

# BEE SPELLED

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# CHANGE HISTORY

Version	Summary	Author	Date
.1	Created outline format	Thomas	2/2/2015
.2	Added group members' text to fit format	Thomas	2/5/2015
.3	Added activity diagram pictures and explanations	Naomi	2/16/2015
.4	Added use case diagrams and descriptions	Jack	2/17/2015
1.0	Added scope and definitions, finished screen descriptions	Thomas	2/17/2015
1.1	Added suggestions from Dr. Gray	Thomas	2/18/2015
1.2	Added page numbers and updated Table of Contents	Naomi	3/8/15
2.0	Added create and edit sequence diagrams and descriptions	Naomi	3/11/15
2.1	Removed information about Merriam-Webster and sharing lists	Jack	3/11/2015
2.2	Added view statistics, test, and smart quiz sequence diagrams and descriptions	Jack	3/12/2015
2.3	Added Class Diagram and Descriptions and Removed screen	Thomas	3/12/2015

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## INTRODUCTION

### 1.1 - Purpose

Our goal is to create an Android application to aid students in studying for spelling bees and spelling tests. Students will be able to create word lists to study from and practice those words using their voice or the Android keyboard.

### 1.2 - Scope

In-Scope:

1. The system will allow users to create their own lists of words by typing, pasting, and importing them from a text file
2. Users will also be able to hear the questions, sentences, origins, etc.
3. The system will recognize the user both speaking and typing their answers
4. Users will also be able to save lists for future use and share lists with other users
5. Create a persistent quiz scoring system. Will keep records on spelling accuracy for every word. Will be used to emphasize words that are frequently misspelled by the user. Will be referred to as “Smart Quiz” (name likely to change).
6. Design a series of tests to document how/if the “Smart Quiz” increases efficiency in studying and note user preference.

Out-of-Scope:

1. Social-Networking outside of simple file share via simple/conventional methods (email, etc.)

### 1.3 - Definitions

Word List - A list of words that a user can use to quiz himself/herself.

Smart Quiz - Refers to a quiz algorithm that will account for previous spelling accuracy and will quiz the user on a word more based on poor accuracy and less based on high accuracy.

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## DESCRIPTION

### 2.1 - Goals

The goals of this project are as follows:

1. Allow users to create custom word lists with audio recordings and/or definitions.
2. Allow students to spell words with voice or keyboard.
3. Gamification of the application to make studying more fun for grade-school children.
4. Test and refine quiz algorithm

### 2.2 - Users

1. Children studying for spelling bees or spelling tests
2. Family members who want to help children study, but do not want to spend hours quizzing them
3. Teachers who are looking for fun ways students can improve their spelling skills on their own

### 2.3 - Risks

1. Scope Creep
2. Technology doesn't work as expected (Specifically Voice to Text)
3. Inexperience with the Android platform
4. Productivity

## 2.4 - Screens

### Main Menu



This screen will serve as the main splash screen when starting the app. You will have an option to start a new quiz, display and edit your word lists, or open an options dialog to edit user preferences.

### Lists (Not Pictured)

This screen will lists all the user-created lists of words. You can access this screen from the main menu. This screen will allow you to select existing word lists or create new ones. An icon adjacent to a ListView entry will serve as a button that will allow the user to rename or delete a list. Selecting a list will open a new screen for editing the words in the the selected list.

## Words (Not Pictured)

This screen will serve as a way to view, search, add, and remove words from a selected list. The title of the word list will be displayed at the top and then the words in the list will be listed below. An icon next to a word will serve as a button that will allow you to delete the word or record a pronunciation.

## Quiz Prep (Not Pictured)

The quiz prep screen will serve to allow the user to select preferences for the quiz and what words to be quizzed on.

## Quiz (Not Pictured)

This screen will serve the quizzing functionality of the app. From here, you'll be able to have the app pronounce the word to be spelled and then spell it with either your voice or the keyboard. Additionally, the word will display the letters you have said so far. When finished spelling, the correct spelling will be displayed directly underneath/above your attempted spelling to show you where your mistakes were.

## REQUIREMENTS

### 3.1 - Functional

1. A user shall be able to create a list by typing, pasting, and searching for desired words.
2. A user shall be able to create a list by importing words from a text file.
3. A user shall be able to save lists for future use.
4. A user shall be able to hear the word, origin, definition, and sentence.
5. A user shall be able to spell a word by speaking or typing.

### 3.2 - Non-functional

1. The system must be able to use speech recognition to recognize individual letters.
2. The system must be able to speak in a non-robotic way.
3. The system must be able to work without draining the battery.
4. The system must be able to get data in minimal time.

### 3.3 - Hardware

The app will require:

1. Touchscreen Display
2. Internet capability
3. Microphone
4. Speaker/Sound output
5. At least 5 MB of storage (in addition to size of app) for data storage

### 3.4 - Software

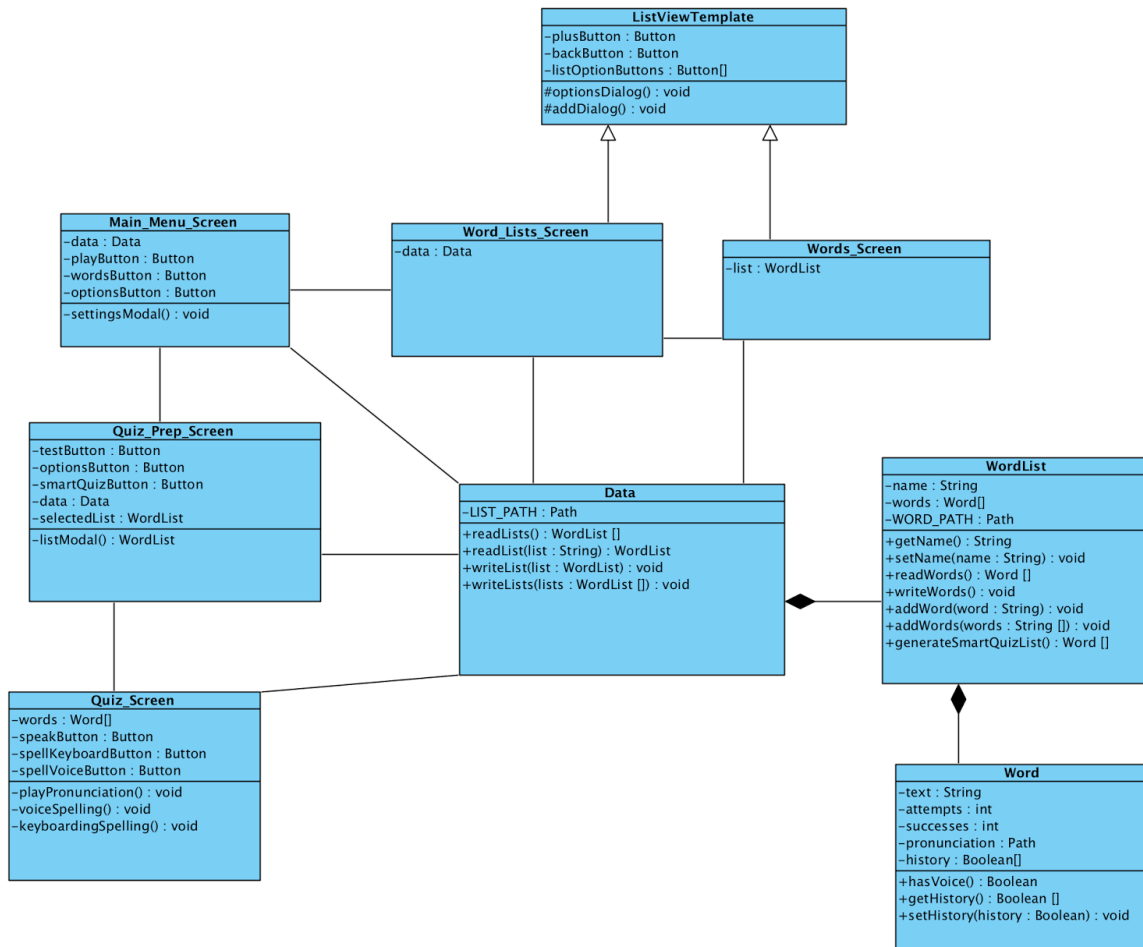
The app will require:

1. Internet Connection
2. Android v4.1 (API 16) or higher, target will be v5.0



# UML

## 4.1 - Class Diagram



Above is the basic class diagram for the app. There are classes for each screen, as well as a few other classes that will be described below.

**Main\_Menu\_Screen** - Main Menu that will initialize a Data object for use with the other screens. Can start the Word\_Lists\_Screen or the Quiz\_Prep\_Screen.

**Word\_Lists\_Screen** - List view that lists all the WordLists saved. Can start the Words\_Screen or return to the Main\_Menu\_Screen.

**Words\_Screen** - List view that lists all the Words in a specified WordList. Can return to the Word\_Lists\_Screen.

Quiz\_Prep\_Screen - Screen that allows the user to pick a WordList in a dialog box, then select an option for how to quiz on that list. Can start Quiz\_Screen or return the Main\_Menu\_Screen

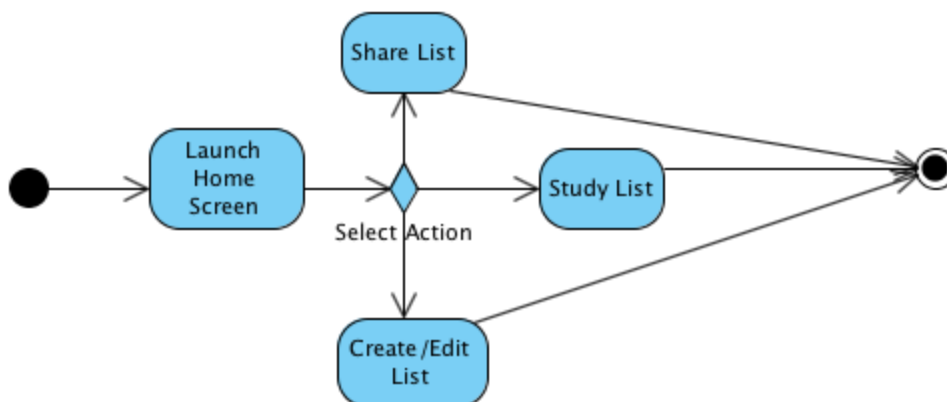
Quiz\_Screen - Screen that takes a list of words from Quiz\_Prep\_Screen and quizzes the user.

Word - A data class to store all the necessary dictionary data for a specific data.

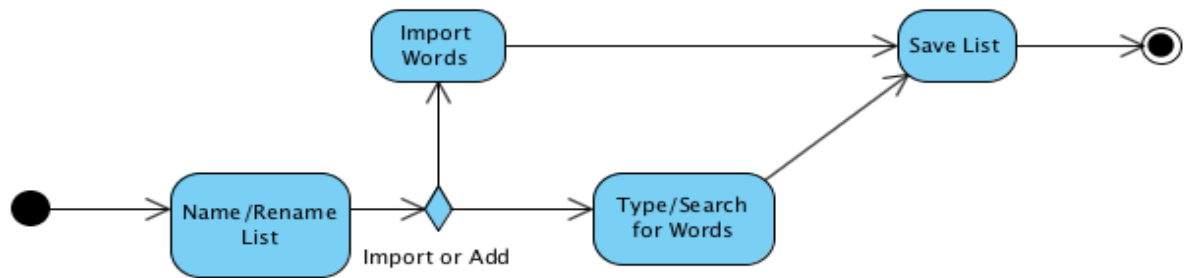
WordList - a data class to store data for Word Lists and abstract File storage of Words

Data - A class intended to abstract access to a File Storage and read in WordLists

## 4.2 - Activity Diagrams



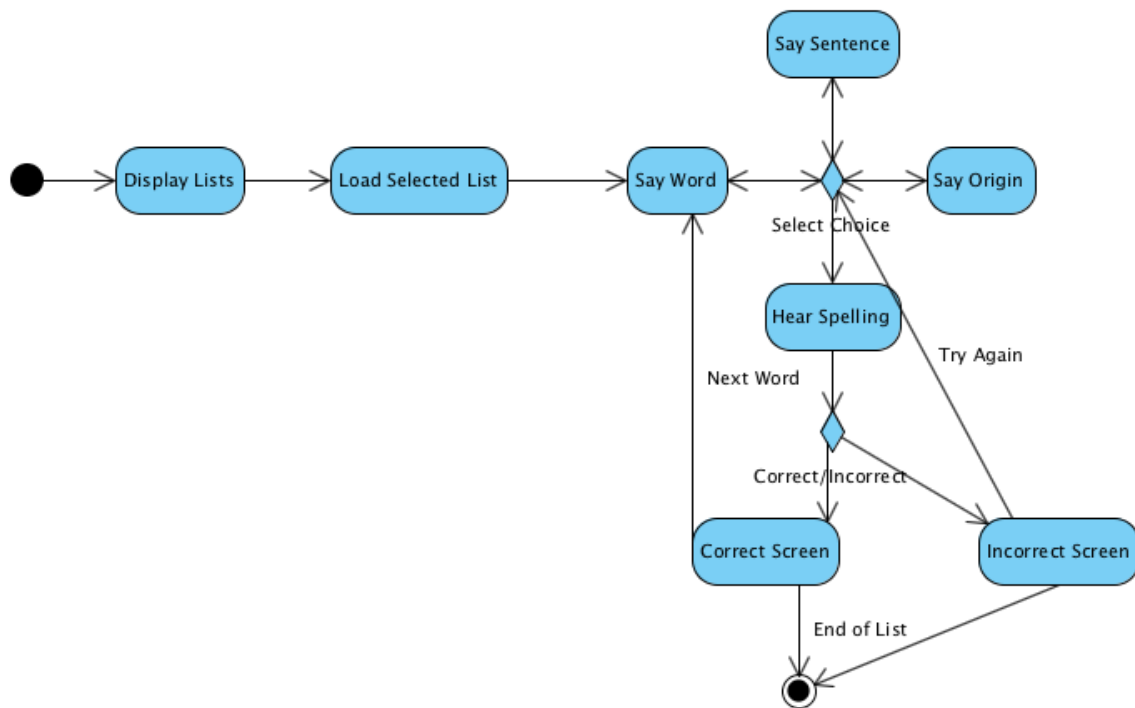
This is the Main activity diagram. Once the user opens the application, the home screen will launch. The user then can select to share a list, create/edit a list, or study a list.



This is the Create/Edit List activity diagram. The user will name/edit the name of the list. Then, either import words from a text file, or type/search for/paste words. Lastly, the list will be saved.

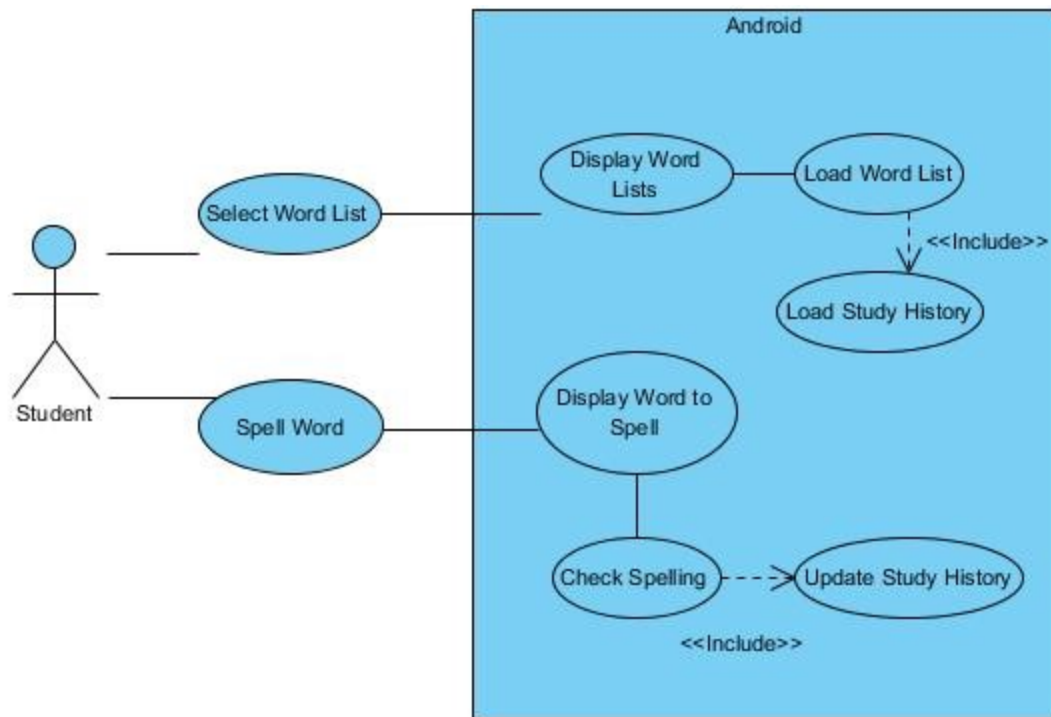


This is the Share List activity diagram. The user will select a list to share and enter the contact information of the desired recipient. The list will then be sent.

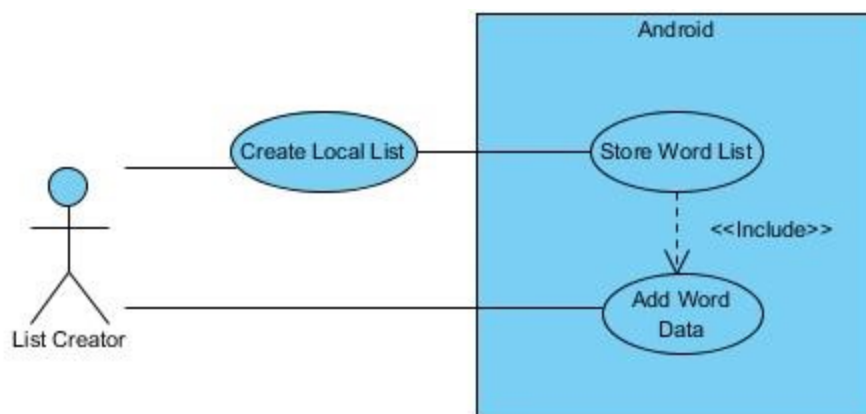


This is the Study List activity diagram. The system will display the lists and load the list selected by the user. The studying begins with the system speaking a word. The user is allowed to skip words by requesting the system to say the next word. The user can also have the system say the word again, say a sentence, or say the origin as many times as they would like. The user will then spell the word by either speaking or typing the spelling. The system will either tell the user they are correct and move on to the next word, or tell the user they are incorrect and allow the user to try again. This will continue until the end of the list is reached.

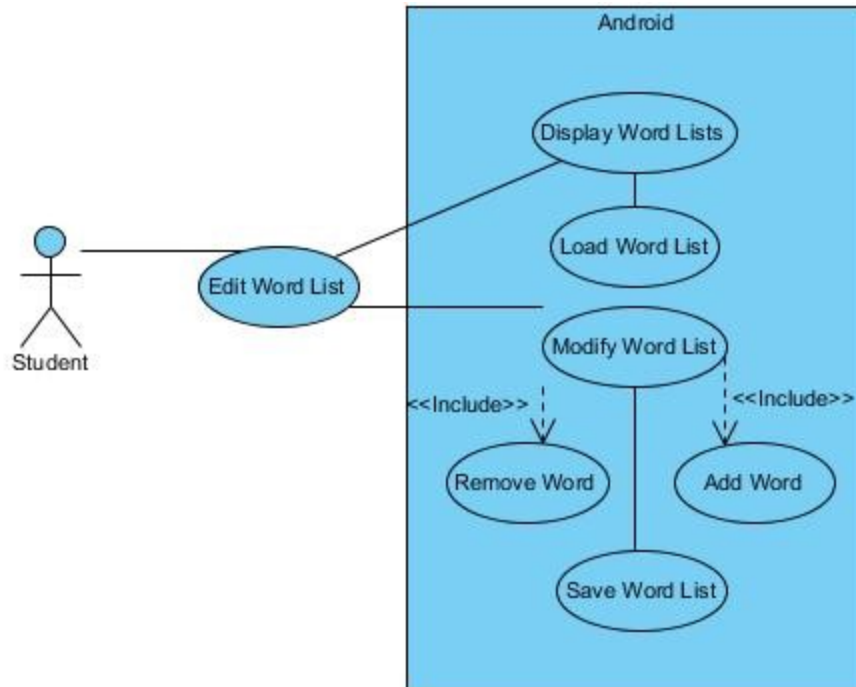
### 4.3 - Use Case Diagrams



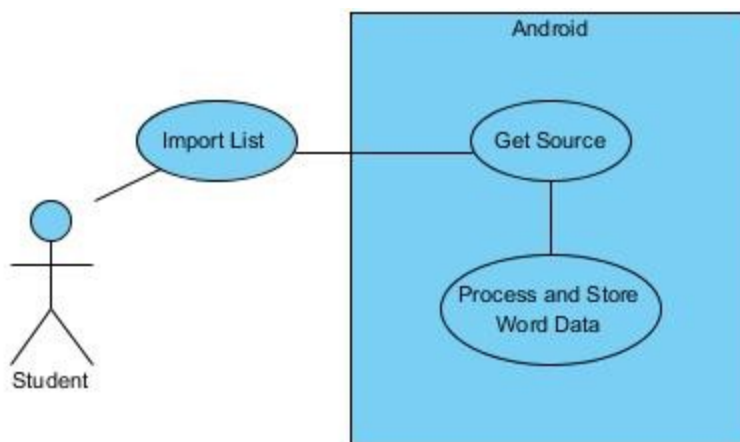
This is the Study Word List use case diagram. Once a user selects a word list to be tested on, the word list and study history for that word list is loaded. Then the user is tested on words in the list based on their study history and the history is updated based on the user's correctness.



This is the Create Local Word List use case diagram. The user names the list, adds data for all of the words, and it is stored on their device.

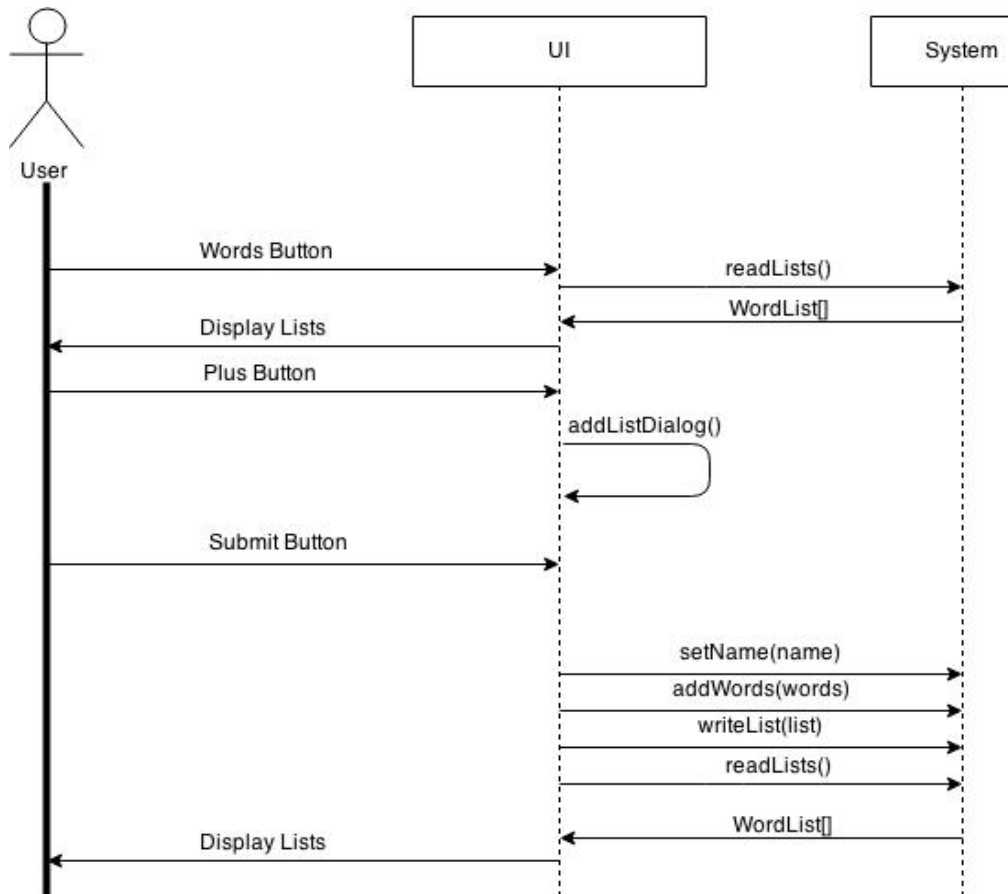


This is the Modify Word List use case diagram. The user selects a word list to edit and is then given the option to add or remove words from the list. When the user is finished, the word list is saved.

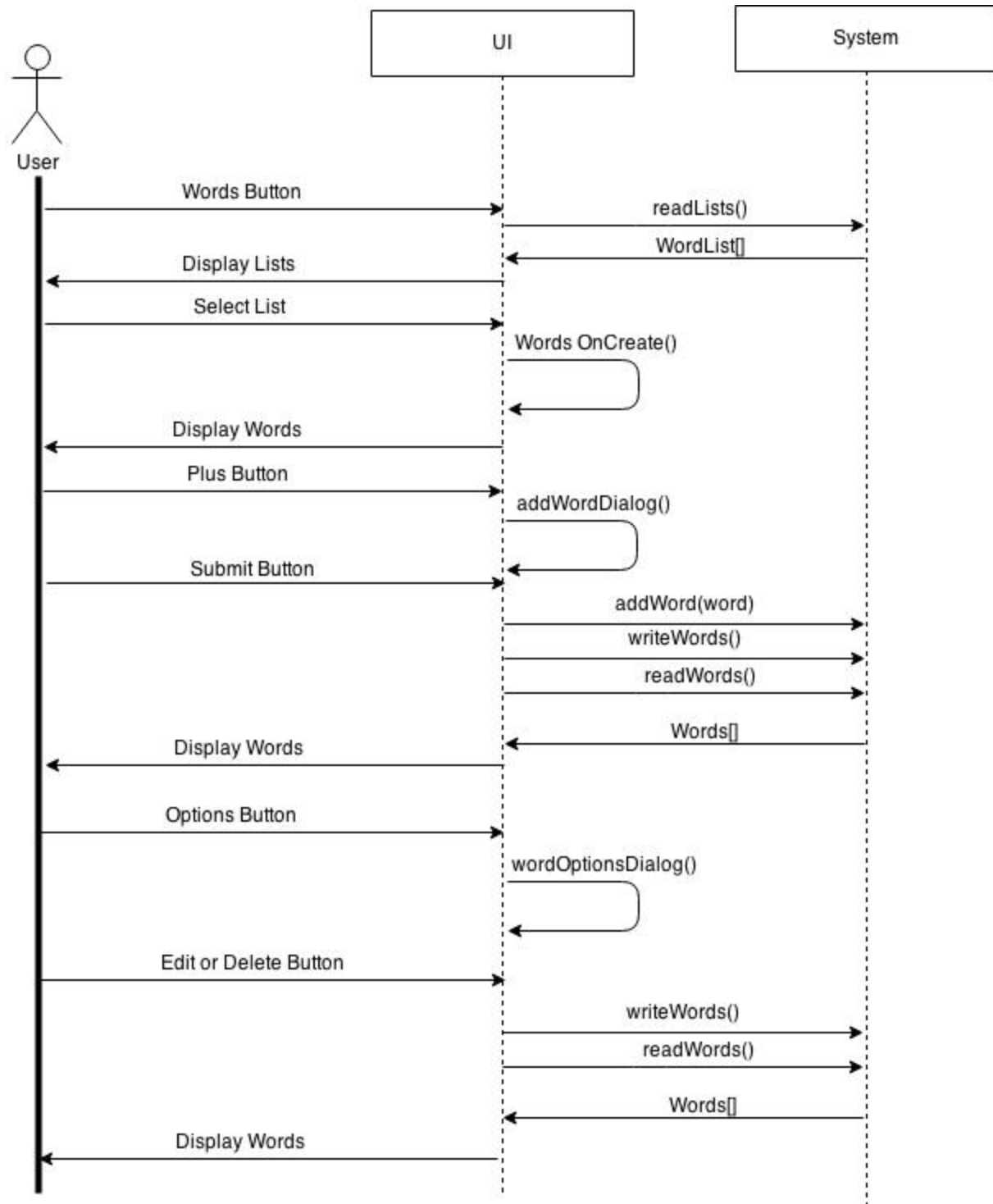


This is the Import Word List use case diagram. The user selects the text file containing the word list and it is processed and stored on the device.

## 4.4 - Sequence Diagrams



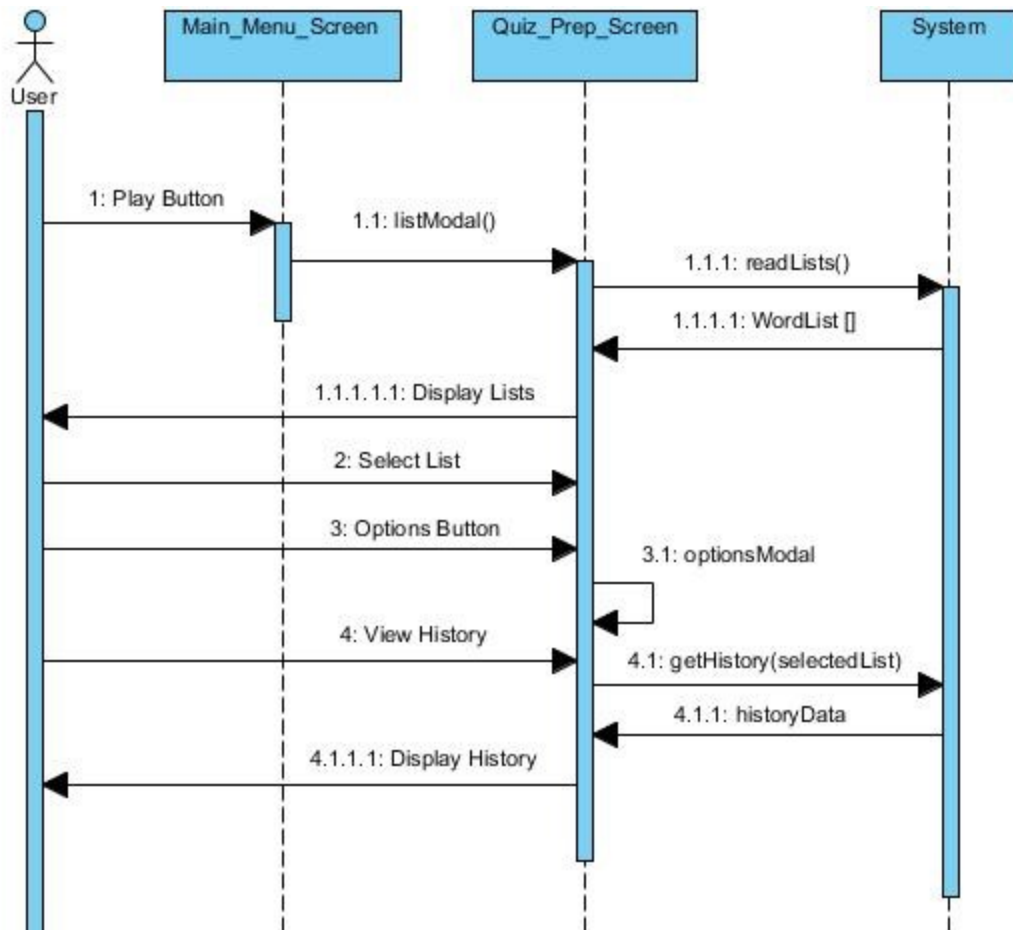
This is the sequence diagram for creating a list. The user clicks the “words” button from the home screen and the system gets and returns the current lists. The lists are displayed and the user clicks the “plus” button. The system then brings up the add list dialog box, where the user can enter text and submit. The system then creates a list object, writes it, and displays an updated list of lists.



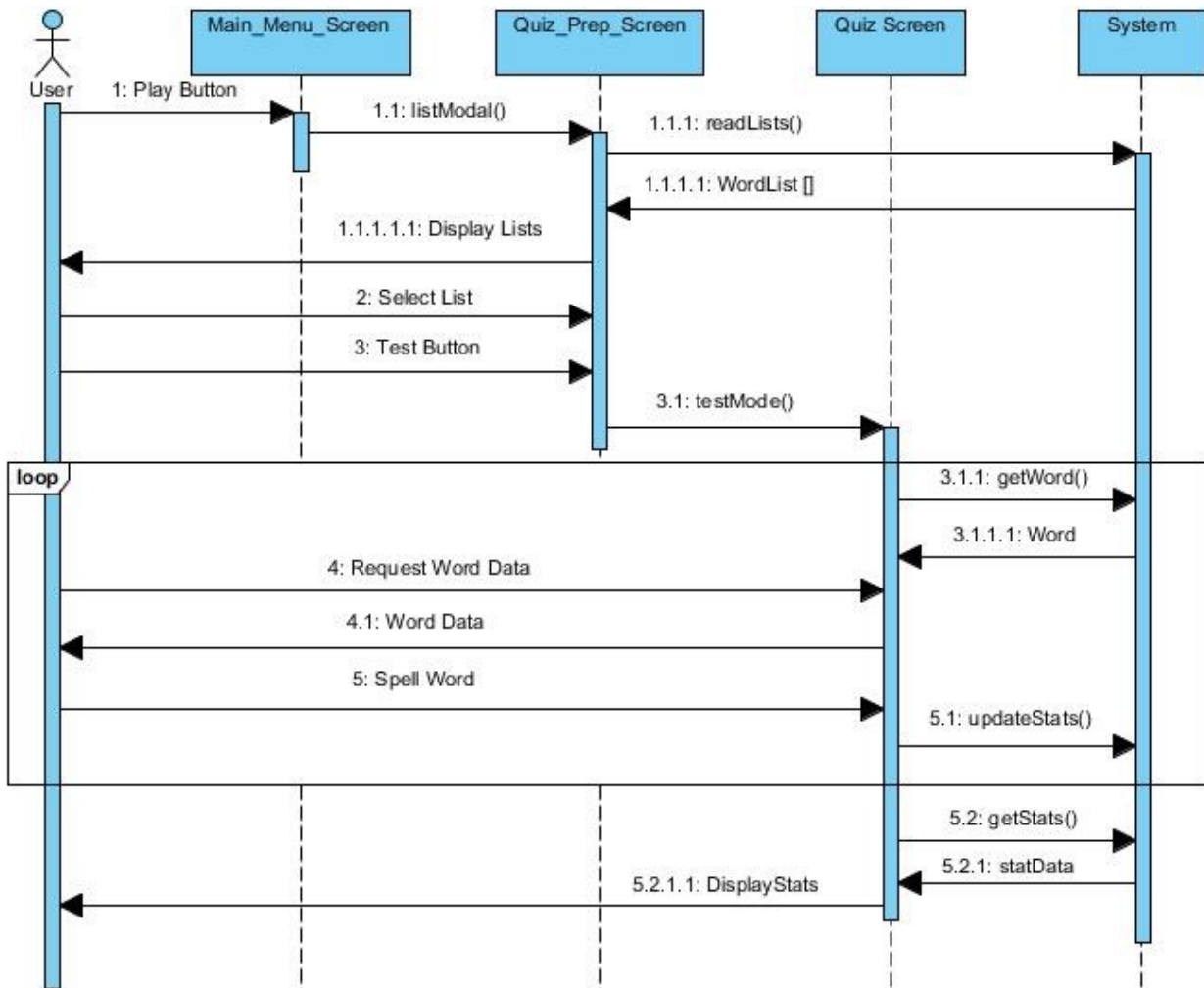
This is the edit list sequence diagram. It begins as before with the user selecting “words,” and the lists being displayed. The user then selects a list and is taken to the words screen. The user can then, as before, select the plus button and add their text. On submission the system will add the word, update the list of words, and display the



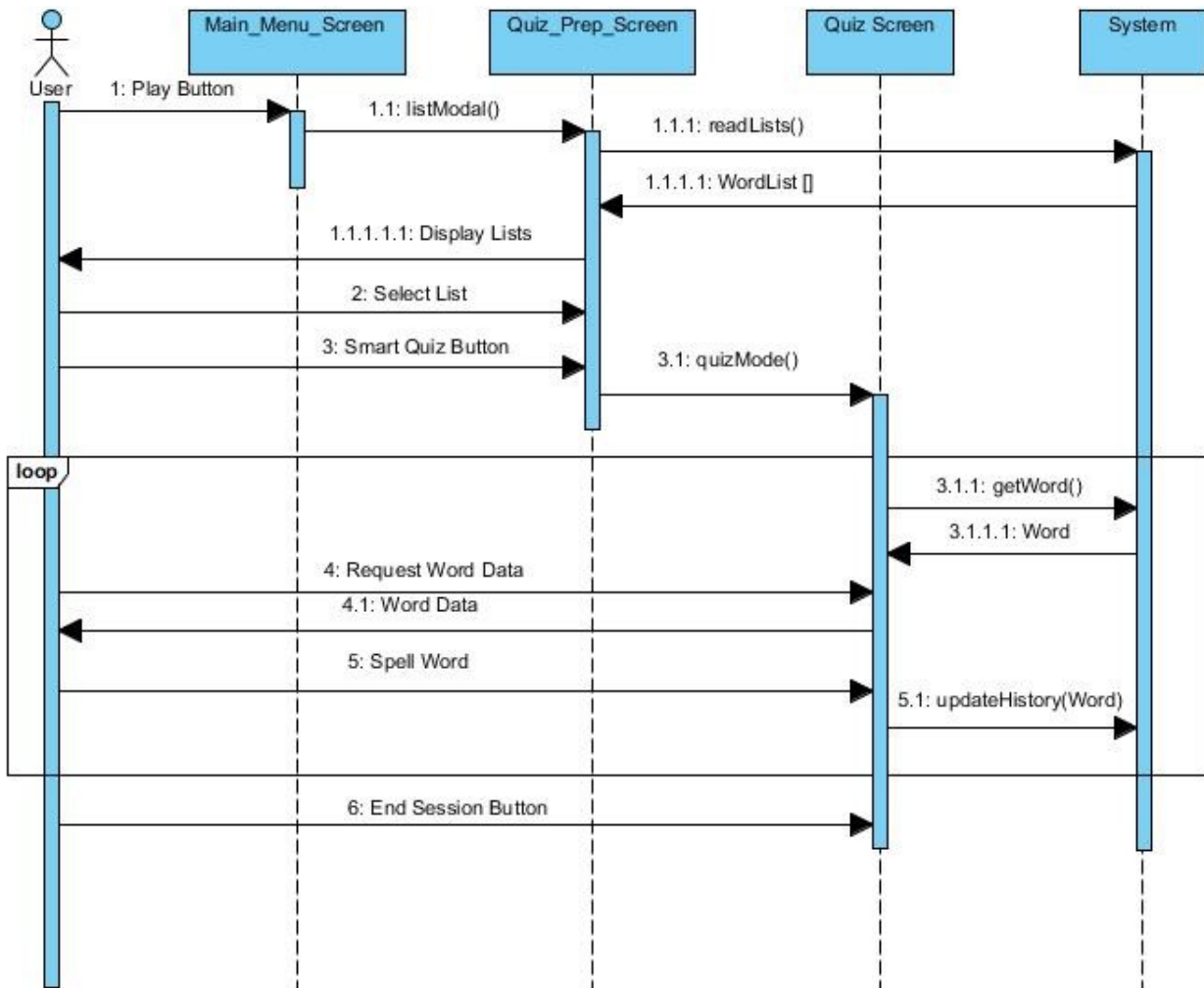
updated list. The user also has the option of editing and deleting words by selection "options." The options dialog will be created and on edit or delete the list will be updated. The updated word list will again be displayed.



This is the view statistics sequence diagram. From the main menu, the user selects "Play." The user is then taken to the quiz prep screen where they select the list they want to view their study history of and select "Options." From there the user selects "View History" and the history is displayed.



This is the test sequence diagram. From the main menu, the user selects "Play." The user is then taken to the quiz prep screen where they select the list they want to be tested on and select "Test." From there the user goes to the quiz screen and is asked to spell each word in the list with the option of requesting data for the word such as pronunciation. After the user has been tested on all the words, the application displays the statistics for that session.



This is the smart quiz sequence diagram. From the main menu, the user selects "Play." The user is then taken to the quiz prep screen where they select the list they want to study on and select "Smart Quiz." From there the user goes to the quiz screen and is asked to spell each words from the list with the option of requesting data for the word such as pronunciation. The user is continually quizzed until they press "End Session."