

RFID Home Automation Control (ECE 438 Software Engineering)

<https://sites.google.com/site/rutgersece438rfid/home>

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Introduction

The purpose of this project to build a RFID Automated Home control System using RFID technology which provides a secure and peace environment to the people. RFID system uses Radiofrequency electromagnetic fields to transfer data from a RFID tag to identify and track the object. Our system will apply Radio Frequency technology which consists of RFID Tags, RF Readers with antennas, Arduino, transmitter- receiver, and added networking properties to identify and track object. With the use of these readers, the system is able to successfully accommodate users to preset conditions and create a secure environment which also provides convenience to the users.

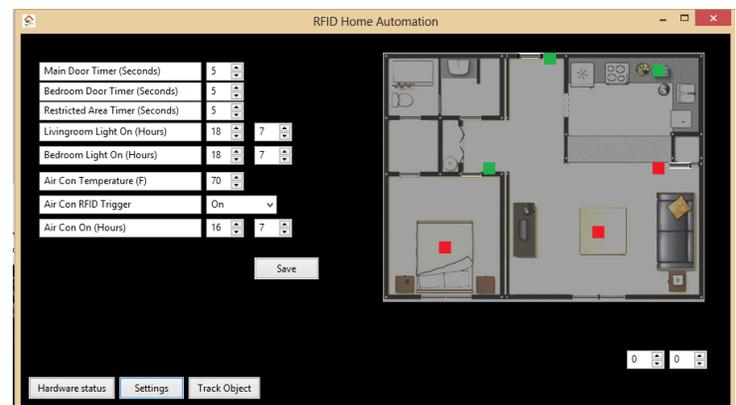
Motivation

The world RFID market is expected to jump from \$7.5 billion today to around \$20 billion next year. With a jump this huge, it is expected that a wide range of features and technologies will be created around RFID. Not only RFID is capable of tracking objects and people, it can also be used as a means of interacting with the environment and accessibility and security applications. With this technology, the user no longer has to worry about the home system. Everything would be automated to the user's personalized settings and the surroundings will be mindful of the user. Our biggest advantage compared to the existing home automation product is that our system requires less

concern in terms of manual control. The RFID technology will provide all the necessary information for the system to perform the expected tasks. We just need to set up the preference during the first time usage of the system and the system will do the rest for the rest of the time automatically.

Design

We are using Arduino and RFID transceivers to identify and track the RFID object based on its range, orientation, and the type of material which contact with it. RFID reader reads the tag ID received by the user and reports the tag ID to system. System verifies RFID tag with its unique identification and performs the expected task. Computer works as a controller.



Conclusion:

The objective to build a RFID automated home control system was successfully working for use cases. This project proves that how RFID technology is significant for the object tracking system, environmental and accessibility system and security system. People can control and secure their houses very easily using RFID technology. In the end, this RFID system offers many convenient applications to the customer, leaving them with peace of mind when they are not able to manually control appliances and other devices.