Ahsanullah University of Science & Technology Department of Computer Science & Engineering Semester Fall 2021

CSE 3216

Microcontroller Based System Design Lab

Project Proposal

Project Name: Home security and fire detector

Submitted To

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Objective

Like any other countries of the world, Bangladesh also faces frequent hazards in everyday life. However, in our country it is not well treated like most developed countries of the world. Moreover, robbery and burglary are quite common for Bangladesh as well which ends up leading to severe loss of finance and can even cost lives of many people if things go wrong. Nowadays, fire accidents are quite common specially because of gas canisters being used for cooking. Old electronics specially refrigerators and air conditioners also play a vital role for the cause of fire. As we modernize, it is crucial for us to take actions against all kinds of hazards and reduce the level of risk to as low as possible. Moreover, we should ensure proper safety of our loved ones and our precious belongings from the hands of all cracksman. Thankfully modern technology is here to provide us that safety and we need to make sure that we take the advantage of it and prepare the most useful home security system at a fairly low price. Our objective is to ensure that we provide proper safety from both theft and hazards such as fire at a reasonable price.

Social Values

Fire accidents are getting more common everyday in Bangladesh. People should be more concerned about their lives and take proper measures. Our home security device is expected to detect any kind of gas leaks. Moreover, smoke particles will be detected from a reasonable range as well. If the smoke particles exceed the limit of human smoking in everyday life. The buzzer will go off and a message will be sent both to the nearest fire service as well as to the owner of the place. As a result, people will be much safer specially at night and when they are out for work. The main door of the house will be connected to a keypad where users will be able to set passwords. The main user can reset delete or add new users and sub users would not be able to delete passwords. If someone tries to break in, he or she has to input the password correctly. If the password fails five times, siren will be turned on as well as messages will be sent to both the owner and the nearest police department. In this way robbery will be reduced gradually but effectively. Reduction in crimes and accidents will lead to the betterment of the society with improvements in mental and financial health as well. Moreover, fingerprint sensor will also be there for the main user to open the door. Motion sensor will be there to detect the unusual activities of certain individuals and the owner will get notified.

Required Components

- Flame sensor module
- Arduino mega ATmega2560
- Jumper Wire 40 Pcs Set
- MB102 Prototype Breadboard
- Keypad Keyboard Membrane Switch
- High Torque Servo Motor
- 20x7mm Buzzer
- Led (if needed)
- 16x2 Alphanumeric LCD display shield
- MQ-6 LPG Gas Sensor
- R305 Fingerprint Module R305 UART
- HC-SR501 PIR Motion Sensor Module
- GSM Module with PCB Antenna

Working Procedure

The output will be displayed on the following components –

- Flame sensor
  To detect smoke particles.

- PIR motion sensor
  To ensure the absence of unwanted trespassers.

- LCD display
  Shows the input and confirmations of passwords.

- Buzzer
  It will work as an alarm to alert people during fire or burglary.

- Servo Motor
  It ensures whether the door will open or not.

- Gas sensor
  To detect gas leakage

- GSM Module
  To send messages to the owner and fire or police department

Estimated Budget

Equipment	Quantity	Budget (Tk)
Flame sensor module	1	50
Arduino mega ATmega2560	1	2004
Jumper Wire 40 Pcs Set	as required	280
MB102 Prototype Breadboard	5	550
Keypad Keyboard Membrane Switch	1	103
High Torque Servo Motor	1	386
20x7mm Buzzer	4	100
Led (if needed)	as required	200
16x2 Alphanumeric LCD display shield	1	180
MQ-6 LPG Gas Sensor	6	840
R305 Fingerprint Module R305 UART	1	1499
HC-SR501 PIR Motion Sensor Module	6	552
GSM Module with PCB Antenna	2	720
Total		**7464**

Conclusion

Life is the most precious gift provided by God and it would be terrible to lose it before living it to the fullest. Every penny is earned through hard work and dedication as a result every single belonging is precious. Therefore, personal safety is the major priority in human life and it should be respected as a task to be fulfilled before any other necessity. Moreover, staying safe helps to have a healthy mental state and be more productive at work. Through modernization, manual tasks are gradually decreasing but when it comes to security it must be ensured that human error are reduced to as low as possible since there are few such electrical devices, the project will be successful to benefit the lives of millions.