Ahsanullah University of Science & Technology
Department of Computer Science & Engineering
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CSE 3216
Microcontroller Based System Design Lab

Project Proposal

Project Name: ***Secured Smart Home***

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Objective

Nowadays, android devices become part of our day-to-day life. We can use our mobile phone to control our home appliances. For the elderly and lame/disabled persons, it is difficult to turn on/off light, fan, etc. by their own. They can switch home appliance without going to switch. Sometimes people forget to turn off light/fan on hurry. They can turn off the light/fan while travelling by their android phone. This will reduce the electricity consumption. The main objective of this project is to build a smart home device which can be used to control the home appliances via internet

Most of the time water tank refilling is troublesome and sometimes people forget to turn off the pump. This process can be automated with low cost and able to cut down water wastage. This project will automate water tank refilling task.

We all are concern about our home security. In this project home security will be introduced with gas sensor and password protection.

In addition to these features, user can also see the temperature, humidity of their surroundings.

Social Values

By installing our 'Smart Home' device users can turn on/off their home appliance from anywhere. If they forget to turn off home appliances, they can turn them off even from outside of their house and save electricity. This project is highly beneficiary for disabled/elderly person. They can easily turn on/off their light/fan.

Automating tank refilling will cut down water wastage.

Gas detection feature in the kitchen can detect gas leakage and notify the user by alarm. This can save many lives from fire accidents. Password protection ensure the safety of their valuable assets and if someone press wrong password, user will be notified and alarm will blow.

Therefore, this project is socially beneficial.

Required Components

These following parts and tools are required for building this project-

- Arduino UNO
- NodeMCU
- Transistor BC547

- Mini Submersible 8 Watt DC Pump
- I2C LCD Display 16x2
- Matrix Key Pad (4x4)
- Gas Sensor Module (MQ-4)
- LED Light
- DC Motor 6v
- Buzzer 5v active
- Wire(male to male, male to female, female to female)
- Lipo Battery 1100mAh
- Lipo Battery Charger
- DHT11 Sensor Module
- Double connection on/off switch
- Servo Motor SG90
- Breadboard (830 Point)

Working Procedure

The basic components that react to the input are -

- Servo motor
    - It controls the movement of door to be opened or closed
- LCD Display
    - To show the welcome message, temperature and humidity
- Keypad
    - To provide password for locking door
- Gas Sensor
    - Detects gas leakage
- Buzzer
    - Alarm rings for the consequence of unwanted event
- DHT11 Sensor Module
    - To measure temperature and humidity

Estimated budget

Equipment	Quantity	Budget(Tk)
Arduino UNO	1	640
NodeMCU	1	500
Mini Submersible 8 Watt DC Pump	1	240
Transistor BC547	4	10
I2C LCD Display 16x2	1	332
Matrix Key Pad (4x4)	1	90
Gas Sensor Module (MQ-4)	1	160
LED Light	1	100
DC Motor 6v	1	65
Buzzer 5v active	2	30
Wire(male to male, male to female, female to female)	as required	100
Lipo Battery 1100mAh	1	1200

Lipo Battery Charger	1	300
DHT11 Sensor Module	1	155
Double connection on/off switch	2	50
Servo Motor SG90	1	200
Breadboard (830 Point)	1	124
Total		**4206**

Conclusion

The automation and comfort you gain with a smart home system is perhaps the greatest benefit of all. Next to being safe, the confidence of feeling safe will help you be a more productive, healthy, and focused person. We can save electricity and water by implementing this project. Fire accidents can be mitigated through this project and we can save people's life.