Remote Controlled House Network
Project code: KV1-12
Supervisor: Professor Volkan Kursun
Students: Ho Chun Man, So Ka Wai, Cheung Ming Yu

Introduction
Nowadays, with rapid growth of mobile network and smart phone platform, using a smart phone, which is highly populated recently years, people can remotely control their appliances no matter where they are in by connecting to the internet.

However, these real examples are not perfect solutions:
1.) Closed platform development lead low feasibility for self-customization.
2.) Unsatisfying cost brings difficulties in populating remote control technology.
3.) Specified control brings inconvenient in flexibility.

So, there are many spaces for improvement of the existing systems and leading us to explore possibility on better solution.

Objective
1.) Develop a convenient cost-efficiency mobile remote control systems through internet connection to control home appliances remotely.
2.) Provide an open interface for all users to implement household remote control system on home appliances through open-source resources, which provides the possibility of customization for users with cost efficiency.
3.) Reducibility of Standby Power Consumption

It accounts for 5-10% of total electricity in residential, commercial and industrial use in Hong Kong, typically ranging from 0.5 to 10 Watt. Offering a solution could save up these waste power consumption in our Earth.

Design Methodology
In our project, there are mainly separated into three modules included Mobile Android Application, centralized controlling module, receiving module and function module.

Basic Structure of the project

Message Flow for whole system

In order to achieve stable communication, we designed a message flow to minimum the risk for unpredicted actions.

Hardware selection
We choose Arduino board with CuHead Wifi shield as centralized controlling module, And we take 89s52 MCU with several ICs to assemble the receiving modules.

Result and Specifications

Smartphone Application and Centralized Controlling Module
Arduino collect and receive both address and data form users (Smart phone), then check received data has already existed in database or not, finally send 2 characters (2 bytes) feedback to Android.

Receiving Module and Function Module

We will assign address code to each appliance first. When 89S52 received data from Arduino through RF transmission, check data has existed or not, then send feedback to Arduino. Finally, 89S52 update memory and switch on/ off home appliances.

We combine the parts above and now the appliance can be controlled using our phone.