

**Ahsanullah University of Science & Technology**  
**Department of Computer Science & Engineering**  
**Semester Fall 2020**



**CSE 3216**  
**Microcontroller Based System Design Lab**

**Project Proposal**

**Project Name: ZEN**

**Submitted To**

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## **Objective:**

Nowadays, houses are going through a swift change to make them more and more comfortable. Home automation is an example of this. Our target is to build a project where the homeowners can control some of the appliances of the house like the fan and the light via their voice. Safety and security are also emphasized in this project. As such, our project will also have a fire alarm in case of fire. Moreover, in this project, the homeowners will have the authentication system to prevent break-in.

## **Social Values:**

Unfortunately, gas explosions have become a common norm in our country. A lot of people die every year due to gas leakage in the kitchen. Our home automation will provide a fire alarm which will be triggered by a smoke detector in case of a gas leakage. This will give time to people to prevent fires or explosions by taking necessary steps. Burglary and break-in have always been a safety concern for any home. Our project will include an authentication system where people can get into the house using the information only they and their family members know. So, traditional locks and easy-to-lose spare keys have been replaced. As a result, the homeowners feel a sense of security. Finally, the voice controlled appliances like the fan and the light will provide a lot more comfort and relaxation to the people of the house.

## **Required Components:**

- Arduino Mega
- LCD
- Keypad-Phone
- Breadboard
- Flame Sensor
- Buzzer
- Resistor
- Cables and Connectors
- LED
- Diodes

- Servo Motor
- DC Motor
- LDR
- Transistor
- Battery
- Bluetooth Module HC-05 v1
- Relay Model

### Working Procedure:

- Owner will enter his home by entering a password on the keypad. If the password matches, the servo motor will work and the LCD will show, "Welcome Home". Else, after entering the wrong password 3 times, the buzzer will be on.
- There will be a voice controlled light and fan system. Users can control light and fan by commanding over an android app.
- There will be an automated fire alert system, which will detect smoke and press the buzzer to alarm people.

### Estimated Budget:

Equipment	Quantity	Budget(TK)
Arduino MEGA	1	1000
16x2 LCD	1	160
Keypad-Phone	1	90
Buzzer	2	98
Flame Sensor	1	68
Bluetooth Module HC-05 v1	1	350
Resistor	4	16

Servo Motor	1	450
DC Motor	2	172
LDR	1	6
Relay Model	2	50
Diode	2	5
Breadboard	1	90
Jumper wire	As required	100
Led	3	6
Battery	1	50
Transistor	2	18
<b>Total =</b>		<b>2729 Taka</b>

## Conclusion:

Our voice controlled automated home 'ZEN' will provide a safe and comfortable environment to people. Though this project is currently developed on a small scale, a lot more features can be added in the future to provide more and better facilities to the people. We are hopeful that this project will live up to our expectations.