Home Automation

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Introduction

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The plan is to build a digital door locking system which would also have the capability to control most of the home appliances using a bluetooth device to control all the system using a mobile app.

We will control the room lights according to the presence of light in the room using a light sensor.

Besides, the basic control of the appliances will be allowed only when the door is unlocked. In a situation when the digital lock is asserted(i.e. door is locked), all appliances will remain switched off.

System Overview

A block diagram of the system is given in figure below

The keypad is made using the switches and logical circuit, this keypad gives output in the binary format corresponding to the input key pressed.Light senror and buzzers are used which are taken from the Digital I/O board which was easily available. Digital I/O board, bluetooth module, buzzer and LCD screen are connected through the Arduino board.

The digital I/O board contains light LDR which is used to detect the intensity of light in the room, it also has the buzzer and temperature sensor.
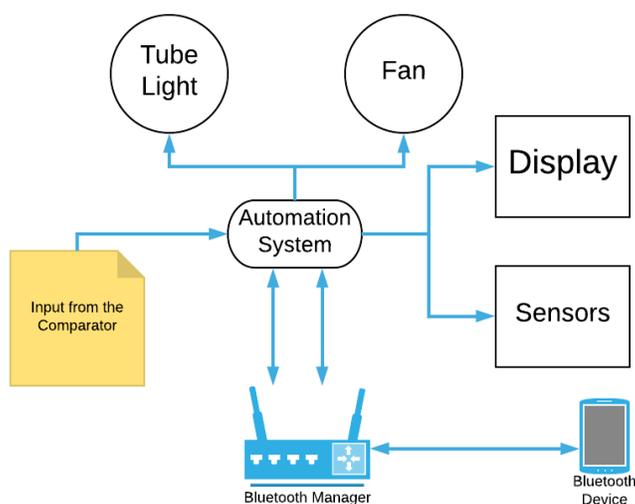
Implementation Details

Input is taken from the keyboard and the binary input is converted into decimal, this converted input is stored in a memory element which stores the value of the input. This input is given to a comparator which checks if the given input is correct then it waits for the enter key to be pressed,when the enter key is pressed then one of the output is set to high.If wrong password is entered then it stops checking the further input and waits for the enter key to be pressed, when the enter key is pressed then the second output is set high.
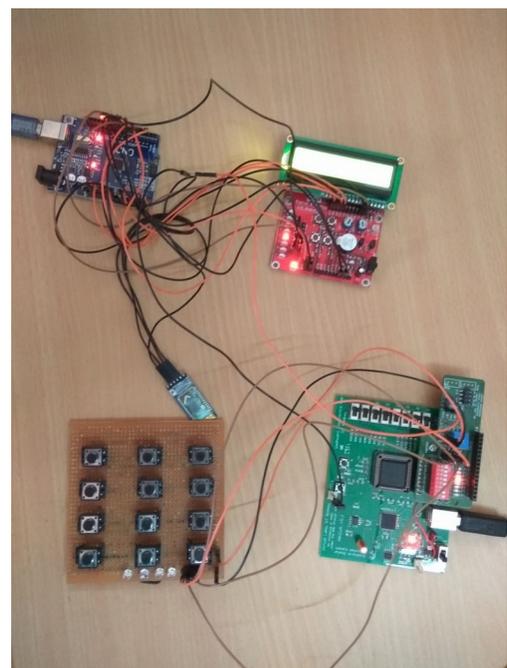
If the first output is high then we can connect any bluetooth device with the automation system, which can be given command from the bluetooth device to control all the systems of the house.
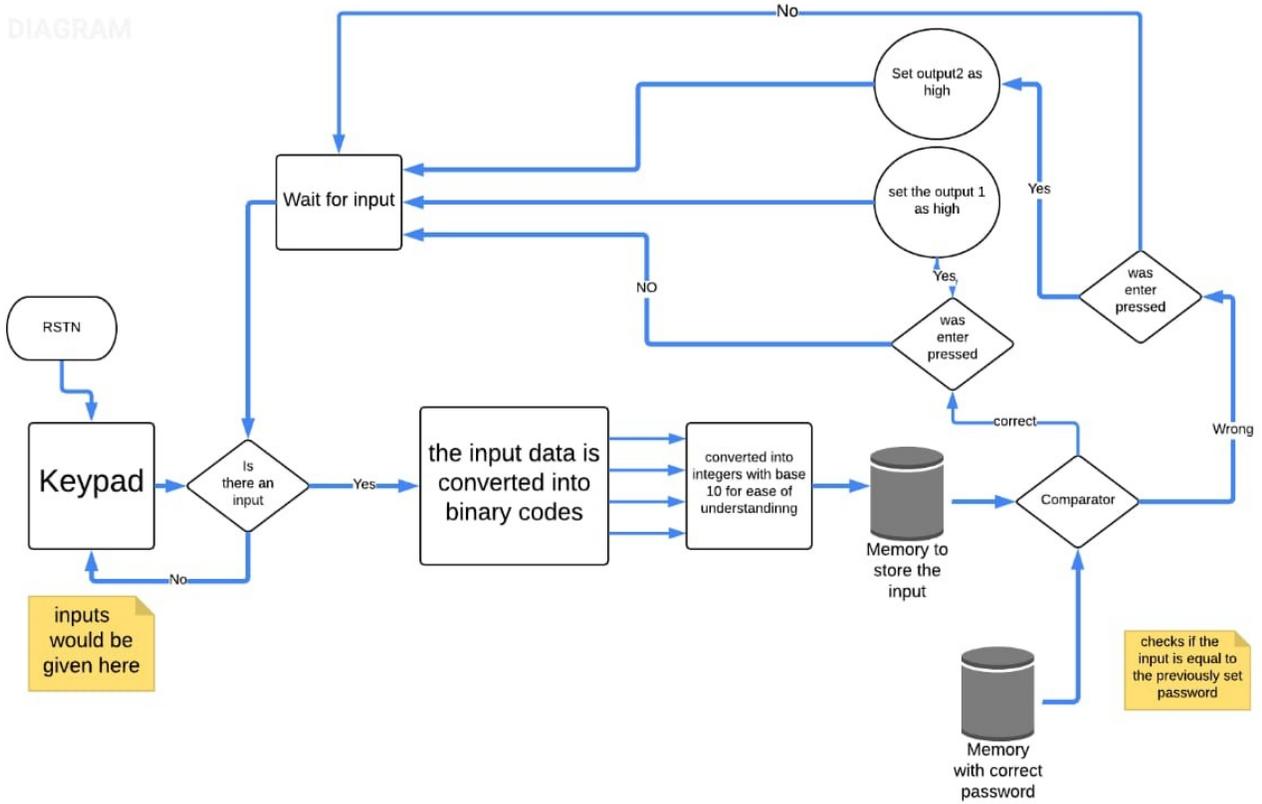
Results

This project presents the overall design of Home Automation System and security with low cost and wireless system.The bluetooth device is used to control the home appliances.The bluetooth device provides remote accessibility and control.

Conclusion

We can also include temperature senrors in the system and control the speed of fan/heater. IR sensors can also be integrated in the project to save power when their is no one in the house.

DIAGRAM

No

Set output2 as
high

Wait for input

set the output 1
as high

Yes

RSTN

NO

was
enter
pressed

was
enter
pressed

Yes

Keypad

Is
there an
input

Yes

the input data is
converted into
binary codes

converted into
integers with base
10 for ease of
understandinng

Memory to
store the
input

correct

Comparator

Wrong

No

inputs
would be
given here

checks if the
input is equal to
the previously set
password

Memory
with correct
password

References

[1] Resources of IOT Workshop.
[2] Help from Prakash W Dandaker.