

## REQUIREMENT ANALYSIS

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### 3.1 Introduction

This chapter will describe problem domain to the project and the requirement elicitation. The analysis begins with a problem statement. The statement might be incomplete or informal and the analysis makes it more precise and exposes ambiguities and inconsistencies. It is important to specify the problem domain and determine the characteristics to deliver better product.

### 3.2 Problem Domain

The problem of	Non-availability of a mobile based application for language learning.
Affects	All registered subscribers.
A successful solution would be	Provide mobile based language learner for subscribers They can access information in short time. A user-friendly system. Secure site

Table 3.1 – Problem Domain

Knowledge of foreign languages is indispensable in the modern world. However, allocating time to learn foreign languages may be difficult due to various reasons. As mobiles and hand held devices are very popular these days, availability of a mobile-


based language learner is a boon to anyone who wishes to learn a foreign language. It does not require much time and it is not an arduous task to access it. So any WAP enabled web site mobile subscriber can access this mobile language learner virtually in anywhere of the world at anytime of the day.

### 3.3 Functional Requirements

- System shall provide user login and allow the subscriber to log on to the system.
- System shall provide user validation.
- System shall allow the user to select desired learning language
- System shall allow the user to select desired level.

### 3.4 General Process Flow

Develop the WAP enable application with the following main functions

- Subscriber validation when logging in to the system  
 Subscribers can register in the MLL and when logging will validate against the MLL database and authenticated subscriber will be allowed to navigate. Database will keep track when a subscriber logoff from the system and update the database last lesson accessed. When he / she logon to the next time, the system will move to the next lesson.
- Browse through desired language selection  
Subscriber can access desired language English / German / French and the proposed application only allow to access English language.
- Select subscriber skill level according to the knowledge of the subscriber  
He / she can select the skill level such as Beginner / Intermediate / Expert. The lessons are selected according the levels.
- Navigation through lessons  
Download and listen to the lesson using sound file  
MLL will allow downloading the sound file of the lesson as .mp3 / .mmf and subscribers can listen to it.
- Dictionary

Subscribers can type any word can check for its meaning and MLL will display three main meanings of that word.

- Design and develop a Database

Database should be developed in such a way to produce fast response to subscriber queries and hold necessary data.

- Develop admin application for the following
  - Subscriber creation
  - Insert text data to the system
  - Insert sound file to the system

### Scope of the application

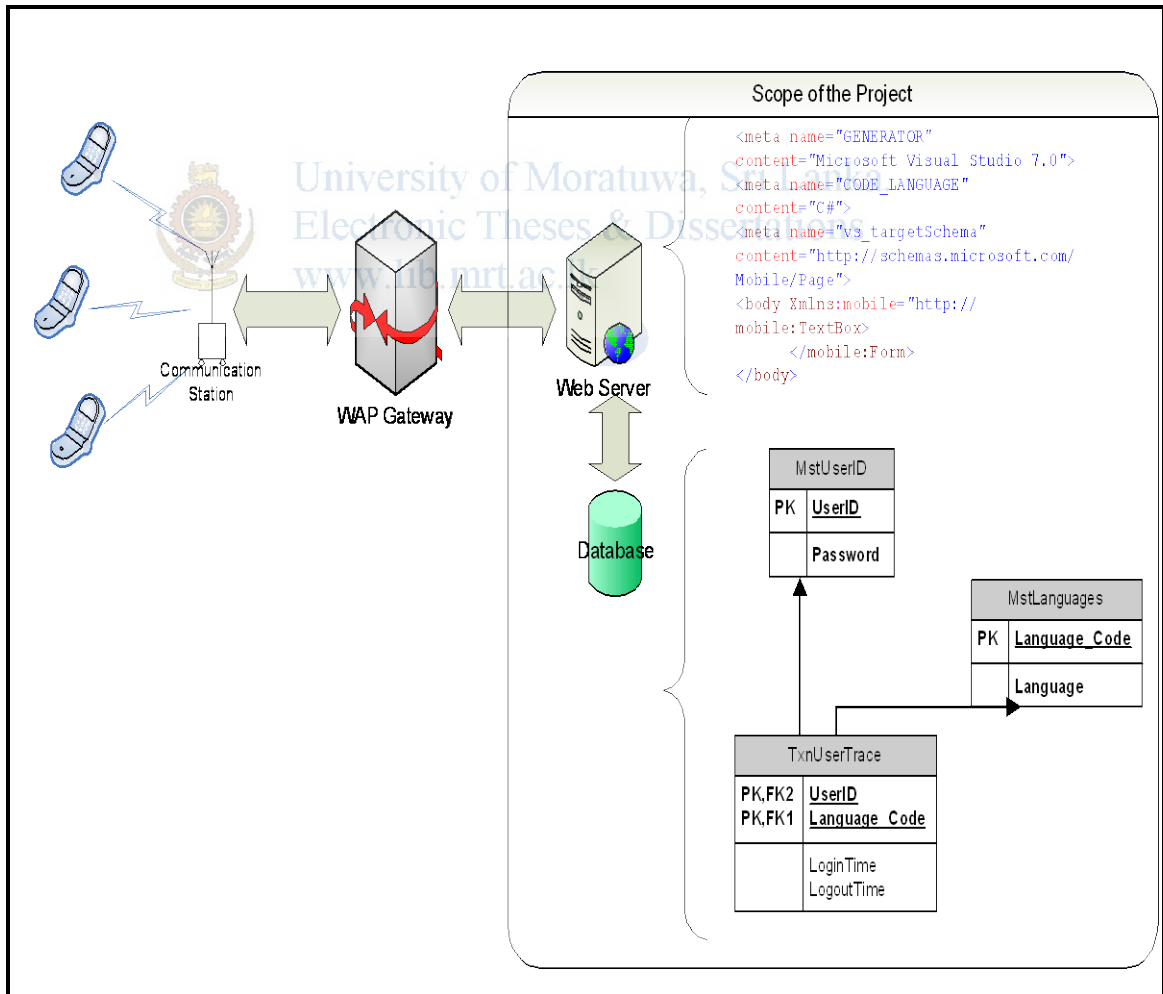


Figure 3.1– MLL Scope

### **Learn Lesson -Prerequisites**

The relevant user must be a valid user to access the information.

#### **Main Flow**

User can select the desired language to learn. After selecting the language user can move to the level of the selected language. Then he / she can select the lesson.

#### **Alternate Flow**

User does not exist.

### **Learn Meaning of a word - Prerequisites**

The relevant user must be a valid user to access the information.

#### **Main Flow**

User can enter the word.

#### **Alternate Flow**

Word might be incorrect or not in the database.

*Please refer Annex B for the process flow diagram*

### **User Registration-Prerequisites**

The relevant user must be an administrator to access the information.

#### **Main Flow**

Admin enters the user details and system checks for the availability. If user is not available data is updated and UserId and password will be displayed to the admin.

System will be updated and relevant information will be displayed to the Admin.

#### **Alternate Flow**

User already exists.

### **Product Perspective**

The project is based on a simple and a user-friendly interface that provides easy access to information. This proposed project can easily be expanded to a large system for learning not only languages but also display other information such as language learning course details, questions and answering and getting subscriber feed back ect.

This project can also be extended as a mobile knowledge base, which will hold a large amount of information.

### **Product Functions**

The system is capable of accepting user requests via GPRS enabled connection and sends results through a WAP gateway. To accomplish the task the application will perform database access query through a database, and transmits that data to the requested subscriber to accomplish the task. The system provides the facility to hear the sound of the lesson and dictionary words.

### **User Characteristics**

Users are not expected to be an expert of navigating WAP sites and who are familiar with mobile technology. The subscribers can query and follow links in the pages and easily find required lessons.

### **Constraints**

When developing the proposed system, the following constraints are identified.

- The user interfaces of the proposed application with related to other desktop or web software's are being low in quality.
- The text should be understandable and with less scrolling

## **3.5 Non Functional Requirements**

### **Performance**

Server requests should be minimized as much as possible to get maximum performance.

### **Availability**

Because customers access the WAP Web site across the world, it needs to be available 24 hours a day, 7 days a week.

### **Reliability**

Because of the need for 24\*7 availability, automatic disaster recovery, backup plans and procedures must be introduced.

### Scalability

Code modifications should be avoided as much as possible to maintain near zero downtime of the site.

### Security

Subscribers will need to log on, no data encryption is required, and their user names will be used to determine levels, access to different parts of the system.

### Interoperability

In this version of the application, there are no requirements for interoperability with other systems.

### Setup/Installation

Setup and installation must be complete and automated so that the developers can easily deploy it on Web server for development and testing.

## 3.6 Use Case Analysis

Use case model is a dialogue between an actor and the system. They represent the functionality provided by the system; that is, what capabilities will be provided to an actor by the system. The collections of use cases for a system constitute all the defined ways the system may be used. The most critical part is the identification of Use cases and Actors in the system.

### Main Actors



Actor	Description
 Admin	Admin of the system
 Subscriber	User of the system

Table 3.2 – Main actors of the system.

## Use cases

- WAP application Use Case

This will describe the MLL application use case and its main processes and communication with them.

- Site Admin Use Case

Site admin process is displayed in this use case.

## Identified Use cases





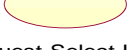


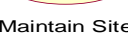
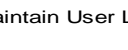
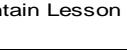
Use Case	Function
 Registration	User registration process. This is done by the Admin.
 Login	User Login Process
 Validate User	Validation user against the Database
 Request Select Language	User has to request the desired language
 Request Select Level	Selection process of the level the user in
 Request Desired Lesson	Select the lesson
 Request Dictionary	This is a separate process which can be accessed after login
 Maintain Site	Admin process of maintain web site
 Maintain User Log	Admin process of user trace
 Maintain Lesson Data	Admin process of uploading the data and sound files to the database

Table 3.3 – Main processes of the system

## WAP application Use Case

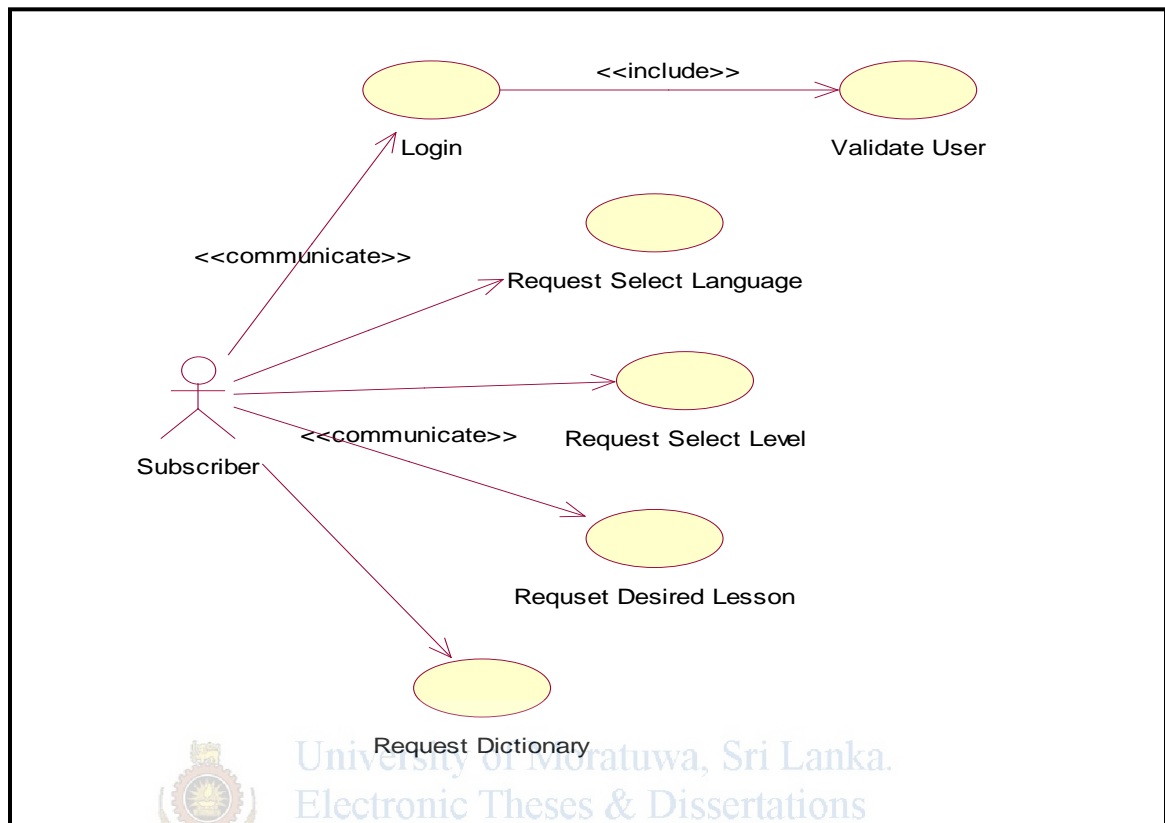


Figure 3.2– Main Application Use Case diagram

- Registration process can be completed either through the system administrator or the subscriber can register to the MLL.
- Subscriber must go through a login process and it includes the user validation process against database.
- Valid subscriber can select the desired language
- Valid subscriber can select the level of language depending on his or her ability.
- Valid subscriber can select the lesson (First time user have to select the lesson and second time user will automatically be directed to the next lesson)
- Valid subscriber can select the dictionary to find meaning of words. After selecting the dictionary, subscriber has to enter the particular word to get the meaning of it.

## Site Admin Use Case

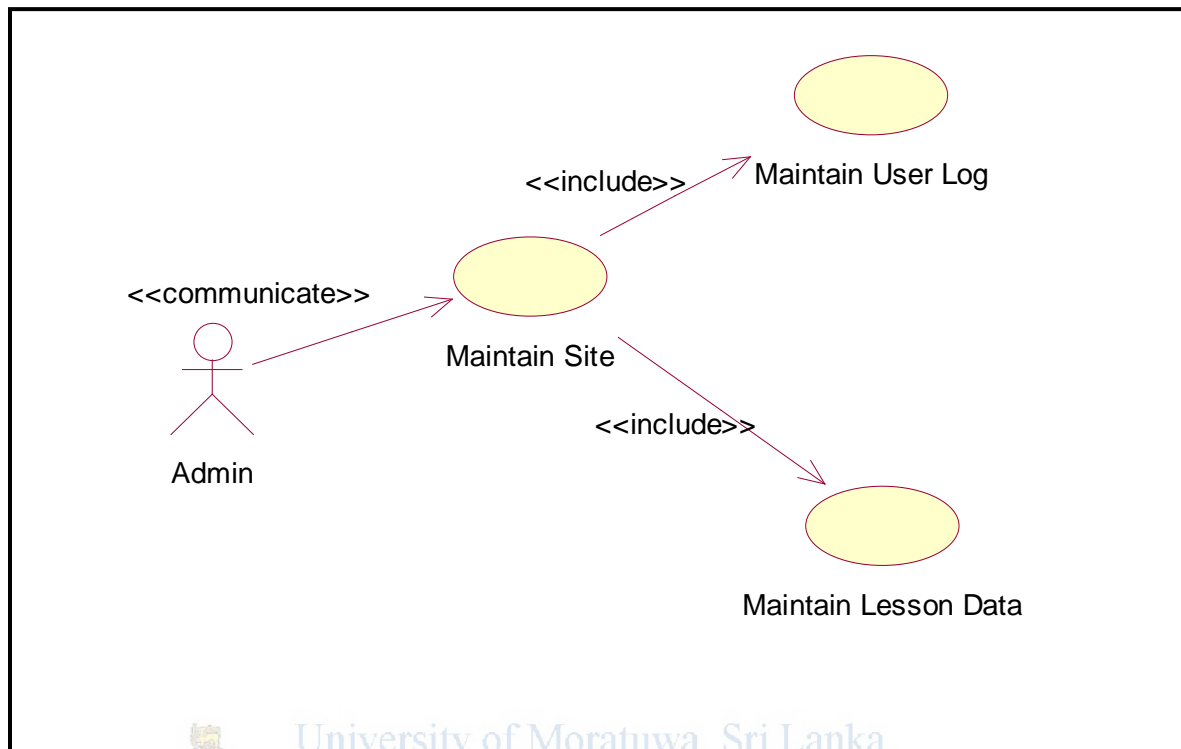
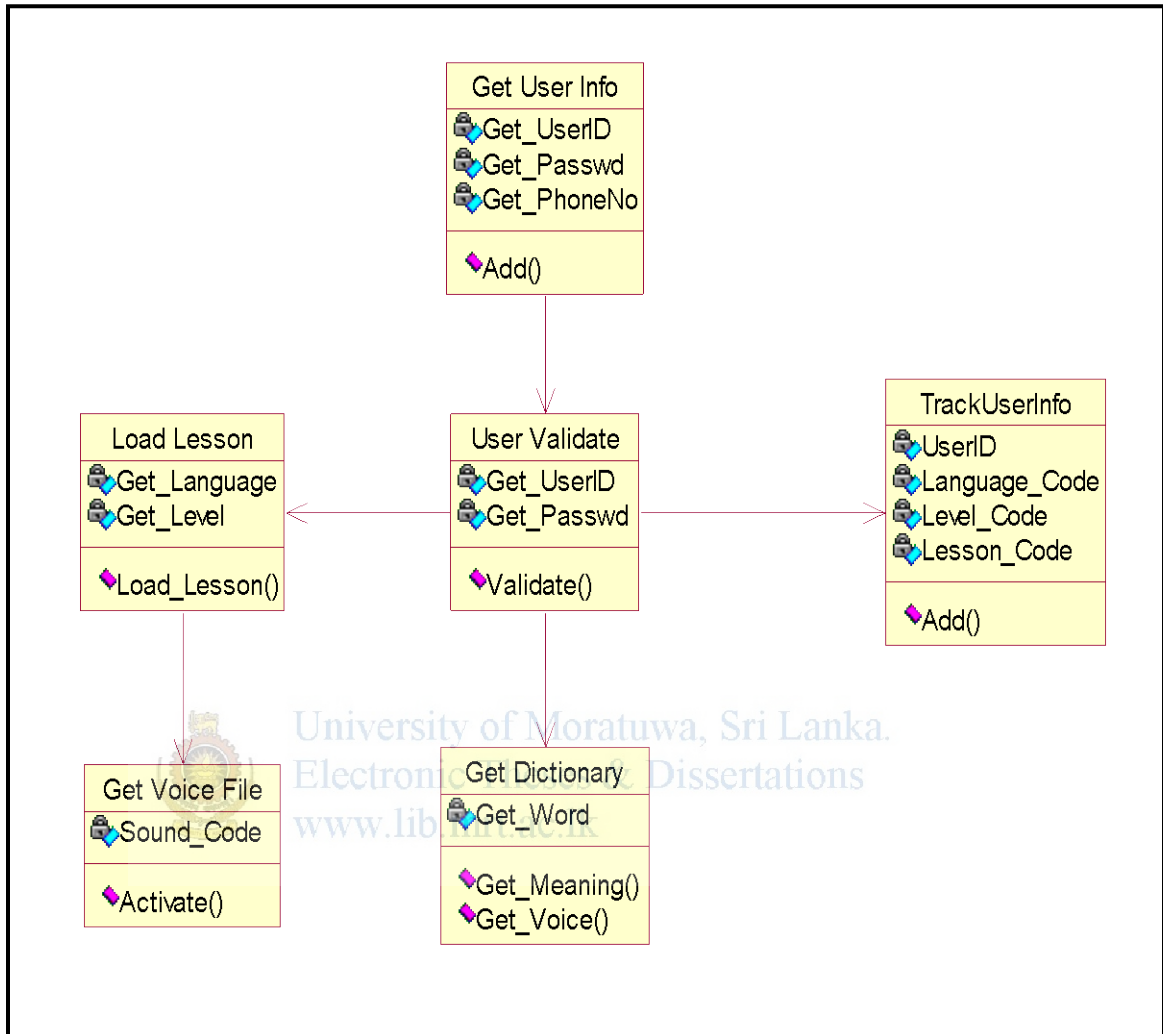


Figure 3.3– Admin Use Case diagram

- Admin can get details of subscriber activities
- Admin has to upload the necessary lessons and voice data to the system
- Admin must go through backup procedures, security procedures and other relevant procedures to maintain site on 24 \* 7.

## Class Diagram

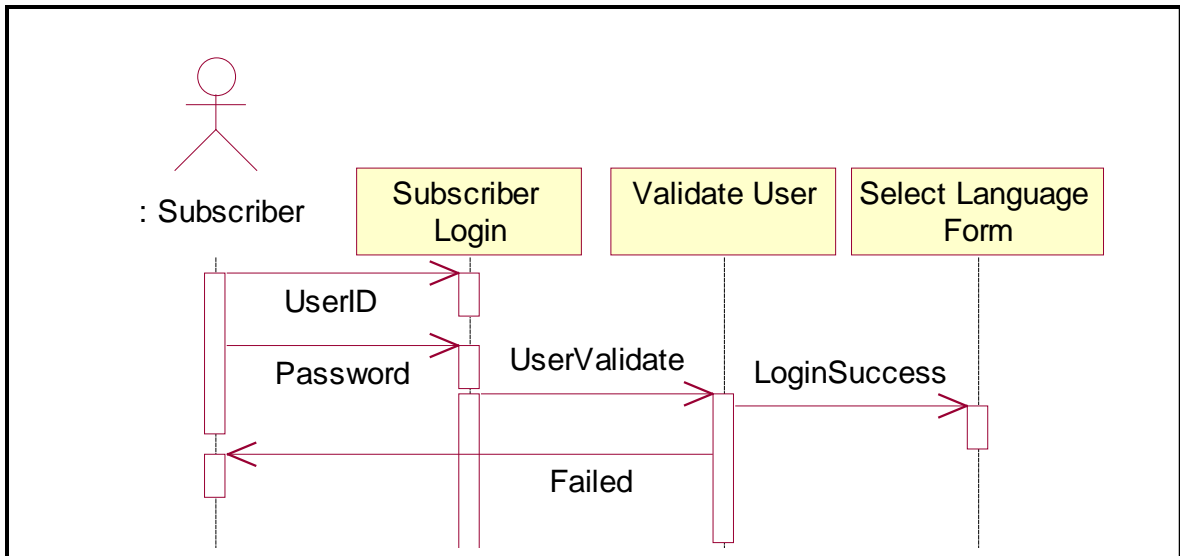


**Figure 3.4– Class diagram**

A class is a description of a group of objects with common properties (attributes), common behaviour (operations), common relationships to other objects, and common semantics. Thus, a class is a template to create objects. Each object is an instance of some class and objects cannot be instances of more than one class. MLL will contain above properties and methods inside the identified classes.

## Sequence Diagrams

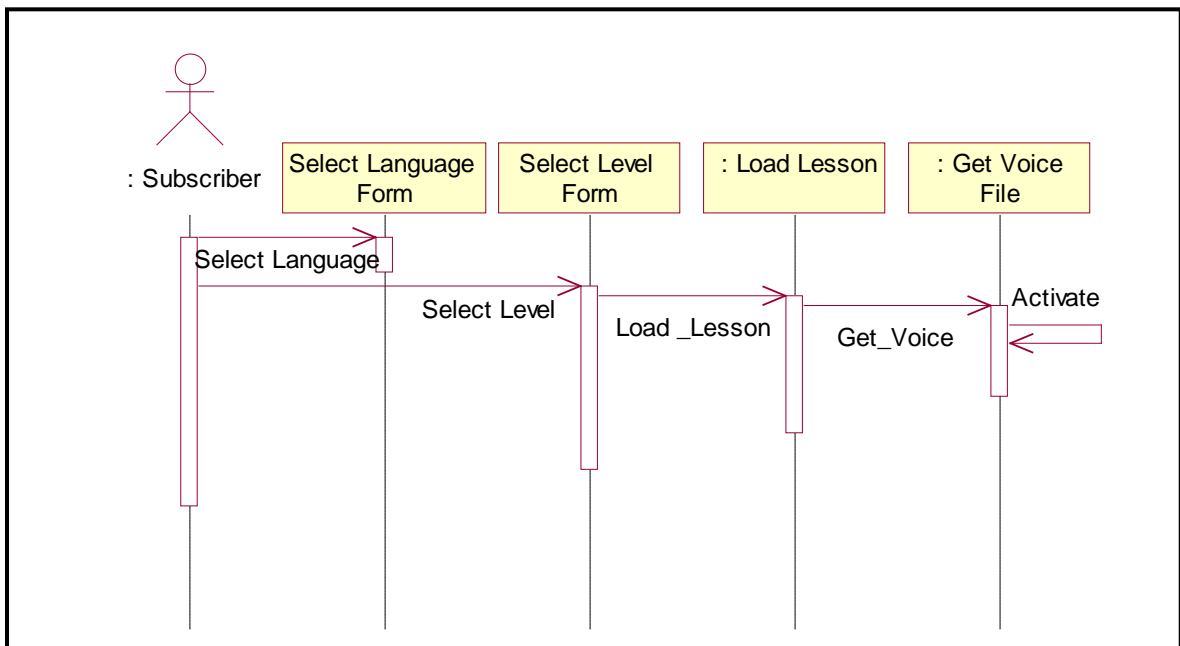
### Login Process



**Figure 3.5– Login Sequence diagram**

Figure 3.5 describes the login sequence to the system. Subscriber has to enter the UserID and Password. The login form contains the UserValidate function and it will check against the database. Function will return the status Success or Fail.

### Main Process



**Figure 3.6– Main Process Sequence diagram**



### 3.7 ER Diagram

Database is developed using Entity Relationship technique and it designed in such a way that it is easy to maintain and has the facility to dynamic grow. Primary and foreign keys are defined as shown in the diagram and it will ensure the relations of the tables and consistency of data. After creating those relations the ER diagram can be expressed as in Figure 3.7. End points of the linked lines depict the cardinality of each relationship. Administrator has the facility to backup the database and all data handling transactions such as data user and managing users.

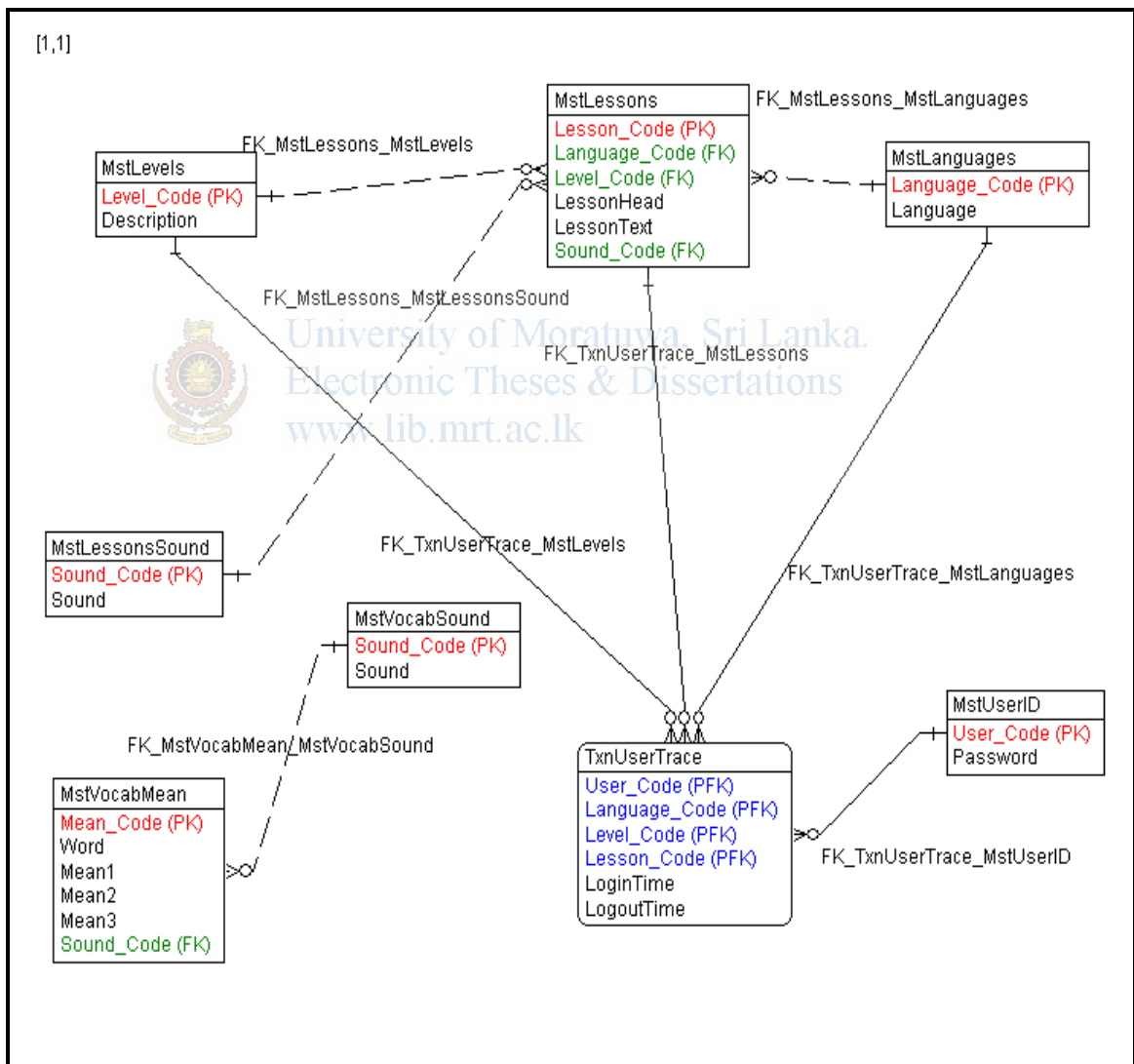


Figure 3.8– ER diagram

### **3.8 Interface requirements**

This is one of another important area of the project; since this is the layer communicating with the users. If it is not properly deliberated the entire project can be a mess. Because of that importance, the interface requirements were carefully analyzed under the following main categories.

#### **Consistency**

Font used for the forms is Verdana and Used contrast rule for colours and fonts for easy readability. Fonts, colour scheme, button, wording of labels and the messages are consistent throughout the system. This will help the user to use the application easily and efficiently.

#### **Standards**

Used menus and combo boxes, check boxes controls and radio buttons where applicable. Adopting these industry standards took the advantage of look and feel like approach of other application. Hence the usability of the system is improved.

#### **Support both novices and experts**

Since the messages and wordings are simple and consistent throughout the system it is very easy for anyone to use the system.

#### **Alignment and Fields**

Editing fields of the screens are left justified and the corresponding labels are right justified and placed immediately beside the field. This presents a pleasing outlook and efficient use of the screen.

#### **Screen Display**

Throughout the application screens are not crowded. This presents the easy accessibility and ease of use.

## Chapter Summary

This chapter discussed about what was the problem and the requirement analysis for the MLL system. The unified process used for the analysis and entity relationship technique is used to design the database. Next chapter is about the system design of MLL.



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