PROJECT PROPOSAL FORM

CSE 216 LAB
Autumn 2019

1. Project Title:

"HOME AUTOMATION WITH BIDIRECTIONAL VISITOR COUNTER"

2. Duration of the Research Project:

√ 1 Semester ☐ 2 Semester ☐ 3 Semester ☐ Others (Please specify): ………………

3. Principal Investigator's Information:

Name of Principal Investigator	Mohammad Rejwan Uddin		
Designation	Adjunct Faculty	Department	CSE
E-mail	rejwan.azad@gmail.com	Contact No	01755282004

4. Student Information (Human resource involved in this project):

Name	Mohitul Shafir	Department	CSE
Institution	Independent University, Bangladesh	Current Status	BSc Student
E-mail	shafir3264@gmail.com	Contact No	01622243541

Name	Partho Protim Saha	Department	CSE
Institution	Independent University, Bangladesh	Current Status	BSc Student
E-mail	parthoprotim1221@gmail.com	Contact No	01881068129

Name	Dipanker Sarker	Department	CSE
Institution	Independent University, Bangladesh	Current Status	BSc Student
E-mail	dipankersarkerkas@gmail.com	Contact No	01788386621

5. Abstract:

This Project "HOME AUTOMATION WITH BIDIRECTIONAL VISITOR COUNTER using Arduino" is a reliable circuit that takes over the task of controlling the room light and fan as well as counting number of persons/visitors in the room very accurately. When somebody enters into the room then the counter is incremented by one and the light & fan in the room will be switched ON. When any one leaves the room then the counter is decremented by one. The light & fan will be only switched OFF until all the persons in the room go out. The total number of persons inside the room is also displayed on the LCD displays. We also add the Bluetooth module in this project. With the help of this system you can control your home appliances from your mobile phone. You can turn on/off your home appliances within the range of Bluetooth.

6. Introduction:

Electricity is one of the most important resources in this century. We should conserve the electricity. But many times, we come outside the room and forget to turn off the lights/fan, thus the electricity is wasted. To overcome this, we are going to implement a project called "Home Automation with bidirectional visitor counter". This project has 2 modules. First module is "Bidirectional Visitor counter" and the other module is "Automatic room light controller". Main concept behind this project is to measure and display the number of persons entering in any room like home, seminar hall, conference room. And when number of persons inside the room is zero, power supply inside the room can be cut using a relay interface. This will help to save electricity. LCD display placed outside the room displays number of persons inside the room. Also, if at all one wants to know the number of people present in room so as not to have congestion, this circuit proves to be helpful.

7. Problem Statement:

1. It can be used only single person cuts the rays of sensor hence it cannot be used when two persons cross simultaneously.
2. IR sensor cannot detect if lots of people are entering at one time.
3. If there are multiple (Enter and Exit) doors for the same room, the project becomes quite complex.

8. Topology with Circuit diagram:
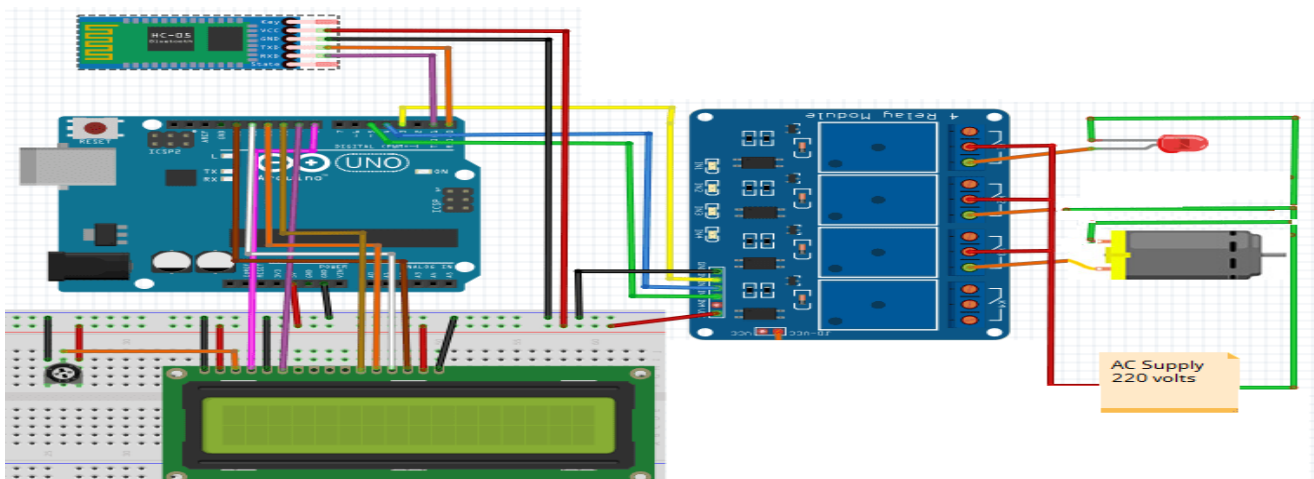
9. Possible outcome of the Project (Progress with Expectation):

> 1. This project can be used in various rooms like seminar hall, where the capacity of room is limited and should not be exceeded. Project will display the actual number of persons inside the room.
> 2. B$_y$ using mobile application, we can control fan and light.
> 3. Low cost and easily implemented on single doors.

10. Discussion:

> We built a IoT based system which can automatically switch ON room lights and fan when at least one person is present in the room. From the room if one thinks he or she don't need light or fan, he or she can ON/OFF by using mobile apps which is connected to this project through the Bluetooth module. If room is empty, the lights and fan will automatically get switch off. It also displays count of persons present in the room. We build this system using Arduino, Bluetooth, Relay and IR sensor module.

11. Future Plan:

> 1. Voice alarm system can be added to indicate that room is full & persons can't enter inside.
> 2. Arduino based device control using Bluetooth on Smartphone project can be enhanced to control the speed of the fan or volume of the buzzer etc.
> 3. Home automation and Device controlling can be done using Internet of Things – IOT technology.
> 4. We can replace Bluetooth by GSM modem so that we can achieve device controlling by sending SMS using GSM modem

12. Budget Information:

Item	Sub-total (Tk)	Total (Tk)
Arduino UNO, Arduino NANO, IR Sensor, 4 Channel Relay Module, 12V Fan, LED Light, LCD display, Breadboard, Battery, Jumper wires, Bluetooth Module	1990/-	1990/-

Declaration: *To the best of my knowledge, all information provided here will be completed.*

Signature of Principal Investigator		Date	