

Intensecomp Pte Ltd
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RFID Profile Control System – Using RFID Beginner’s Kit and NetIO™.

Background Information

RFID Beginner’s Kit™ – Radio Frequency Identification or RFID is an identification technology with growing popularity. Implementation of RFID in access control, product identification and asset management have been mushrooming all over the places. RFID technology is always difficult to implement due to complexity in selecting suitable RFID devices to use and software implementation associated. RFID Beginner’s Kit is an easy to use and hassle free kit for users who are new to RFID. A complete package with one desktop RFID reader, 10 RFID tags and software development kit make it easy to develop software around RFID solutions. RFID ActiveX control in the SDK enables application development in MS-Visual Basic or MS-Visual C++. For future version, we will have .Net Framework compatible control.

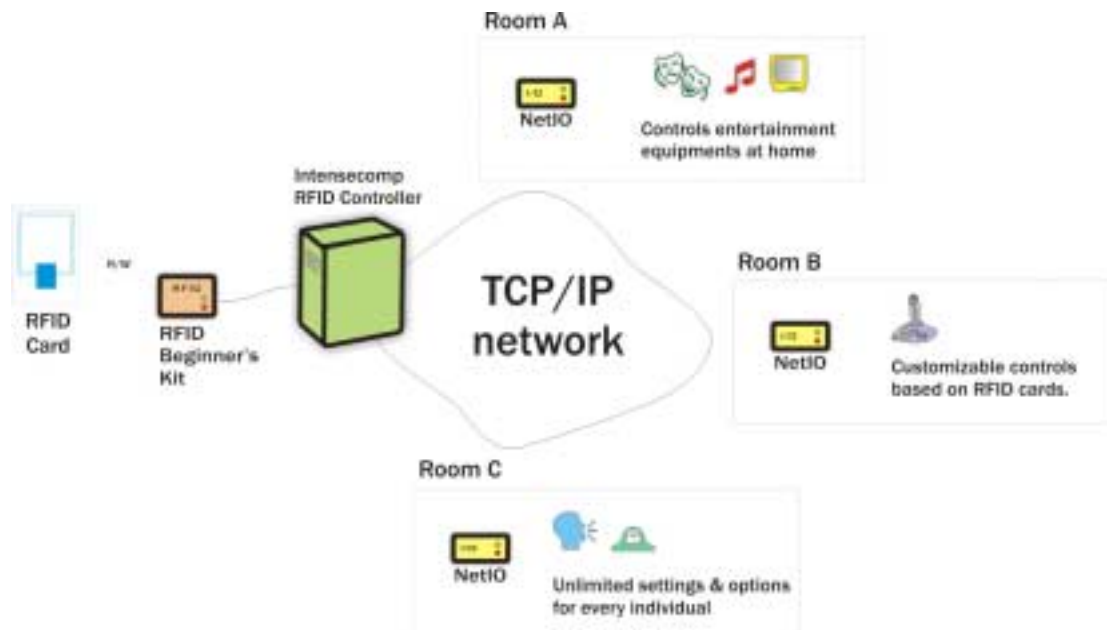
NetIO™ – A device capable of sensing digital signal and monitors analogue values. It also has built-in temperature sensor for monitoring purposes. Communicates through standard TCP/IP network protocol means it can be extended in any Ethernet networks and connectable to any Intranet and the Internet. Remote controlling features allows NetIO to turn on or off a device or equipments such as air-conditioning systems and building automation systems. It is also capable of monitoring a room temperature and adjusts the air-conditioning system automatically. Viola, here you get a full-scale building automation system at a fraction of cost and half the setup time.

RFID Profile Control System Overview

In today’s smart home environment, everyone has their own preferences in the lighting control, music of choice, room temperature settings and many more. What we try to achieve here is to design a RFID based profile management and control system for a smart home. The aim of the design is to implement a solution using RFID technology and yet low in cost so that it could be implemented by the masses.

In this system, everyone in the house will hold a RFID tag in the forms of card, key chain or watches. The tag is used to open door, turn on/off lighting, enable the air-con systems and control audio-visual equipments. Each tag holder has a profile associated to the preference of usage of each device. For example, in a 3 users environment, user A can only enter its own room, cannot enter the master bedroom, like to listen to jazz music and uses hot water in shower. Additional users like user B and user C have their own choice of preferences. When user A opens the door, the RFID profile control system will immediately turn on the water heater, play a jazz cd, unlock room A and etc. The profile changes when user B enters the house and so on.

System Diagram



How To Implement

For the start, familiar with RFID Beginner's Kit and try out the demo software in the kit. Find a suitable location to place the RFID desktop reader. It is used to scan and reader user's RFID card. Assign a RFID card to every user in the house or apartment. More than one reader can be connected to the Intensecomp RFID Controller. The RFID Controller is a normal PC act as server to interface to multiple RFID readers and also issue action command to NetIO in the local area network.

Connect NetIO to the device to be controlled through digital outputs and inputs. Relay switches might be required if the voltage of the device is very high. Normally, if NetIO is required to control a device of 24V or above, use a 5V to 24V relay to do the intermediate job.

Create a database table using MS-Access and use the RFID ActiveX control accompanied in the Beginner's Kit to create a software application that links the user Id and actions required. Once this process is completed, extend the software application to control NetIO in the local area network.

In the database, create profile for each user and assign actions to the profile. For example, in profile of user A, light 1,2 and 3 will be turned on at medium density and differently for user B. There are unlimited configurations possible for such arrangement. Importantly, find out what is the preference of each individual user and it simply the job of configuration and reconfiguration.

Monitoring application could be created as well. It shows which items are the most used unit, electricity consumption, maintenance status and data and many more. By doing so, we could fully automated and the ideal smart home could be achieved easily.