

## BACKGROUND

American Sign Language (ASL) is one of the primary forms of communication for people who are deaf or hard of hearing. The language itself is a collection of hand symbols that represent words in the English language. There are many apps that teach ASL vocabulary and word structure. However, I wanted to create an app that allows the user to learn in a fun, easy, and free way.

According to the National Institute on Deafness and Other Communication Disorders (NIDCD), "about 2-3 out of every 1,000 children in the US are born with some level of hearing loss in one or both ears and approximately 90% of deaf or hard of hearing children are born to hearing parents."<sup>(1)</sup> It is important for both children and parents to have access to ASL so that they may communicate with each other.

Although there are other ways of communication for people who are deaf or hard of hearing, such as cochlear implants. A cochlear implant is a small, complex electronic device that goes into the ear of a deaf or hard of hearing person that gives them the ability to hear.<sup>(3)</sup> However, these devices are not always an option for some people who suffer from deafness because often the devices are extremely expensive, or their hearing level is not high enough for the device to be beneficial.

There are many apps on the Google Play Store that teach ASL. For my research I looked at the top 2 apps with the most downloads. I wanted to see what people are looking for in an app that teaches ASL. Do they want to learn more about deaf culture? Does the visual appearance of the app play a role?

During my research of these apps, I found some features that would be useful for my app. These are features such as, videos that will be used to show how a sign moves, pictures for signs that are still with clear backgrounds, and interactive quizzes and lessons.

My plans for this app is to provide the user with a fun way to learn ASL and providing a clean and intuitive user interface.

## ABSTRACT

### Introduction:

For this research project, I have built the prototype for an Android app that helps people effectively learn American Sign Language (ASL). ASL is the communication method for people who are deaf or hard of hearing. It is comprised of a series of hand motions that represent letter, numbers, words, and concepts. The early versions of the app will teach users the alphabet, numbers, and some words to help them get started. Later versions of the app will teach users how to create sentences in sign language and supply the user with gifs and videos on how to convey their messages. The app will also teach the user about the deaf community and deaf culture. The goal for my app is to create an effective, efficient, and fun way to learn sign language.

## Materials and Methods

I used Lifefprint for much of the content on the app so far. Lifefprint is a website dedicated to teaching people ASL for free. They provide a plethora of lessons on everything from fingerspelling to word order and sentence structure.

ASLU  
American Sign Language University is resource site for ASL students and teachers. Here you will find information and resources to help you learn ASL and improve your signing.

ASL Lessons: [1][2][3][4][5][6][7][8][9][10][11][12][13][14][15][16][17][18][19][20][21][22][23][24][25][26][27][28][29][30]

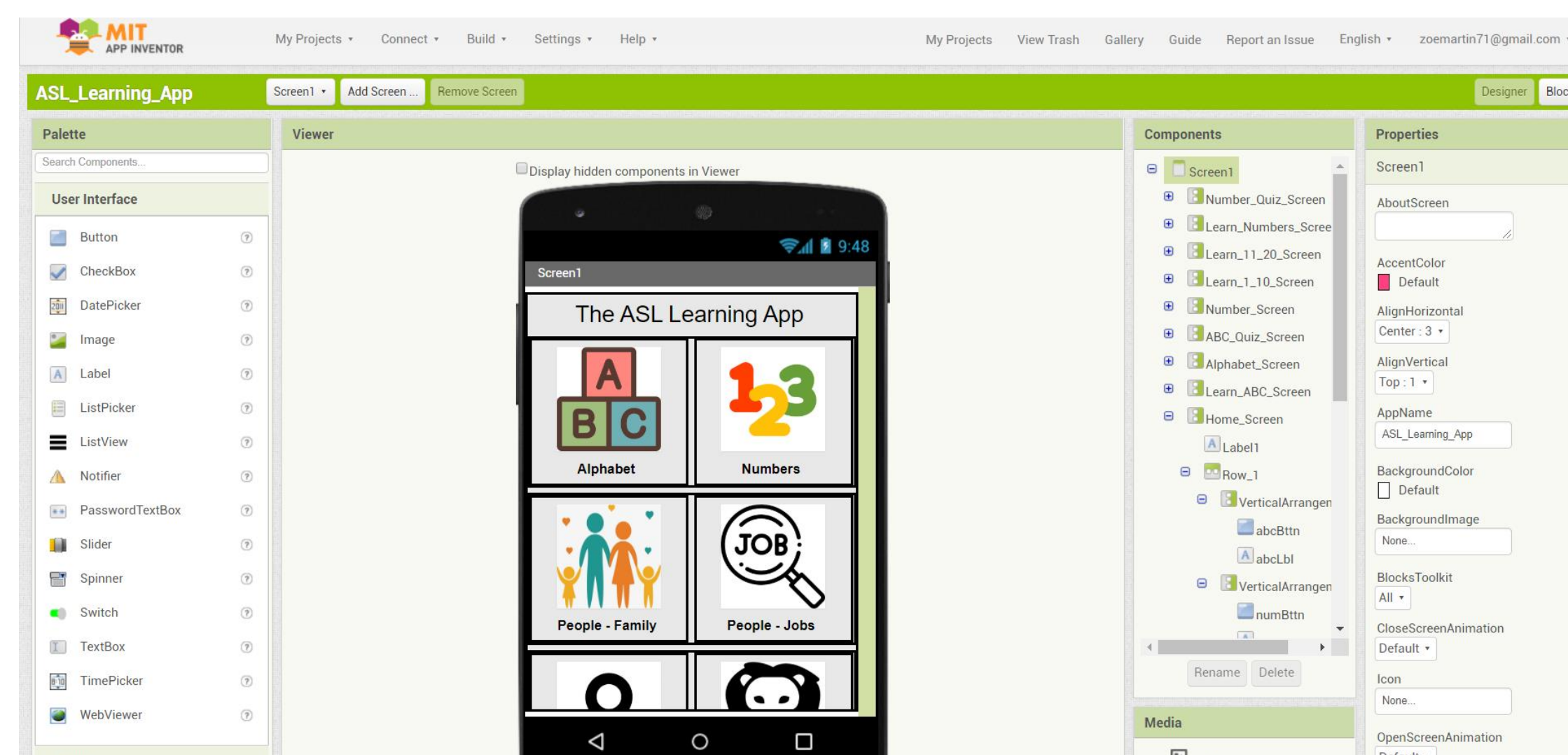
- First 100 Signs
- About ASL University
- ASL Lessons
- Dr. Bill's Super Disk Library
- Dictionary
- Numbers
- Jokes
- Sign Language wallpaper
- ASL Screensaver (PC)
- Fingerspelling art!
- Fingerspelling Practice Tool
- Fingerspelling Learning Tool
- Fingerspelling introduction
- Fingerspelling Quizzes
- Fingerspelling Chart: ABC's
- Font Download
- Interpreting Archives
- Permission
- Workbooks
- Practice Sentences
- Peer Advice

Video: 100 Basic Signs

## Programming Environment

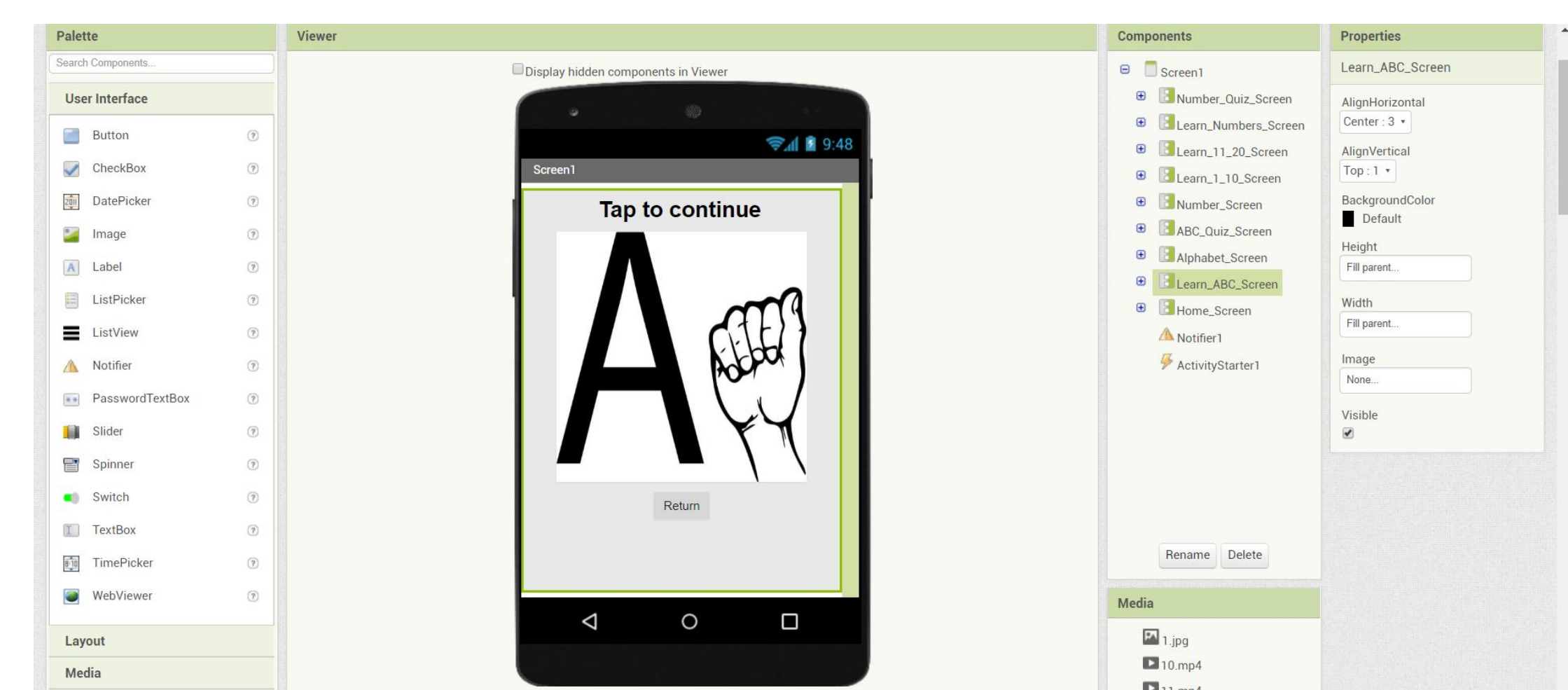
I used MIT App Inventor for the creation of the prototype version of this app. "MIT App Inventor is an intuitive, visual programming environment that allows everyone to build fully functional apps for smartphones and tablets."<sup>(2)</sup> It is an android based app creator that uses blocks to create code for the app.

Figure 1.



This figure shows the home screen of The ASL Learning app and the user interface to navigate between topics.

Figure 2.



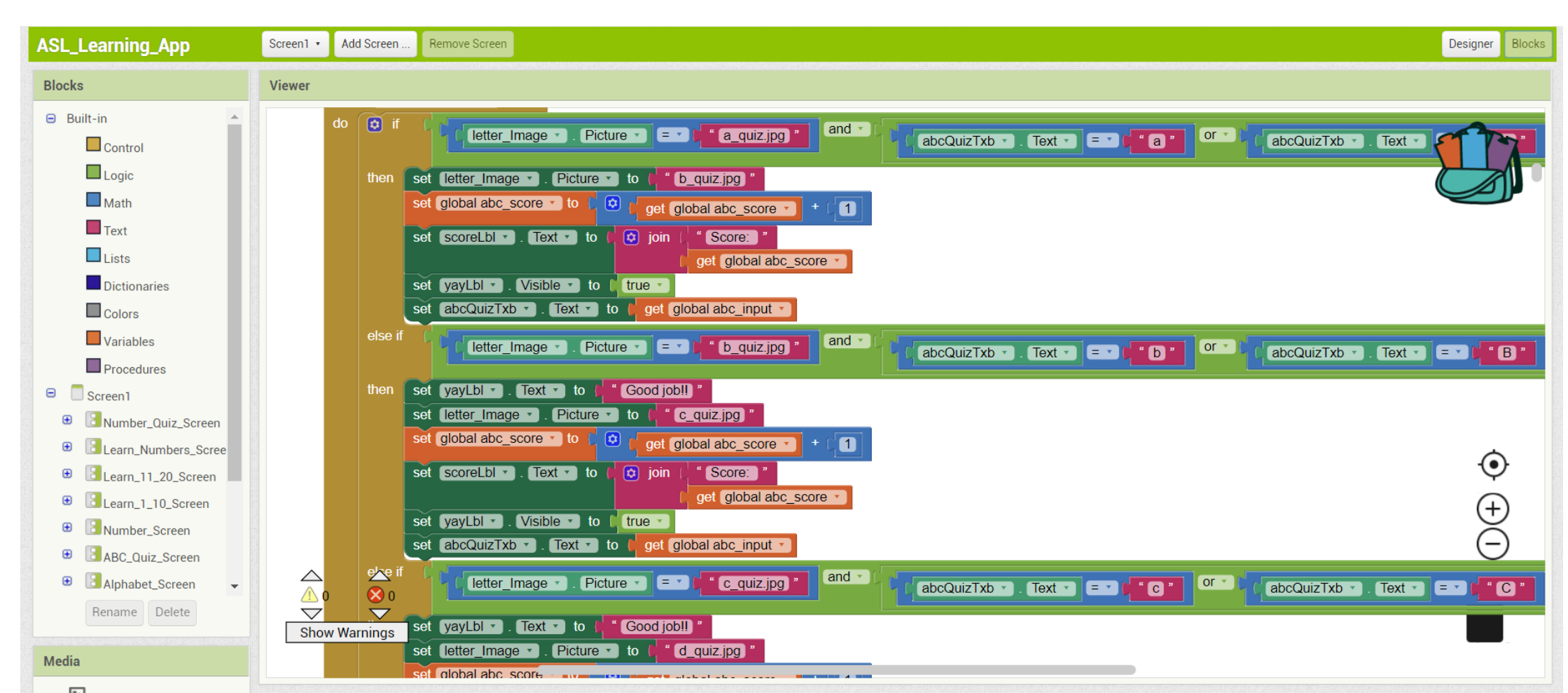
This figure shows the first lesson of the ASL Learning App that teaches the user their ABCs.

Figure 3.



This figure shows how blocks in MIT app inventor are put together. This portion of the code is from numbers section of the app.

Figure 4.



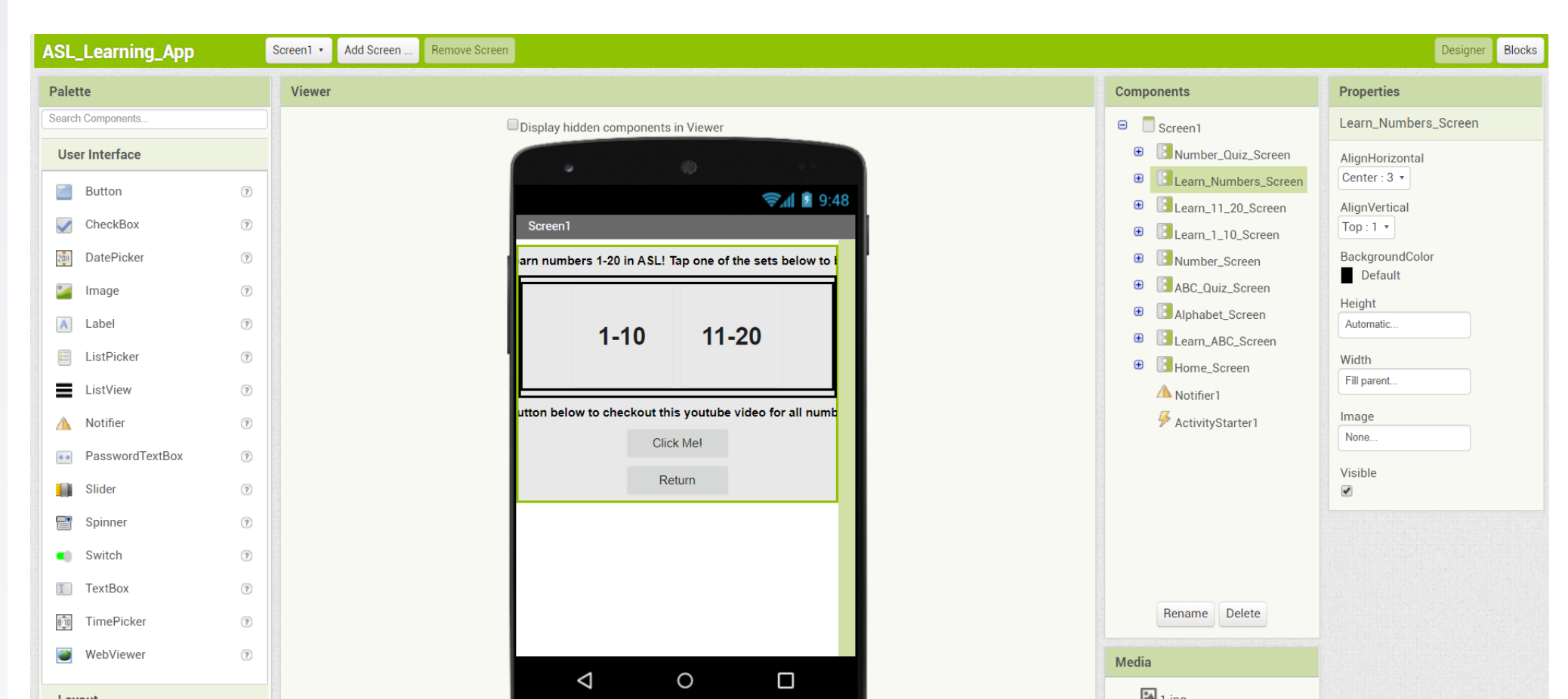
This is another picture of the code. This portion is showing how the ABC quiz portion was made.

## RESULTS

Since this app is not finished yet, I think the progress for the app is going well. For the initial set up of the app there are six categories that intend to give the user a strong foundation and a large vocabulary of words.

There are two completed sections on the app so far, the alphabet and numbers sections. Each section has a learn and quiz section. The learn section teaches the user the signs for the alphabet and the numbers and the quiz section quizzes the user on the signs. Throughout the app so far, I have mostly used buttons, labels and video players.

Figure 5.



This figure shows the learn number screen. The learn number section is split into two sections because there is an infinite amount of numbers, so I decide numbers one through 20 was a good split.

## Future Work

I am still working on this app, so I plan to add more features to the prototype with more quizzes and vocabulary. Then I will add lessons on ASL sentence structure and Deaf culture. Furthermore, the app still lacks consistency with images and videos because of where I had to gather content. In future versions of the app I want to work on using custom photos and videos that create uniformity within the app. After all the content I want is added to the app, I want create an IOS version of the app that will be accessible to Apple users and publish the app on both the Google play store and Apple store for everyone to use for free.

## REFERENCES

1. "Quick Statistics About Hearing." National Institute of Deafness and Other Communication Disorders, U.S. Department of Health and Human Services, 5 Oct. 2018, [www.nidcd.nih.gov/health/statistics/quick-statistics-hearing](http://www.nidcd.nih.gov/health/statistics/quick-statistics-hearing).
2. "About Us." About Us, MIT App Inventor, [appinventor.mit.edu/about-us](http://appinventor.mit.edu/about-us).
3. Cochlear Implants. (2018, June 15). Retrieved from <https://www.nidcd.nih.gov/health/cochlear-implants>

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