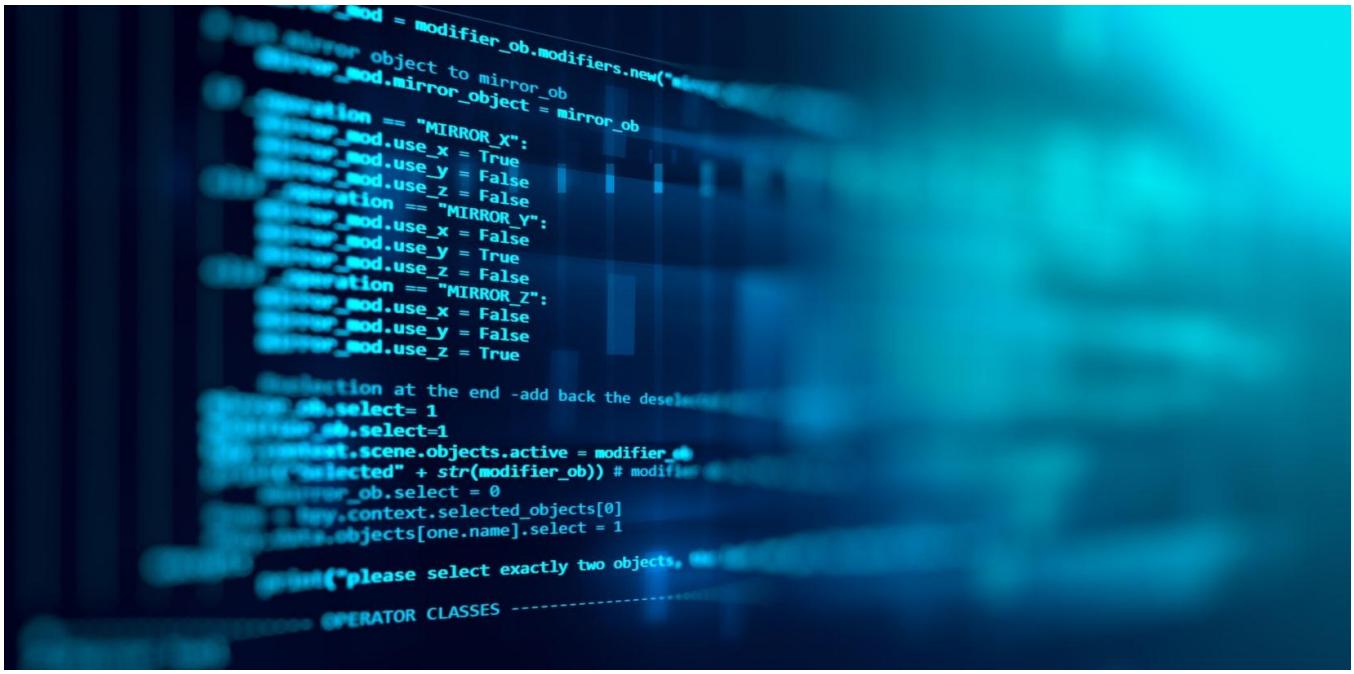
Suwapiyasa – Technical Overview



Suwapiyasa is a C based software built by The Our Mind team of Dharmaraja College Kandy. It has a quiet complex technical background which here has been explained simply.

Software Overview

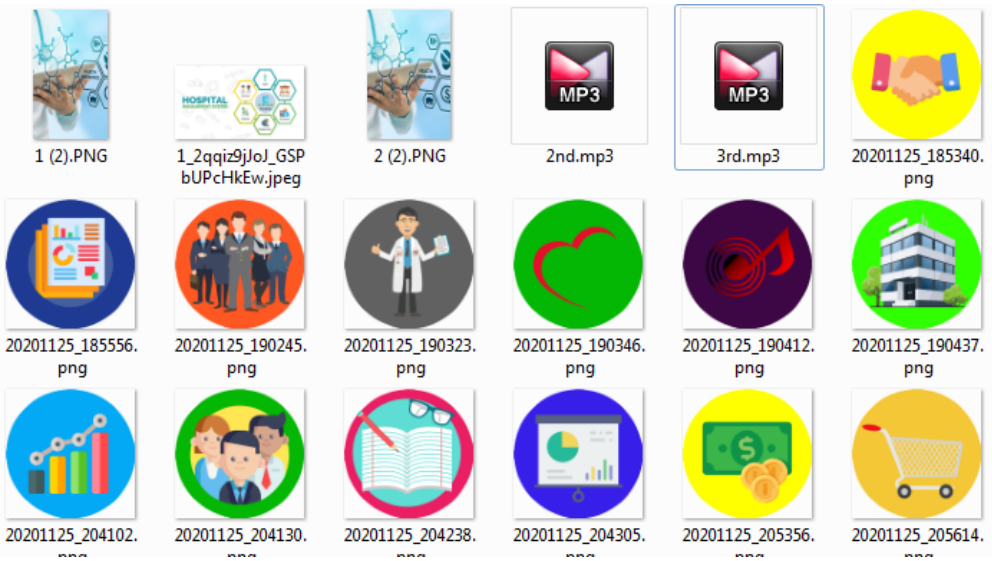
Software overview of Suwapiyasa is to explain the software based programming designing and developing part of Suwapiyasa. It is done by several members of team as factions and all of it is explained here. Most of these things are already included in our prototype. And some are yet to be programmed in the future.

+ Designing and Planning

We designed the structure and layouts of our software on papers and on COREL DRAW. And we planned each and every thing we need to program with different methodologies like flow charts and pseudo codes. Then we started building it

+Graphics and Audio Designing

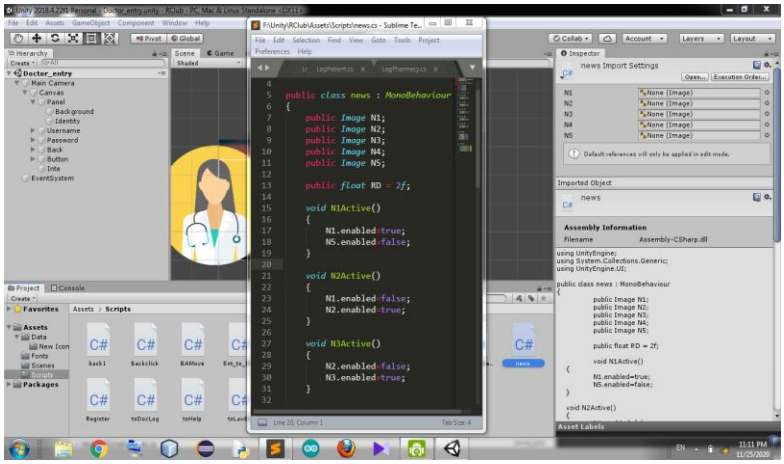
Mainly the graphics of the software is edited by different graphic designing software. Most of the background images are edited by ADOBE PHOTOSHOP. And for generating clip art icons we have used ADOBE ILLUSTRATOR.



And background Audios and Entry audios are created and Edited by ADOBE AUDITION and other AUDIO EDITTING APPLICATIONS.

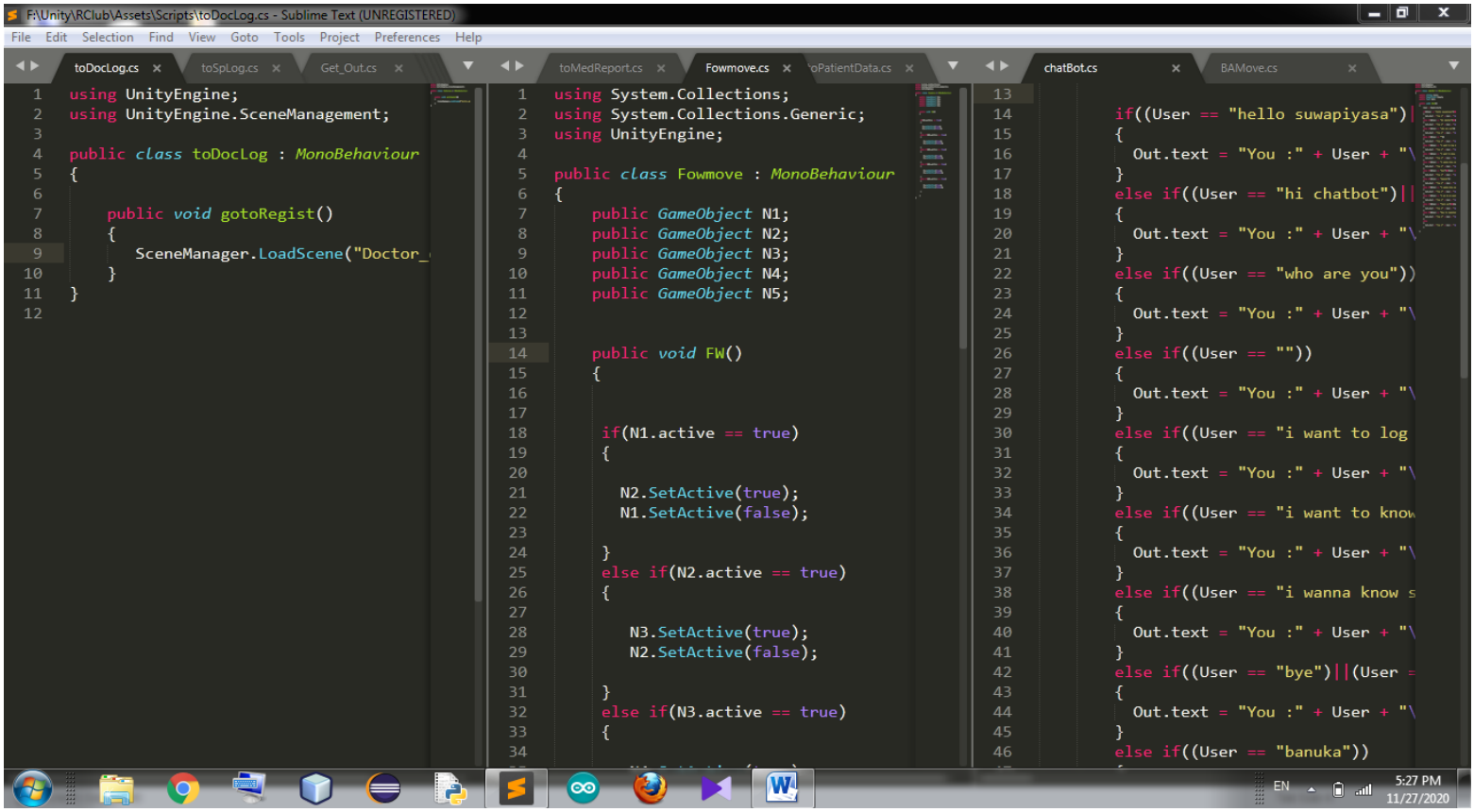
+ Building and Creating

For building and creating our software we used UNITY ENGINE 2018. Because Unity is good for building not even games but also many other Software. And we can create the Android and IOS and Windows, Mac, Linux and Web GL versions of our product from the same build. We used GRADLE building system and SDKs and JDKs for Android and other builds. And many other drivers and components were used in building the software with unity.



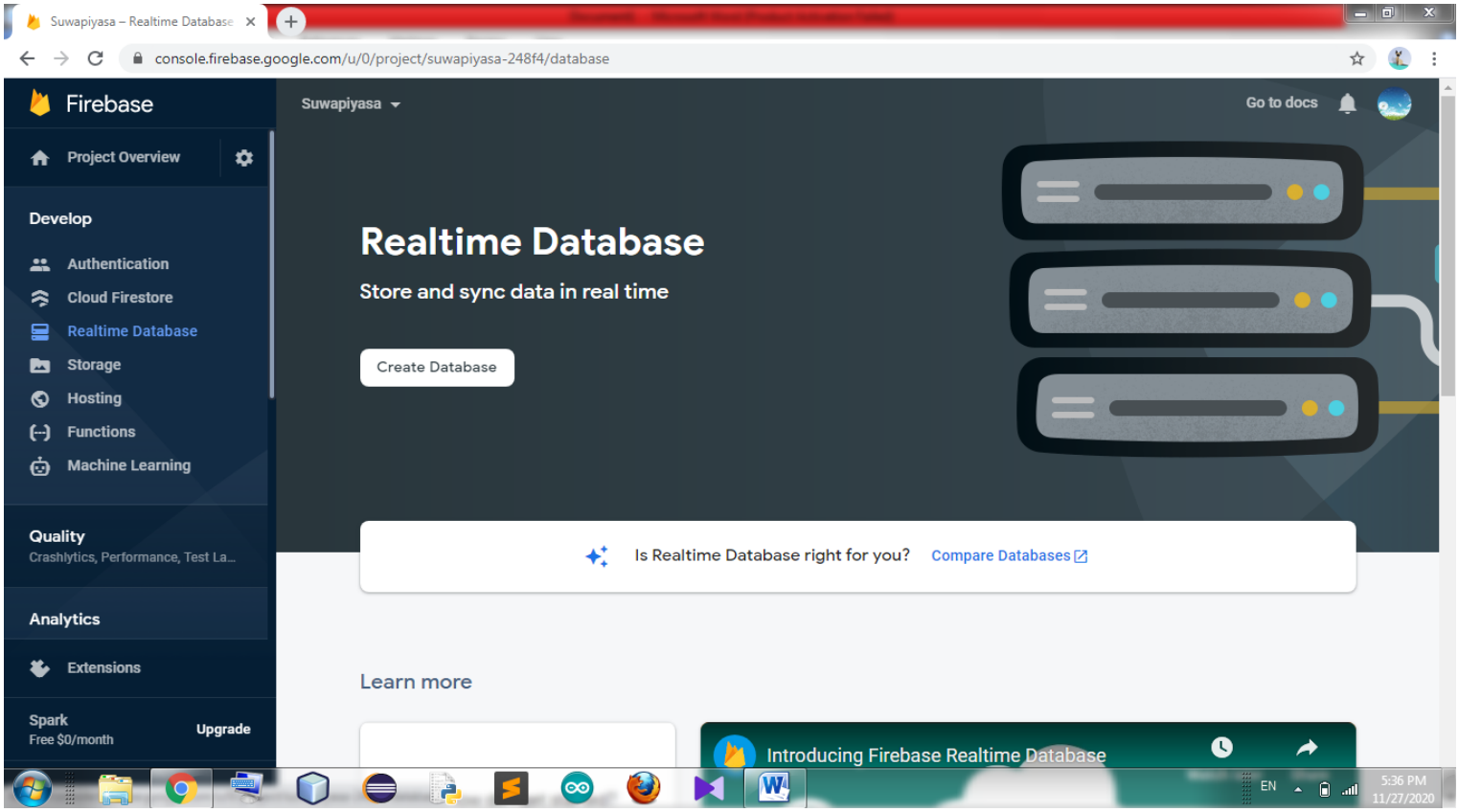
+ Programming and Scripting

For programming we have used C# programming language (VISUAL BASIC) because it is easy to use such a programming language for creating software like this. For texting C# we have used a text editor called SUBLIME TEXT. Due to color variations and other features used in Sublime text we chose that for programming.



This image shows some of the unity based C# codes we have programmed for various actions and purposes of the prototype of our software

+ Connecting Databases

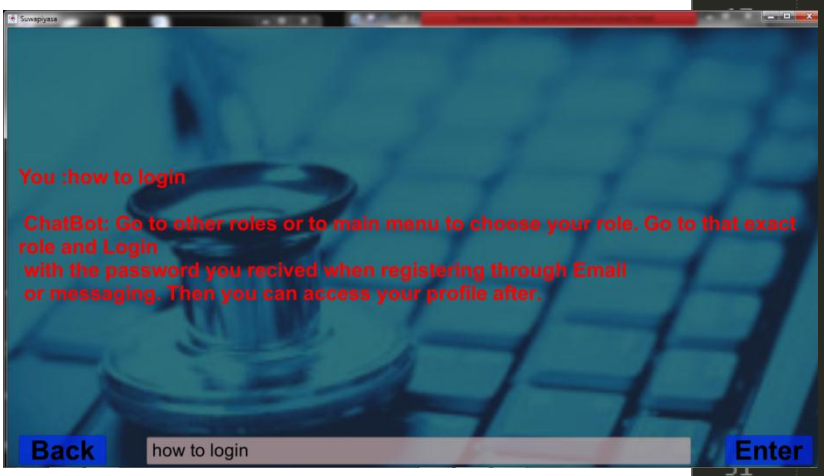


We have used GOOGLE FIREBASE database system because it is a real time database system which is compatible with any of Android, Windows, Mac or IOS. And because it is a very fast and accurate free online database system. We are using files like google-services.json and FIREBASE SDK with much other stuff. With all these we are creating various types of databases for various types of data like Medicine data, Customer Data, Commercial Data, Tax Data, Private Data and many more. And then we are connecting all these databases with each other. And we are

storing profile data of our users in the same database to make a large advance interacting system. By using firebase we hope to give a very high privacy and accuracy to users as well as everyone who will hope to use Suwapiyasa.

+Using AI to make it User Friendly

We have used AI chat software and AI based instant report for a patient generating system in Suwapiyasa. AI chat system is already in the prototype. And the automatic report generation unit is still being programmed and a demo can be seen in the prototype. And here is some of the code used in AI chat system for guiding users by an easy to use chat bot chatting system.



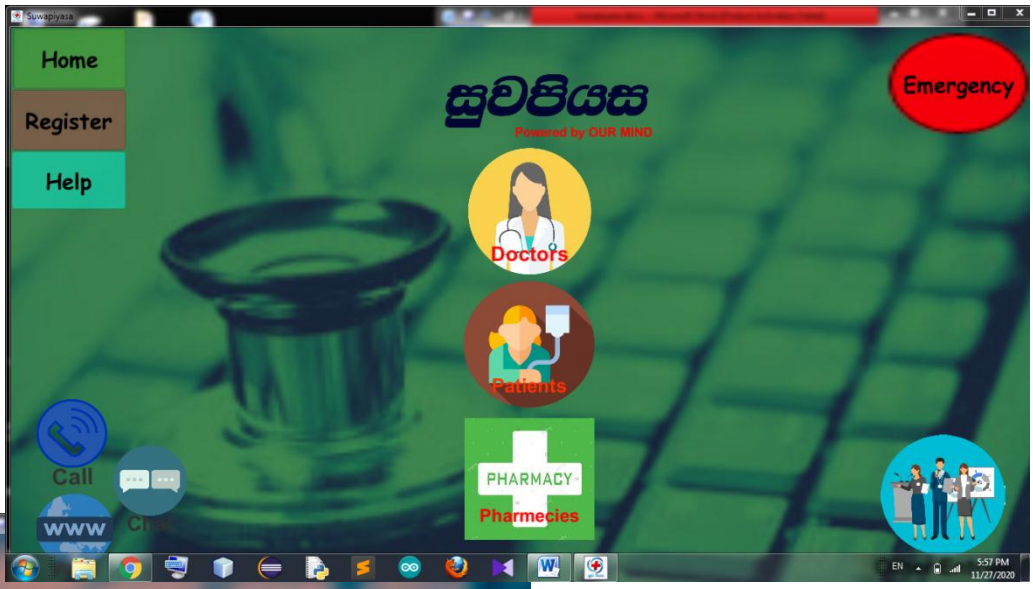

```
chatBot.cs                                    BAMove.cs

using UnityEngine;
using UnityEngine.UI;

public class chatBot : MonoBehaviour
{
    public string User;
    public InputField Input;
    public Text Out;

    public void Chat()
    {
        User = Input.text;

        if((User == "hello suwapiyasa")|
        {
          Out.text = "You :" + User + "\
        }
        else if((User == "hi chatbot")||
        {
          Out.text = "You :" + User + "\
        }
        else if((User == "who are you"))
        {
          Out.text = "You :" + User + "\
        }
        else if((User == ""))
        {
          Out.text = "You :" + User + "\
        }
        else if((User == "i want to log
        {
          Out.text = "You :" + User + "\
        }
        else if((User == "i want to know
```

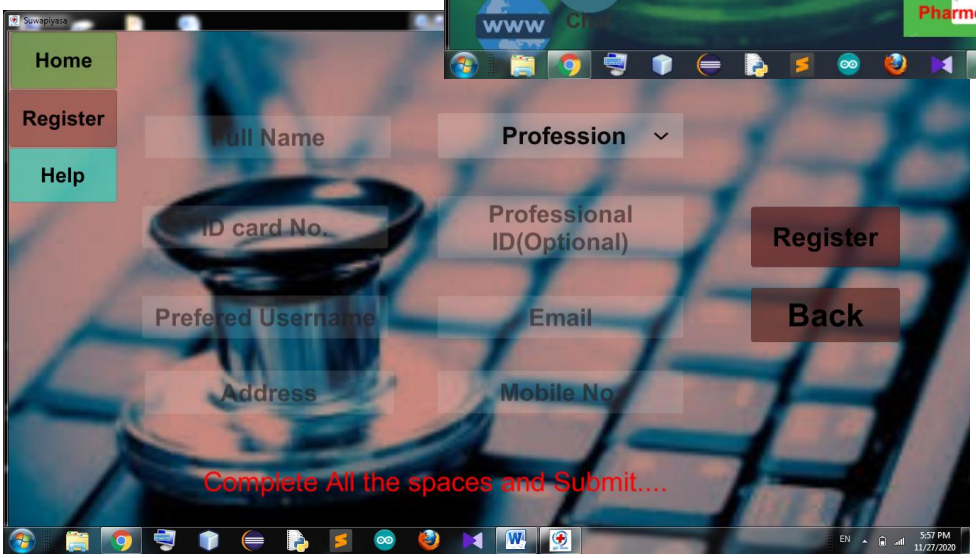
+ Error fixation and Debugging

Program errors are fixed by DEBUGGING while testing the app in UNITY EDITTOR. Other major errors are corrected by testing our software's prototype by multiple members. Then we fixed all those problems to get our final product…..

+ Final Prototype Software product.

After all that we are creating our final software product. But still it's a prototype and there are a lot of things to be added.





Practical and Hardware Overview

+ Practical Development

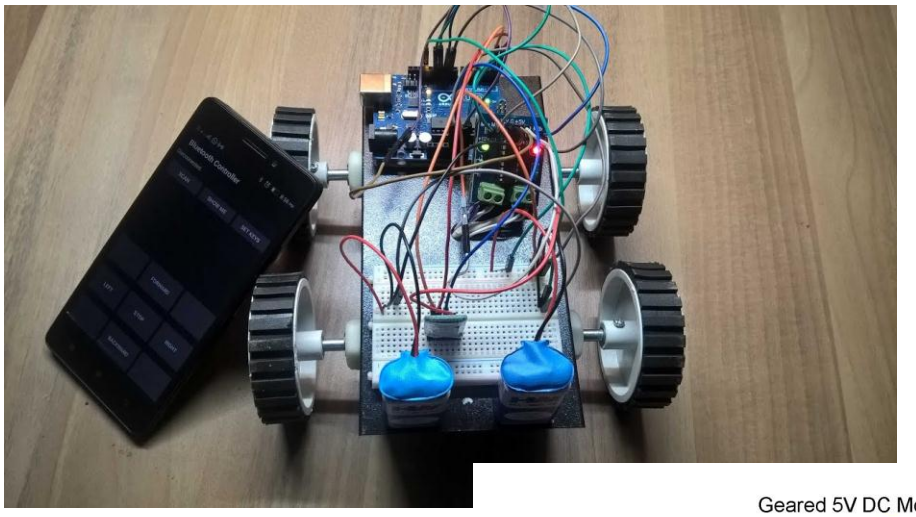
No matter how good the software is we have to try it practically in the first place. So we hope to do this in a hospital which already runs a simple Hospital Management System to show how unique the software is. Or otherwise to avoid the dangerous things that arise in testing something like this we hope to test it in a small scale hospital after correcting all software errors that we can correct individually.

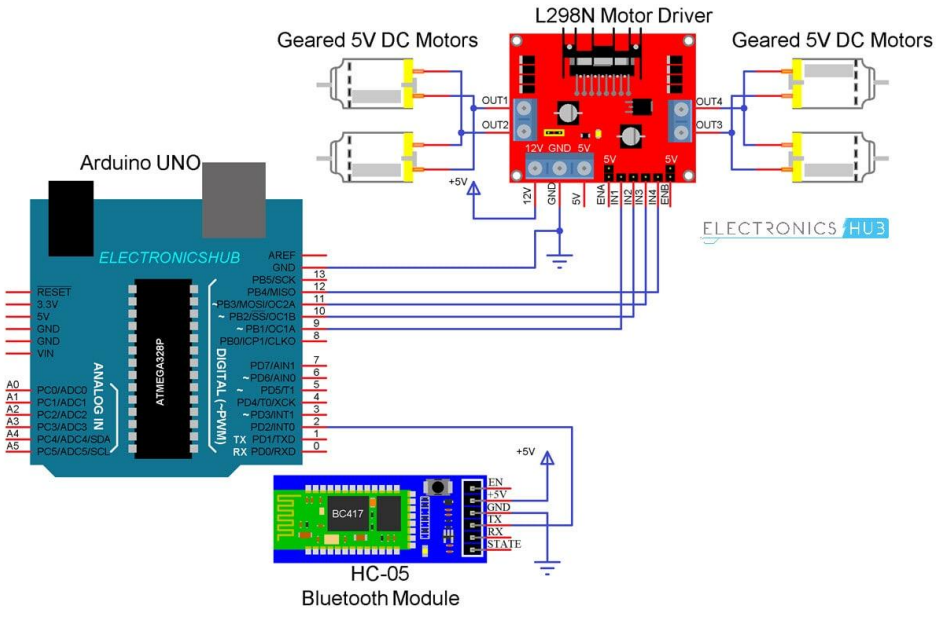
+ Using Robotics

We are connecting robotics to this platform by various methods. We are building ARDUINO based or RASPBERRY PI based robots that can be monitored through our software and can be controlled through our software. We can create a system to indicate the condition of our robot with its battery levels through our software. We can build medicine delivery robots and food delivery robots as well as patient testing robots to function inside a hospital with sensor like Ultra Sonic sensors, IR sensors, Thermal sensors and many more sensors with actuators that can

perform itself. Or otherwise we hope to build robots that we can control through a Bluetooth module or a radio module most commonly Bluetooth (Because any Electronic device now days have Bluetooth) so we can control the robot through our software manually but very easily.

Drones can be used for deliveries in outside of a hospital. Even though it's difficult to monitor a drone with an app we can try it in future to make work easy. This robotics part is so special that no any other hospital management system in the world is connected with robotics.





Special Advantages of Our System due to These Technical Methods

+ Fast and accurate due to used databases and coding.

+ Easy to use due to YouTube Tutorials given for new user and Graphic and Animation based teachings for First Aids and AI systems like chatting and Auto report Generation.

+ Attractiveness due to Audios and Graphics.

+ Spreaded in a wide area with huge amount of user roles such as Insurance agents, law Enforcement Authorities and Pharmacies and etc.

+ High compatibility based on how old the device is and what the device's OS is.

+ Good for pandemic situations due to use of robotics in deliveries and patient monitoring.

+ Protecting theft and creating a high level of accuracy and privacy for data due to its database Firebase database system.

+ Easily upgradable due to Unity based creation.

+ Easy to access due to the availability of Web version.

Made By: Banuka Kumara Ambegoda

Team: Our Mind Team

School: Dharmaraja College Kandy

Software: Suwapiyasa

Creative Innovations Competition