**Goal**

To design a reliable home automation system, which is controlled using an iPhone mobile application. Using X10 device, the iPhone application will be able to control various appliances and lights remotely from anywhere in the world.

**Requirements**

- Create an iPhone application that is affordable, so that the average household can afford it.
- Design a safe and reliable system that communicates commands from anywhere in the world on a consistent basis.

**Hardware Design**

- The iPhone Application is used to transmit data from the user through the Pachube network to the Arduino ethernet shield.
- Pachube network is used to translate the iPhone message to the Arduino microcontroller from anywhere in the world.
- The Arduino microcontroller receives the data and sends the commands to the X10 interface module.
- The X10 interface module sends the binary code to each individual appliance and light module.
- Command codes include: on, off, dim, brighten, all on, and all off.

**iPhone User Interface**

The program was written by Objective-C language using iOS 4.0, the iPhone graphic user interface provides the user interaction and animates the status of the given light or appliance.

**X10 Theory**

X-10 communicates between transmitters and receivers by sending and receiving signals over the power line wiring. These signals involve short RF bursts which represent digital information (binary code).

A Binary 1 is represented by a 1 millisecond burst of 120 kHz at the zero crossing point. A binary 0 is represented by the absence of 120 kHz.

A complete code transmission encompasses eleven cycles of the power line.

**Conclusion**

- Fall 2010: successfully researched, designed, and created an iPhone controlled home automation system. Constructed X10 network.
- Spring 2011: integrate the iPhone application with Pachube network and X-10 components. Expand the application to include more devices and create a security feature.