

# Cloud Mobile Learning for Hearing Impaired Candidates

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**Abstract**— This paper presents a modern aspect of computer science application deals with Mobile Cloud Computing (MCC) and e-Learning as well as computer application for Hearing Impaired Candidates (HI). The major aim is to design and implement an authoring system which can generate tutorial lessons oriented to HI candidates however those lessons would be displayed on Mobile while all process of generating, saving and retrieving them in the cloud. Mechanism of generating lessons is simply the teacher submits his instructional material in text to the system. In the cloud two tasks to be acted, reconstruct the submission into typical tutorial lesson, then translating each word in corresponding video cut. Therefore HI students can read contents of the lesson in sign language. There are security issue has been considered to protect data base. Results of testing the system were positive and the system can successfully generate tutorial lessons for HI students via MCC.

**Index Terms**— Android, Hearing Impaired, Mobile Cloud Computing, tutorial lessons.

## I. INTRODUCTION

“One child, one teacher, one book and one pen can change the world” stated Malala Yousafzai (2013) the youngest Nobel Prize laureate expressing her trust in the power of education. , The integration of mobile communication and E-learning techniques has generated a new dynamic area that needs further exploration and investigation. This area is forming a new trend, called m-learning. It will lead to a revolution and have a strong impact on education, business and computing disciplines. Using mobile technology for Sign language is really valuable, and can improve learners ‘learning and communication capacity. In addition, texting in a foreign language may be difficult if people who are deaf having limited English (Thornton, & Houser, 2005). [1]

The current study aims to help hearing impaired students to use mobile information and communication technologies effectively and consciously, and provide them with enriched instructional and communication experiences. Within this framework, an instructional process will be designed, developed, implemented, testing and evaluated in order to ameliorate instructional practices of hearing impaired person. [2]

HI students need effective visual mode of communication; the multimedia techniques using speech visualization

strongly provide the required visual effects (animation, images, pictures, diagrams, signs, charts, flashing, lighting, colors, etc.) to HI student. This visual output tries to overcome the disability of Hearing impaired (HI) students in the communication mode. [3]

Mobile cloud computing at its simplest refers to an infrastructure where both the data storage and data processing happen outside of the mobile device. Mobile cloud applications move the computing power and data storage away from mobile phones and into the cloud, bringing applications and MC to not just smartphone users but a much broader range of mobile subscribers’. "Aepona" describes MCC as a new paradigm for mobile applications whereby the data processing and storage are moved from the mobile device to powerful and centralized computing platforms located in clouds. These centralized applications are then accessed over the wireless connection based on a thin native client or web browser on the mobile devices.

Alternatively, MCC can be defined as a combination of mobile web and CC, which is the most popular tool for mobile users to access applications and services on the Internet. [5]

## II. TYPES OF MOBILE CLOUD

Mobile Cloud can be classified into four types on the basis of location and host:

- a) Public Cloud: Computing infrastructure is hosted at the vendor’s premises.
- b) Private Cloud: Computing architecture is dedicated to the customer and is not shared with other organizations.
- c) Hybrid Cloud: Organizations host some critical, secure applications in private clouds.
- d) Community Cloud: The cloud infrastructure is shared between the organizations of the same community

## III. BENEFITS OF MOBILE CLOUD IN M-LEARNING

Following are the important benefits while using mobile cloud in m-learning.

- a. Improved Performance

With fewer overfed programs hogging your mobile memory, we will see better performance from your mobile device, because they have fewer programs and processes loaded into mobile memory.

- b. Instant Software Updates

When the app is web-based, updates happen automatically and are available the next time you log on to the cloud. When

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you access a web-based application, you get the latest version without needing to pay for or download an upgrade with your mobile device.

c. Improved Document Format Compatibility

In mobile cloud, we have more compatibility for opening the files, applications easily with installation of several software's on mobile device.

d. Device Independence

You're no longer tethered to a single mobile device or network. Change mobile devices, and your existing applications and documents follow you through the cloud.

e. Lower Costs

One does not require a high-powered and high-priced computer to run mobile cloud computing web-based applications, since applications run in the cloud, not on the desktop PC. When you're using web-based applications on mobiles need not required any memory space and as no software programs have to be loaded and no document files need to be saved [6]

IV. THE PROPOSED SYSTEM

Below the major steps and diagrams which describes the proposed system:

Figure (3.1) shows all the stages of the proposed system. In this chapter, we will explain all the above stated methods which are required for construct the proposed system.

As stated earlier, the present research work is an amalgamated effort satisfies special educational needs of HI persons, with the help of current technology. The proposed System for Hearing Impaired Persons,

Technique of Displaying Multimedia Video Clips of Sign Language need to Read the sentence in the text of Rich text object) word by word in sequence then ask if the Word is present in the sign language video clips. ....Figure3.2 will explain the steps

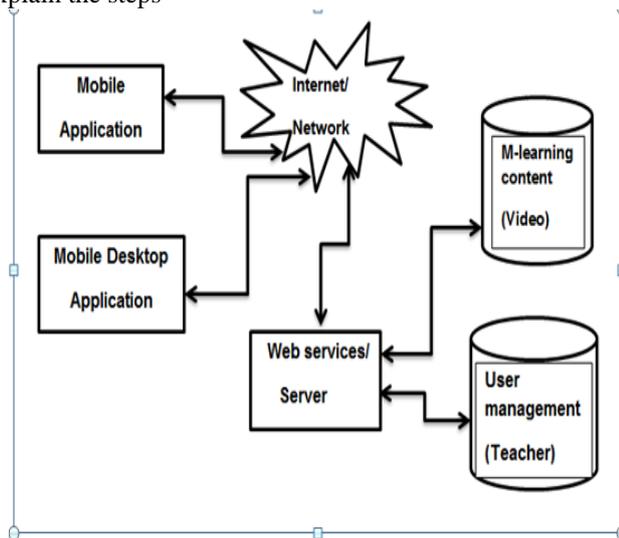


Figure 1: A block diagram of the proposed system architecture

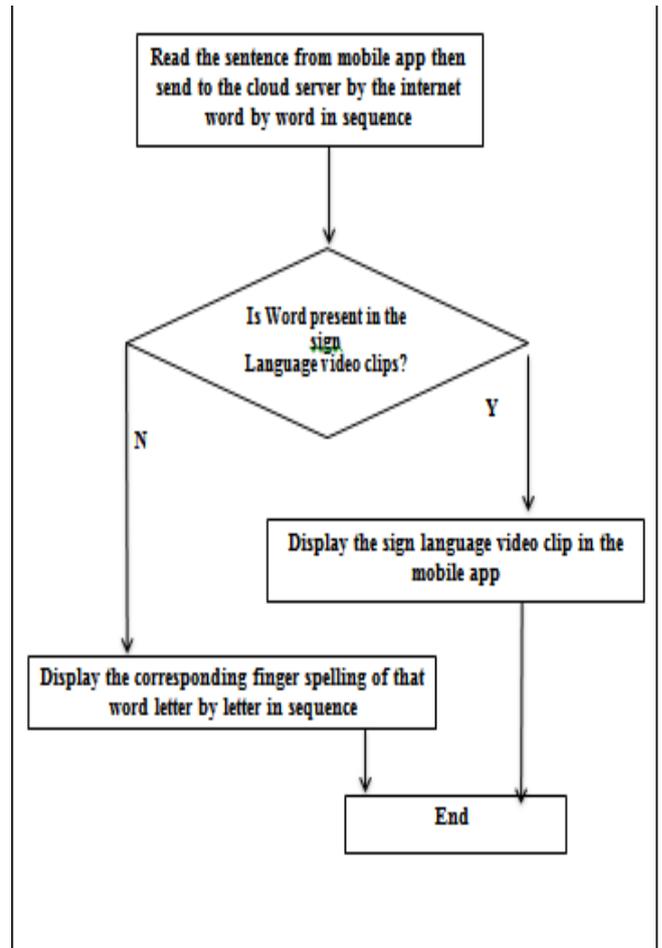


Figure 2: Word by Word

V. TRIPLE-DES

The Triple-DES variant was developed after it became clear that DES by itself was too easy to crack. It uses three 56-bit DES keys, giving a total key length of 168 bits. Encryption using Triple-DES is simply

- a. encryption using DES with the first 56-bit key
- b. decryption using DES with the second 56-bit key
- c. encryption using DES with the third 56-bit key

Because Triple-DES applies the DES algorithm three times (hence the name), Triple-DES takes three times as long as standard DES. Decryption using Triple-DES is the same as the encryption, except it is executed in reverse.

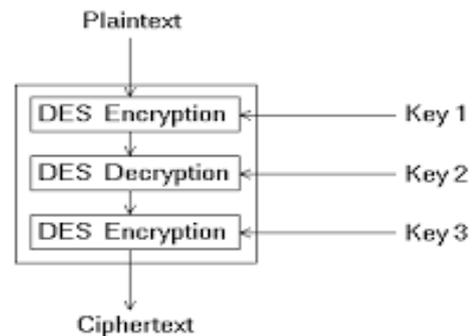
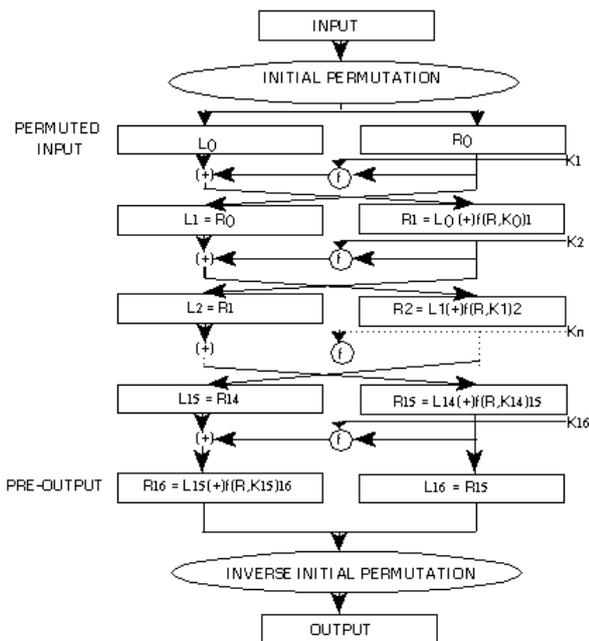


Figure 3: Triple DES



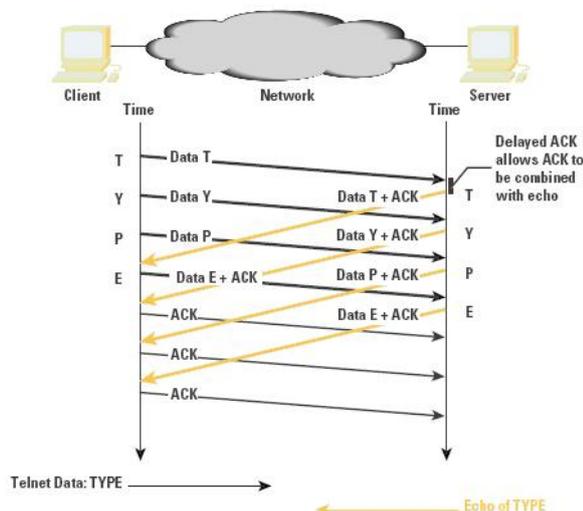
**Figure 4: des algorithm diagram**

The figure should hopefully make this process a bit more clear. In the figure, the left and right halves are denoted as  $L_0$  and  $R_0$ , and in subsequent rounds as  $L_1, R_1, L_2, R_2$  and so on. The function  $f$  is responsible for all the mappings described above.

#### VI. THE TCP/IP PROTOCOL

The protocol stack used on the Internet is the Internet Protocol Suite. It is usually called TCP/IP after two of its most prominent protocols, but there are other protocols as well. The TCP/IP model is based on a five-layer model for networking. From bottom (the link) to top (the user application), these are the physical, data link, network, transport, and application layers. Not all layers are completely defined by the model, so these layers are “filled in” by external standards and protocols. The layers have names but no numbers, and although sometimes people speak of “Layer 2” or “Layer 3,” these are not TCP/IP terms. Terms like these are actually from the OSI Reference Model.

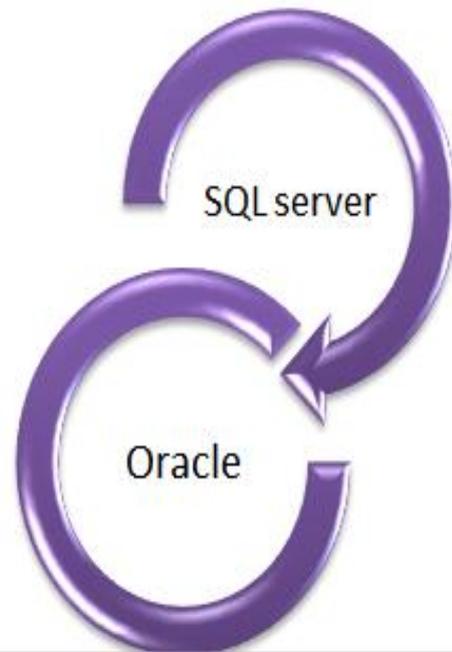
The TCP/IP stack is open, which means that there are no “secrets” as to how it works.



**Figure5: TCP algorithm**

#### VII. ORACLE SQL DEVELOPER

Oracle SQL Developer is a free, integrated development environment that simplifies the development and management of Oracle Database in both traditional and Cloud deployments. SQL Developer offers complete end-to-end development of your PL/SQL applications, a worksheet for running queries and scripts, a DBA console for managing the database, a reports interface, a complete data modelling solution, and a migration platform for moving your 3rd party databases to Oracle.



**Figure 6: relation between SQL & Oracle**

#### VIII. DATA MODELING WITH ORACLE SQL DEVELOPER

Oracle SQL Developer Data Modeller is a free graphical tool that enhances productivity and simplifies data modelling tasks. Using Oracle SQL Developer Data Modeller users can create, browse and edit, logical, relational, physical, multi-dimensional, and data type models. The Data Modeller provides forward and reverse engineering capabilities and supports collaborative development through integrated source code control. The Data Modeller can be used in both traditional and in Cloud environments.

Oracle SQL Developer Data Modeller is a data modelling and database design tool that provides an environment for capturing, modelling, managing, and exploiting metadata.

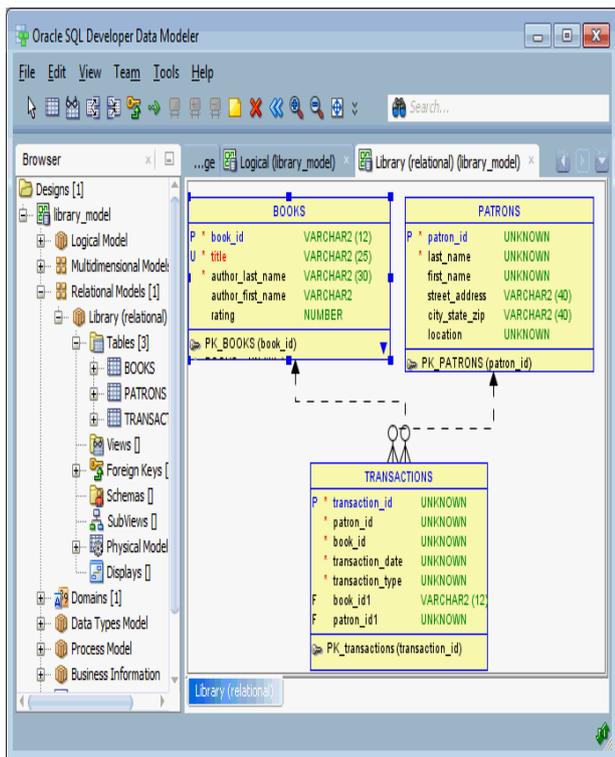


Figure7: Oracle SQL Developer Data Manager

IX. ANDROID PERMISSION

The purpose of permission is to protect the privacy of an Android user. Android apps must request permission to access sensitive user data (such as contacts and SMS), as well as certain system features (such as camera and internet). Depending on the feature, the system might grant the permission automatically or might prompt the user to approve the request.

provides an overview to how android permissions work, including: how permissions are presented to the user, the difference between install-time and runtime permission requests, how permissions are enforced, and the types of permissions and their groups. If you just want a how-to guide for using app permissions, instead see Request App Permissions.

Permission approval

An app must publicize the permissions it requires by including <uses-permission> tags in the app manifest. For example, an app that needs to send SMS messages would have this line in the manifest:

```
<manifest
xmlns:android="http://schemas.android.com/apk/res/android"
...
    package="com.example.snazzyapp">
...
        <uses-permission
android:name="android.permission.SEND_SMS"/>
...
    </uses-permission>
...
</manifest>
```

If your app lists *normal* permissions in its manifest (that is, permissions that don't pose much risk to the user's privacy or the device's operation), the system automatically grants those permissions to your app.

If your app lists *dangerous* permissions in its manifest (that is, permissions that could potentially affect the user's privacy or the device's normal operation), such as the SEND\_SMS permission above, the user must explicitly agree to grant those permissions.



Figure 8: screenshot android permission

X. RESULTS AND DISCUSSION

Below some selected output results with description;

After building application now how can **Play Video File from in cloud**

First, Open your main application platform then drag Video View and choosing from list of video or writing a word Now run your project...only video in sign language will display on Video View .



Figure9: Mobile Application

#### XI. LOADING VIDEO

At this stage, there are two type of the operation: online and offline video processing. The Online can be done by taking the video direct from the cloud and buffered it to get the capturing operation. While the offline can deals with loading the stored video in the mobile.

#### XII. AUTHENTICATION BY ORACLE DATABASE

Oracle Database can authenticate users attempting to connect to a database, by using information stored in that database itself. To set up Oracle Database to use database authentication, you must create each user with an associated password. The user must provide this user name and password when attempting to establish a connection. This process prevents unauthorized use of the database, because the connection will be denied if the user provides an incorrect password. Oracle Database stores user passwords in the data dictionary in an encrypted format to prevent unauthorized alteration. Users can change their passwords at any time.

#### XIII. PASSWORD ENCRYPTION WHILE CONNECTING

Passwords are always automatically and transparently encrypted during network (client/server and server/server) connections, using DES (Data Encryption Standard) before sending them across the network. now we explain

#### XIV. CONCLUSION

The authors summarized their conclusion as shown:

- a. The System supports the teacher to introduce the tutorial for several topics to be displayed in one list on mobile screen. The teacher needs simple basic skills of suing computer also he needs not for experience in sign language or finger spelling. The teacher is asked to submit his exercises and keys of questions only.
- b. . Reinforcement is the key of learning. Such visual reinforcement is displayed with fun & enjoyment in our system. Also feedback of incorrect answer leads to friendly learning tool to HI learner.

- c. HI learner takes the central role in the teaching / learning process via m-learning system..
- d. Authoring System provides individualization in teaching / learning process. It accommodates diversity through universal design.
- e. The System translates the input word into sign language if the word is present in the vocabulary and displays as sign language video clip. If it is not present, it would be displayed as finger spelling letter by letter through sequential clip.
- f. This system is a valuable for HI students who learn English language. Therefore to develop modified system which can process any desired language of teacher is a great challenge step forward supporting HI persons round the world

#### XV. ACKNOWLEDGMENT

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