



# CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

<b>Name(s)</b> Narek Daduryan; Ethan Keshishian	<b>Project Number</b> <b>S0805</b>
<b>Project Title</b> <b>Creating a Multilingual Keyboard Utilizing LCD Screens to Aid Multilingual Typers</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Our project's goal was to create a sort of multilingual keyboard to aid those who type in multiple languages, or wish to learn a new one. Our objective was to make this keyboard so that the user would not have to own multiple keyboard, memorize the locations of letters, or place stickers on a keyboard in order to type in multiple languages. Instead, a single keyboard would be used to type in any language.</p> <p><b>Methods/Materials</b> To create the working prototype, there are two components: hardware and software. Our hardware consisted of an arduino and two (2) LCD-Display Switches by NKK, along with other general parts. We put everything together from soldering to placing resistors. Two pieces of software were written: we wrote a desktop program in C# that will run on the user's pc, and a second program, written in Arduino's language (based off C) that runs on the arduino. The two programs communicate with each other using serial communication via a USB cable. All software was written by ourselves, except for the arduino timer interrupt code, to which credit was given.</p> <p><b>Results</b> Our result was a working prototype. The hardware included only two (2) keys ('e' and 'n'), that when pressed, typed the letters on the computer. When the computer's typing language was changed (Pressing 'Shift + Alt' or 'Windows + Space'), the LCD displays on the keys would change their displays to show the corresponding letters in the computer's new language.</p> <p><b>Conclusions/Discussion</b> Since our project was only a prototype, we hope to continue development to be able to provide a full keyboard of LCD-keys. We also only have two built-in languages supported. However, our code is available online, open-source, so any developer can add on to our code.</p>	
<b>Summary Statement</b> We created a (prototype) keyboard, where in place of traditional keys, each key contains a LCD screen. These are used to change the keys to allow the user to type in multiple languages with ease.	
<b>Help Received</b> We created all code, except for timer interrupt code, gotten online by Amanda Ghassaei. We also got help soldering from my uncle. All hardware work was done ourselves, however.	