Senior Design 2013

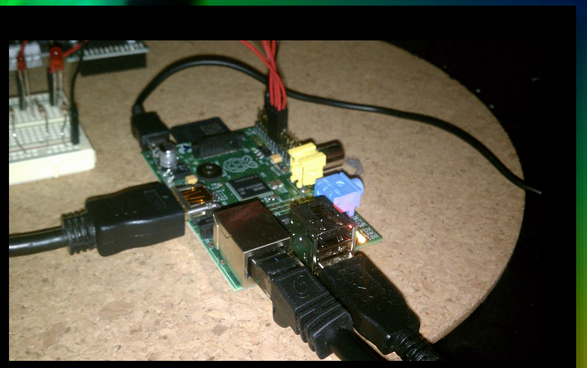
Nick Wainer, Derek Stiles, Tommy Sledzik

Juice Essence

Remote. Customized. Precise.

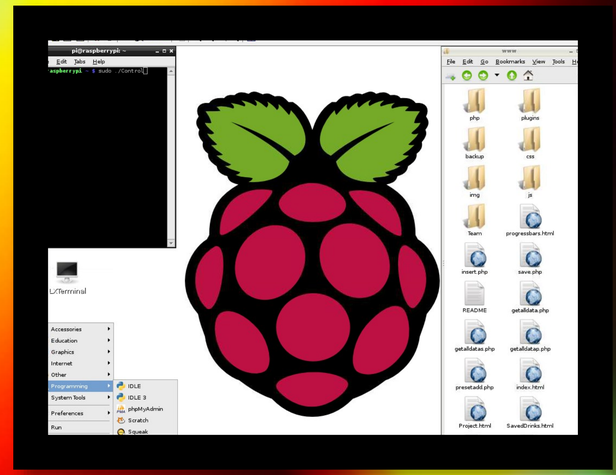
A Juice Dispenser.

Being served to you by: The Drink Mixer 5000



Pictured above is the microcontroller that drives the entire project of dispensing a custom cup of juice from any internet ready device. It hosts the webpage, driving the Android phone application, in which case both can take custom user inputted values via sliders and send them into a queue and a save database. Raspberry Pi is a very versatile chip that is cheap at only $35 and can be configured for a plethora of applications and projects.

Scan QR to download Android App!



Shown above is a screenshot of Raspbian, a Debian based Linux running on the Raspberry Pi. In the top left the console is pictured with the command that executes our Control C++ program. This pulls values from MySQL and translates them into the GPIO pins which drive the valves. To the right is the folder where Apache2 is pointing to, which actually hosts the website and application.

HTML

The front end aspect of the project Was of course the HTML and CSS. The CSS is what gave the look and the HTML was what arranged everything. To pull slider percent's and drink names there had to be fields and classes specific to which data was getting pulled. This data was then facilitated by Java for further transformation.

Java

The Java, actually known as JavaScript in this case, served two purposes. The first and most important job it had was to take the "formData" supplied from all the sliders, and send it to which ever PHP script was requested. It could either simply add it to the queue, or save and then submit the mix in. The second job JavaScript had was to do that cool page scrolling effect, its my favorite.

PHP

When being called on from the JavaScript, by having numbers inputted into its script, PHP can then execute its own command. The first script simply added the drink percentages and persons nickname into the queue table of SQL. The second script did this but also added it to a ever expanding saved drink database with unique names.

MySQL

Within the PHP script there is actually MySQL commands embedded into it such as "INSERT INTO." This is what inserts the values given from PHP, pulled with JavaScript, from the frontend user. Here in MySQL sits three tables: Queue, Saved, and Presets. The queue gets actively accessed and as drinks are made they are deleted, and this is done by our looping C++ program.

C++

The final stage of the process to deliver the Juice Mix to the user is a looping C++ program that we compiled. It constantly checks the queue and if there is a new entry in the table the program grabs the values. It then translates the percentages into seconds, which in turn opens the corresponding valves for the appropriate time delivering the exact drink requested, and finally cleaning the queue.