# CHAPTER 1

# INTRODUCTION

## 1.1    Background

Automation is today's fact, where more things are being completed every day automatically. Usually, the basic task of turning on or off certain devices and beyond is performed either remotely or in close proximity. Automation lowers the human judgment to the lowest degree possible but does not completely eliminate it. Depending on the location of its usage, automation differs in name as industrial automation, office automation and home automation. Each automation system has a different in its degree of intelligence, ease of programming, level of flexibility, intuitiveness of operation, communications media employed and price.

### 1.1.1 Home Automation

Home automation is the process of monitoring and controlling interconnected home appliances within a home environment from a central control point. It can ease daily tasks such as watering the garden, turning on outside light at dusk, setting up the room temperature, closing window curtains at certain time of the day or turning off the lights in vacant room. Home automation can contribute to better comfort levels and at the same time optimize the energy consumption, leading to savings in electricity, gas and water expenditures.

### 1.1.2 Bluetooth Home Network

Developments in the area of wireless data transmission during the last few years, allowed many applications which in the past were implemented using wired connections to be replaced by wireless system. Bluetooth protocol has recently gained enormous popularity and has been widely used in many consumer applications. The technology is capable of transmitting data and voice at half-duplex rates of up to 1 Mbps. Bluetooth employs low power consumption and does not require a license for spectrum use in most countries. Bluetooth network attempts to provide significant advantages over the other data transfer technologies, such as IrDA, Home RF and wireless LAN [1]. The capability of Bluetooth and limits connectivity is quite suitable to be implemented for home automation environment

## 1.2    Problem Statement

In conventional method to control the home appliances, a user is needed to get to the target appliances to perform the control operation. The ability to control much of the home may be convenient for the majority but it will affect the handicapped and the elderly. The difficulty may not be experienced in small houses, but will definitely be a problem in big houses as to get to each and every appliance in the house with a wheel chair is time consuming and tiring. With the development of home automation, the problem experiencing by the disabled and the elderly can be reduced as most of the appliances control is execute from a computer.

Most of the existing home automation systems are using control wires to send the control instruction to the target home appliances. However, using wires to control the home automation system can sometime be troublesome, especially when the house is fully constructed. The wires can no longer be installed inside the drywall but has to make it way from the controller or server to the appliances via a visible path on the surface of the wall. When too many household appliances needed to be controlled by the system, there shall be a mesh of wires on the wall that would affect the interior decoration of the house.

A wireless home network that does not incur additional costs of wiring would be desirable to replace troublesome appliance communication cords with invisible reliable wireless connections.

Installation techniques are also important. These do not just involve the physical installations, but also the setting up of each device with a different address and the registration of this address with the system. The application controller must know how to communicate with a new device even if it is on a separate sub network. An average user with a minimum skill in system networking may find this task complex and difficult. The problem can be overcomes by using Bluetooth technology in home automation network.