

MSC 16/17 - Android App

“Location and Language Aware Messaging App – LLAMA”



Client: <https://github.com/feberhard/LLAMA>

v. 1.0

Server: <https://github.com/woernsn/LLAMAServer>

Application description and targeted audience

LLAMA helps to communicate with persons in different languages in different locations.

It is a multi-feature messenger app that allows to chat with friends in their native language, even if you don't speak it yourself. It also contains a map, where you see other LLAMA users nearby and can start a conversation easily. Besides that, you can display a lot of information about your chat partner's location.

Additionally, you can learn your conversational partners' languages while chatting with them.

The targeted audience for LLAMA are students abroad, tourists who want to make friends with locals, festival visitors, etc.

Contexts

λ **Language**

Messages are translated automatically to the target users' languages. When you receive a new message, you can display it in its original language to gain a learn effect.

λ **Location**

Determine the users' locations to get information about the local time, weather and show their position in a map. (see “People nearby”)

λ **Date/Time**

To get the local time of your chat partners.

λ **Weather**

To get the local weather information of your chat partners.

λ **People nearby**

If other users of our application are nearby, they get visible in a map with informations about their default language, username and mood. From there, a new chat can be created.

λ **Activity (= “Mood”)**

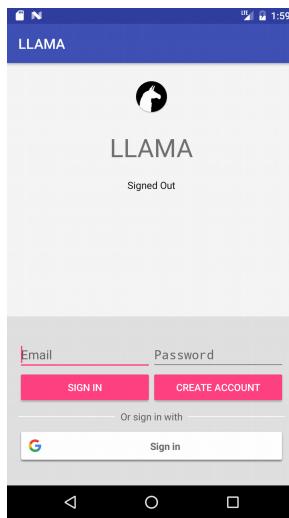
To see other users' current interests (want to party, to study, to do sport, etc.)

Features

- Chat with each other in different languages
- Learn new languages
- Get in touch with people nearby
- Possibility to set privacy level
- Get information about your chat partners
 - Local date/time
 - Local weather
 - Current mood
 - Current location
 - Nationality
 - Known languages
 - Picture
- Group chats
- Multimedia content sharing
- Find groups by common interests, languages, locations, etc.
- Ability to invite friends from social networks
- Login via OAuth2.0, so you don't have to create another account

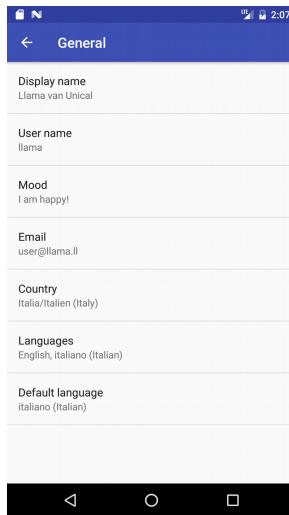
Implementation

Google Log-In



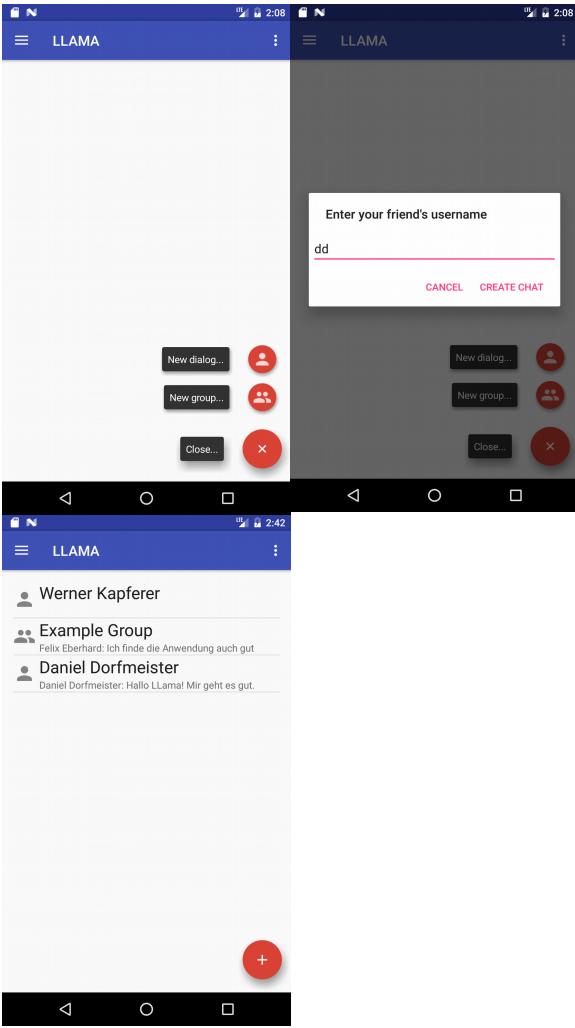
It is possible to sign in with your Google account. Alternatively, you can also create an account with just your email address and a password. Behind the scenes, they are authenticated using Firebase Auth and additional Properties, like user language and mood, are stored in the Firebase Realtime Database.

Settings



In the settings, the user can change their display name, their use name (must be unique), their mood, their email address, their country (selected from a list), the languages they can at least understand (multiple selected from a list) and their default language (must be one of their languages). The default language is typically the user's mother tongue and is also the language displayed on the map. A message will be translated to this language, if the user doesn't understand the language a message is written in. In addition, notifications can be disabled.

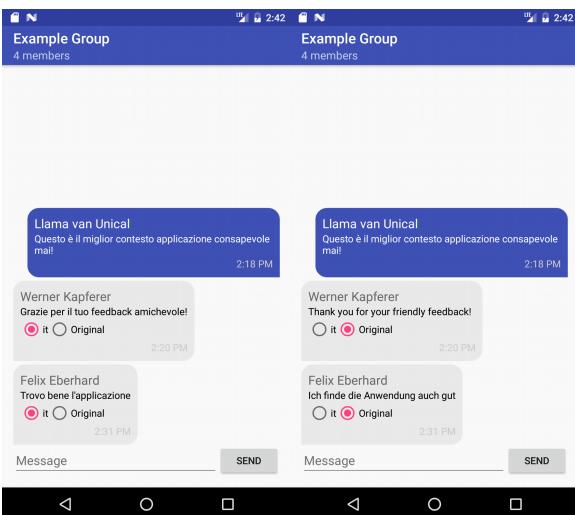
Dialog and Group chats



With a click on the ‘+’ Button, a menu appears, that provides you the possibility to create a new “dialog” or “group” chat. If you choose “New dialog...”, you have to enter your friend’s username to create the chat with him.

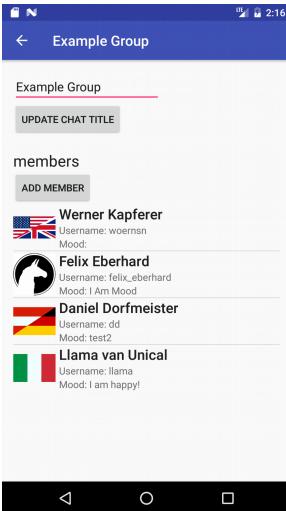
In the third picture, you can see a conversation list, with two dialogs (“Werner Kapferer” and “Daniel Dorfmeister”) and one group (“Example Group”).

Automatic translation in your language



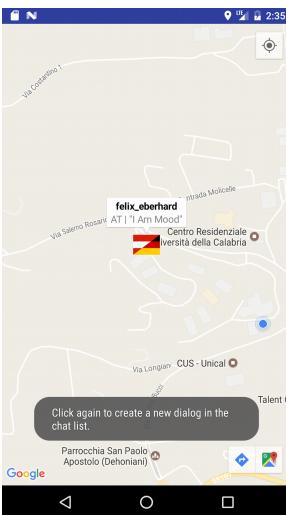
Messages in a group are automatically translated to the languages that the people in the group speak. So, when a new message arrives, it is shown to you in the language you understand, but it is also possible to view it in its original language. Messages that are send in a language you understand are not translated for you.

Group details



When you click on the group name in the message view, you get to the group details page. In this page it is possible to change the title of the group and to add new members to it. Further you see the current members of the group, their preferred language, username and current mood.

Showing users and their username, country and mood in a map



When the application gets your location, it zooms in. At this view, you can see other people nearby. With a click on the flag, following information are visible:

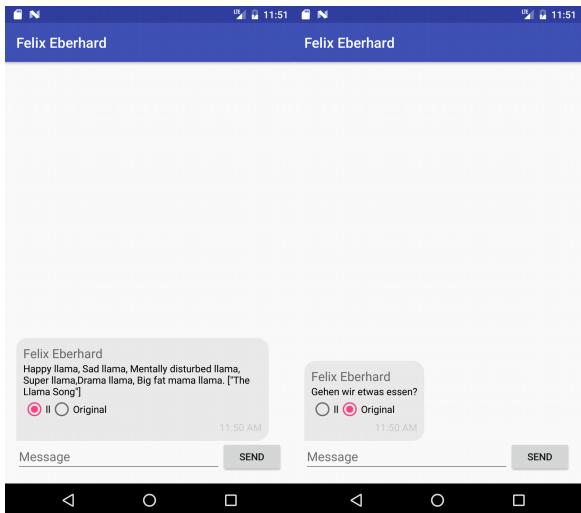
- λ user name
- λ country
- λ mood

Create new chat from the map



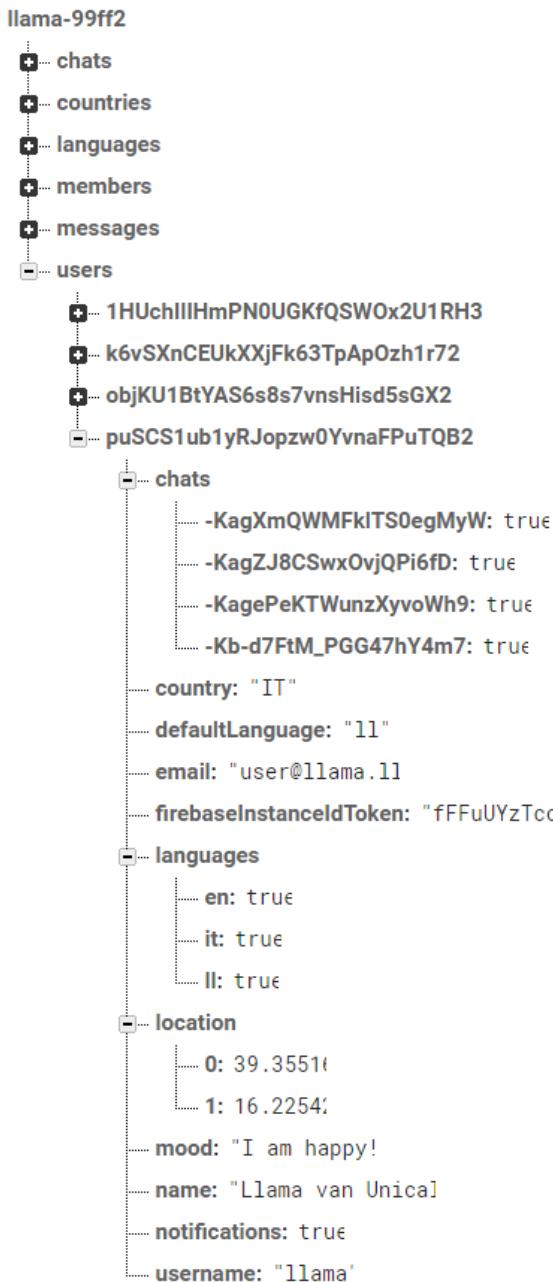
If you click on the same flag again, a new chat with this user is created in your message list. Press the “back”-button to come back to the message list and you will find the new chat.

Easter egg (Llama as Language)



In the settings, you can also add the language “LL” to the list of your known languages. If you set it as “default language” afterwards, it effects your incoming messages in a funny way: The translated text to “LL” (which stands for “Llama Language”), will always be a part of the lyrics of the song “The Llama Song”. Of course, you are still able to see the original version of it.

Database



As database system the Firebase Realtime Database is used. The Firebase Realtime Database is a cloud-hosted NoSQL database. Data is stored as JSON and synchronized in realtime to every connected client.

The database contains six sections (“tables”):

- λ **chats**: includes all chats and information about them (owner, title, last message, etc.)
- λ **countries**: lookup table that contains all countries
- λ **languages**: lookup table that contains all supported languages – the supported languages can be extended without updating the app
- λ **members**: assigns users to chats
- λ **messages**: contains all messages, grouped by chats
- λ **users**: includes all users and information about them (name, location, languages, chats, etc.), shown as an example on the left side

Note that, for performance reasons, some data is duplicated in the database and present in multiple sections but represented in a different way.

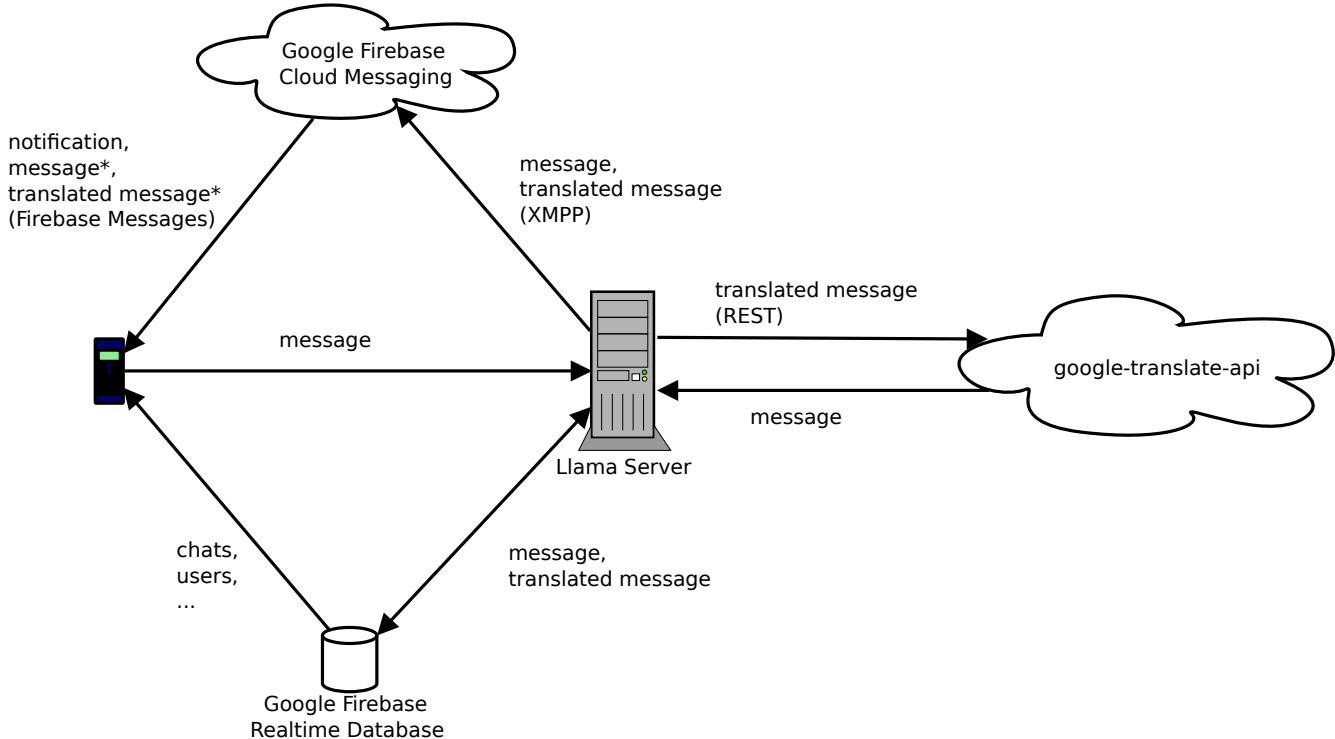
There is also a set of rules that describes the structure of the database, contains validation rules (constraints), adds indexes and restricts read/write access to certain parts of the database depending on the user that accesses the database.

Server

The server was written in [TypedScript](#) ([NodeJS](#)). It contains of 8 classes and 5 node-modules.

It handles sent messages by the Android application, translates and stores them to the **Firebase Realtime Database**. Afterwards, the notifications for all members in a group or dialog is created and sent (not to the sender himself/herself of course).

The communication technologies and the server's infrastructure are visible in the following diagram:



* are read directly from the Database, not the message

Related Work

- ChatLah
<https://play.google.com/store/apps/details?id=com.chatlah>
- Skype (Translator)
(Web and desktop version)
- Duolingo
<https://play.google.com/store/apps/details?id=com.duolingo>

Future Work

The ability to see your chat partner's details like local date/time or weather at his location. The users should also be able to set their own profile pictures (like in other messaging apps) or set a picture for groups.

The mood could be translated to the other users' languages.

In the future, users can also make multi-language calls. Images with text in it will be translated automatically.

To get your best friends to use this amazing app, you can invite them via Facebook and Google+. If you want to make new friends, you can filter the map for common interests, languages or hobbies.

Members

- Dorfmeister Daniel
daniel.dorfmeister@students.fh-hagenberg.at
- Eberhard Felix
felix.eberhard@students.fh-hagenberg.at
- Kapferer Werner
werner.kapferer@students.fh-hagenberg.at