Capstone Project Proposal

Project Number: S19-50

Project Title: Capsule Distribution System

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Five Keywords that classify the scope of this project:
  ○ Healthcare
  ○ Arduino Interfacing
  ○ 3D Printed Parts
  ○ Arduino Add-Ons
  ○ Mobile Application

Project Abstract

As an individual becomes old or sick, he or she, naturally, starts to experience different pains and symptoms of illness. Due to this, a person is compelled to take medicines. When that person has to take four to five different pills, twice a day, of different quantities, he or she becomes irritated and frustrated. Remembering which medicines to take when and how many of them to take can sometimes become very difficult. So, we, a group of students, aim to solve this issue once and for all which will make the lives easier of millions or even billions of people.

Within this project the group will design a pill dispensing system in order to effectively distribute pills to medicated individuals, mainly the elderly. The pills will be processed and sorted using an arduino Mega device. Implementing a real-time clock, the arduino is able to accurately let the user know when to take pills at the right time. Five servo motors are connected from the arduino to 3D printed, custom designed, propeller-like structures to dispense pills. The 3D structures will be designed using Blender. Each dispenser will accommodate different pill sizes. In addition, a piezo will be embedded in the design to act as an alarm clock. To allow the arduino chip to interact with various electrical components, C++ code will be implemented.

The user will ultimately be able to set the time that each pill should be taken and quantity of pills. This can be set from the LCD screen using the input buttons. These settings will be saved and used by the dispenser to match the user’s preferences. The pills will roll off down rail-like structures into a center platform for users to acquire using arduino servo motors. The arduino will know when to dispense pills based on the Real Time Clock Arduino extension.

Also, a mobile application will be developed to let the users take notes and set notifications on certain prescriptions using an Arduino Bluetooth module. As an alternative to using buttons, the user will be able to set the prescription times...
and the quantities right from the app. The app will be designed differently for patients and doctors (doctor-patient account system) and there will be a connection between the two. Patients will be able to find their doctors and communicate with them. Whereas the doctors will be able to send the prescription details, like the times to take the medicines and how many, to the patient. Using this, the patient can then automatically set the settings on the device. The android app will be designed in Java using Android Studio.