

Languages Made Simple(formerly Irish Made Simple)

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CA326 Project

Technical Manual

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1: Introduction

1.1 Overview

Languages Made Simple is an Android application developed to create exercises from whatever language the user decides to use. The app extracts verbs from sentences to create "fill in the blank" style exercises which can be completed within the application. These can be created from text files the user has on their phone or through typing the input manually. This flexible approach means it is not limited to just Irish as our original functional spec proposed. Based on feedback we received on the proposal we improved the intelligence of the app so it was no longer a digital version of a primary school text book. The pattern matching used means it can also be reused for prepositions. The app has been tested with Irish and the Ghanaian language Ga. The app could be especially useful for endangered languages which don't have a lot tools specifically to cater for them.

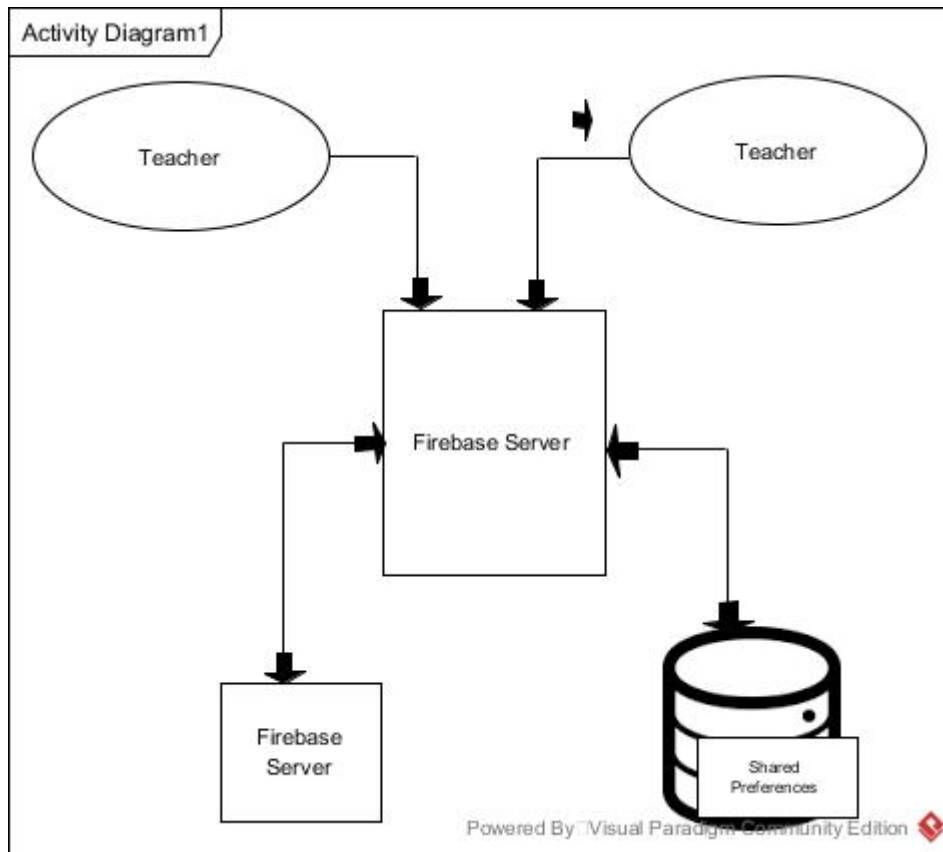
1.2 Glossary

- **Firestore:** Firestore is a web platform with tools and infrastructure for online user authentication
- **Android:** An open source operating system for smartphones and tablets.
- **SDK:** Software developer kit is a set of tools that allow the creation of applications for a specific software framework, in our case Android.
- **Android Studio:** The official integrated development environment for developing Android applications.
- **GUI:** Graphical User Interface, allows communication between users and the application through

graphics.

- XML: XML(eXtensible Markup Language) is a markup language used to define the format of a page to be human-readable and machine-readable.
- APK: Android application package (APK) is the file format used by the Android operating system for distribution and installation of apps.

2. System Architecture



• Android OS Version

our design is targeted at Android versions 5.1 upward to 7.1. This means our app will be compatible with almost 66% of devices currently in use (as of March 6th 2017)

• RAM

The app has been tested on devices ranging from 512MB to 6GB of RAM.

• Screen Size

We have used scalable XML which means our app should display correctly on as many screen sizes as possible.

• ROM

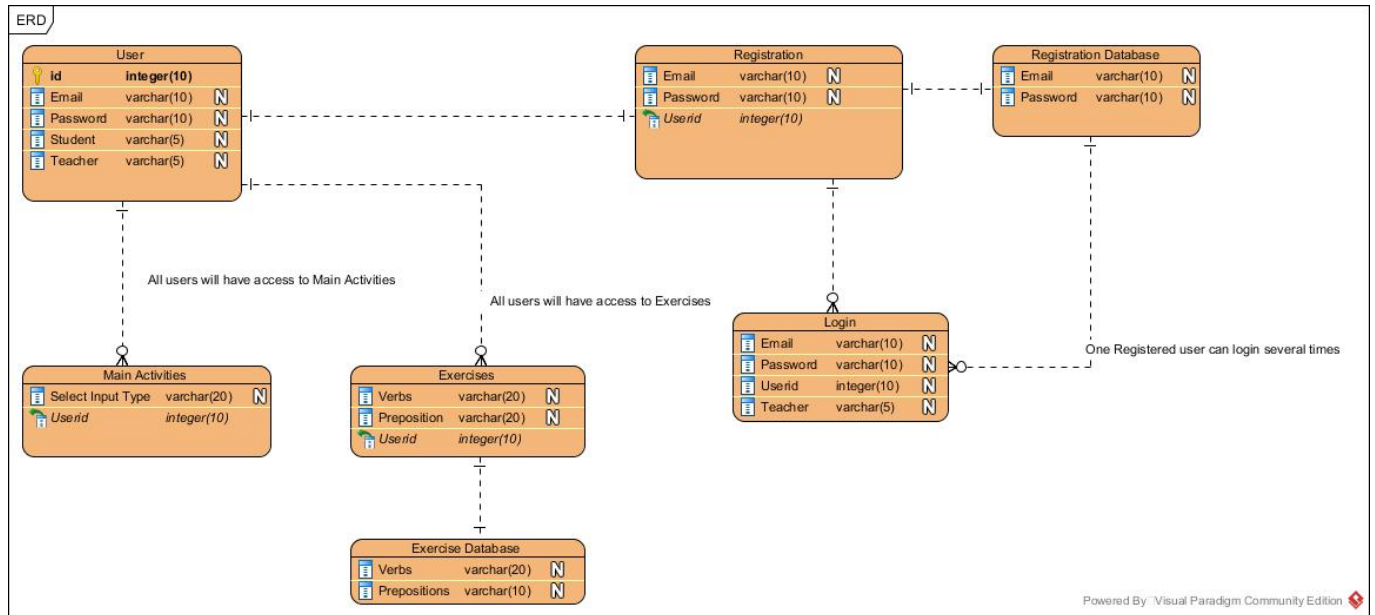
The app is small(<3mb) so should not be too large for any user to install.

- Internet Connection

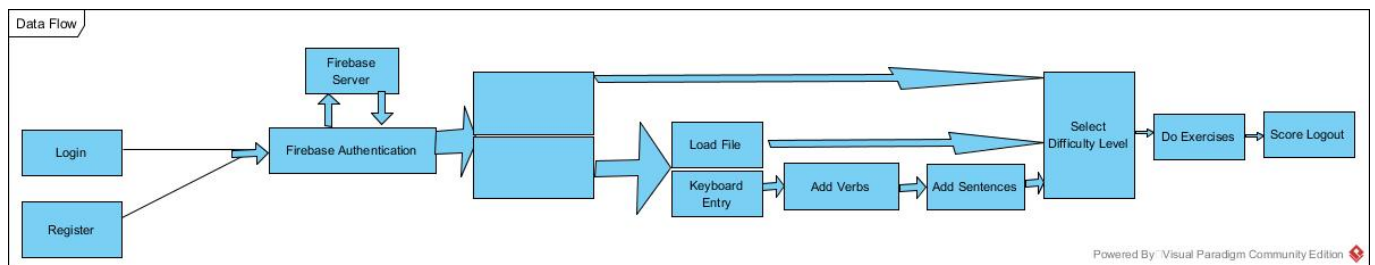
An internet connection is required in order for users to register and log in to the application

3. High Level Design

Entity Relationship Diagram



Data Flow Diagram



4. Problems & Resolutions

- **Android Development** We originally underestimated the amount of time we would need to get a grip on developing Android applications. We had set aside 3 weeks in our preliminary schedule to for learning to develop with Android Studio. In reality it took much longer and it felt as if we were learning constantly as we worked through the app.
- **File Loading** The first working version of the app only took in verbs and sentences that the user typed in on the Android device. Our project supervisor wanted to have the ability to load these from a txt file typed elsewhere and downloaded onto the device. We had issues with the app being unable to locate the txt file on the device. We discovered that the external storage location was different on each device and not always located at /sdcard. We changed from a hardcoded directory to one that checked the external storage directory for the phone it was currently installed on.

- **Dealing with Changes** The app went through a large number of changes from the concept stage to the current product. It was difficult at times to put our finger on exactly what we wanted the finished product to do. Once we settled on what the exact layout of the app was going to be it became much easier to plan out and code. Going forward we will spend more time at the beginning setting out exactly what the end goal of a project is to save time making changes later on in the development process.

5. Installation Guide

Requirements

- A phone or tablet device running on Android
- An internet connection

Getting Ready to Install

The app is currently not published on the Google Play Store so there are a couple of extra steps needed to install the app. By default Android only allows apps to be installed from the Play Store. A potential user has to enable "Unknown Sources" in the settings. As shown in the screenshots go to settings and then click Security. Scroll until you see "Unknown Sources." Click this and you will be prompted to check if you want to enable apps from outside of the Play Store. Click okay and you will now be able to install Languages Made Simple.

Security

Settings



Tap & pay

Personal



Location



Security



Accounts



Language & input



Backup & reset



Unknown Sources



Security



Passwords

Make passwords visible



Device administration

Device administrators

View or deactivate device administrators

Unknown sources

Allow installation of apps from sources other than the Play Store



Credential storage

Storage type

Hardware-backed

Trusted credentials

Display trusted CA certificates

Install from storage

Install certificates from storage



Installing the App

The apk can currently be found in a shared Google Drive folder. This link can be found at the bottom of this technical manual. Click the link and you will be brought to a folder containing "LanguagesMadeSimple.apk". If you are on your Android device you can download the apk straight to your phone. When the download is finished click the file and you will be prompted to install the app. Currently no special permissions are needed. If this changes you will be shown these and asked to allow them. If you download the file on a computer you will need to connect your Android device to the computer and copying the apk onto the phone. Locate the file on the device and continue as if it was downloaded directly onto the device.

If a teacher wanted to project the app onto the board they could use an Android emulator on their PC. Bluestacks is one option for Android emulation and it is compatible with Windows, Mac and Linux. A link to install this is included below.

6. Emulator

for the purposes of using this App for demonstration the emulator can be used. Firstly android studio must be installed, in android studio start the SDK Manager and click tools menu, select Manage AVDs, while in android virtual device manager select the emulator, click start. The emulator will start up (with all the normal features of an android phone).

Links

- <https://drive.google.com/open?id=0ByGvNLARrqqvCTXpGTVg3eHdpR2M>
- <http://www.bluestacks.com/about-us/app-player.html>