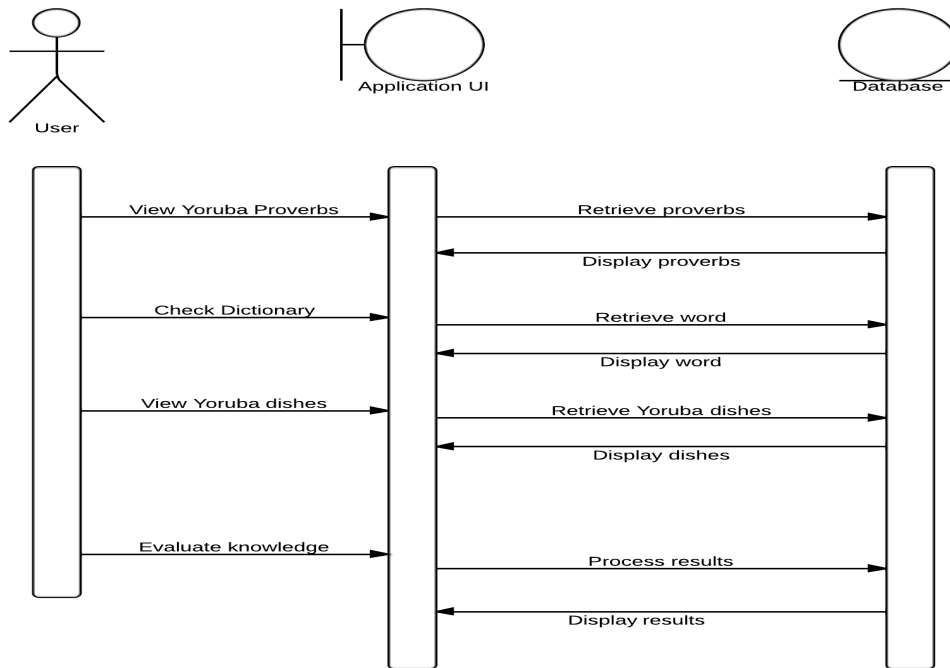

Fig. 2: Sequence diagram for the application.

3.2 Application User Interfaces

Some of the user interfaces of the proposed application are described in the sub-sections that follow:

3.2.1 Yoruba Dictionary

The dictionary module serves as a reference tool in learning the language. It is depicted in Fig. 3
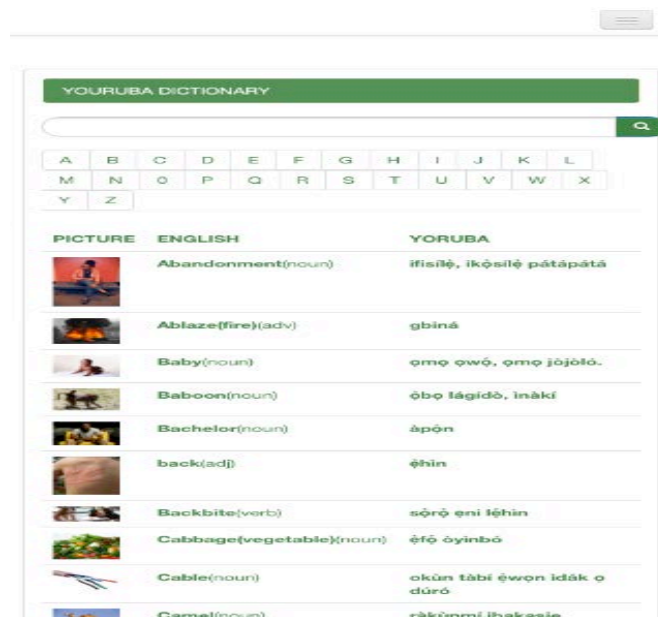

Fig. 3: Screenshot of the dictionary module.

3.2.2   Yoruba Proverbs and their Meanings

This module contains Yoruba proverbs and their meanings. It is depicted in Fig. 4

Fig. 4: Screenshot showing Yoruba proverbs with their meanings.

3.2.3   Parts of the Human Body

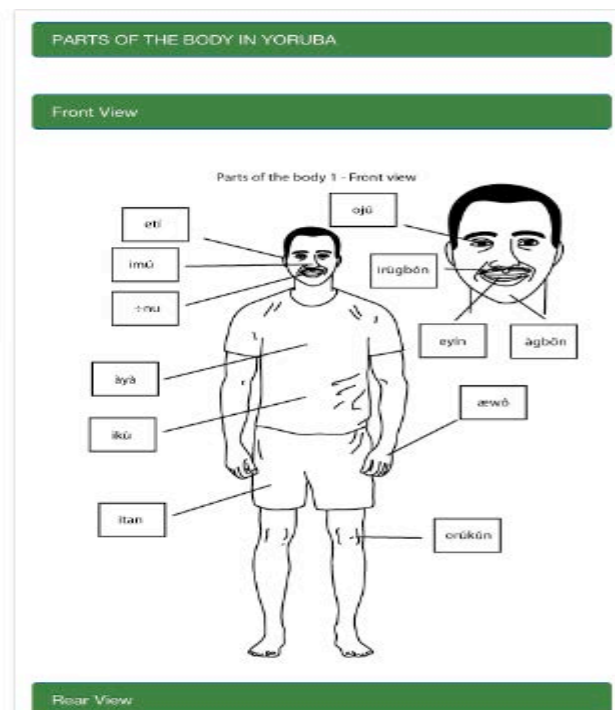This module describes the parts of the human body in the Yoruba language. It is depicted in Fig. 5

Fig. 5: Screenshot showing body parts and their translations in Yoruba.

3.2.4 Evaluation of a User

This module allows a user to test knowledge gained in the learning process. It is depicted in Fig. 6.

Fig. 6: Screenshot showing questions to evaluate a user's understanding of Yoruba.

3.3 System Evaluation

A comparison between the proposed system and existing ones is given in Table 1.

Table 1: Comparing the proposed application with existing ones.

Systems / Characteristics	Proposed System	Yoruba101	Learn Basic Yoruba
Yoruba Dictionary	*	N/A	Only basic words used in everyday conversations
Provides learning assessment	*	*	N/A
Teaches proverbs	*	N/A	N/A
Uses text, picture and sound	*	*	Sound is yet to be implemented
Cross-platform	*	*	*

The comparison is made based on five criteria which include: whether or not a dictionary was implemented; whether or not learning assessment can be done; whether or not proverbs are taught by the system; the use of text, picture and sound in teaching the language and finally whether or not the application is cross-platform. The (*) symbol denotes that an application satisfies the feature against which it is evaluated. N/A signifies that an application does not possess the particular feature against which it is evaluated. Overall, the proposed application implements the features of the existing applications and more so making it a better tool for learning the language.

4   CONCLUSION

This paper has discussed the design and implementation of a mobile-based Yoruba Language Tutor. The system was implemented as a cross-platform application able to work on the various mobile platforms. Comparing the software to existing ones, it was observed that the proposed software provides more features than existing ones. In future work, the plan to evaluate the usability of the system while also improving on the features of the application is in the making.

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