# **CSE316: Microprocessors, Microcontrollers, and Embedded Systems Sessional Project**

## **Group Members**

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## **Smart Home**

## **OVERVIEW**

The advancement of electronics has sky-rocketed over the past few decades. There is hardly any field where the use of electronics is yet to be seen. The housing industry is no exception. The use of electronic components in our houses can increase human comfort and enable us to tackle modern security threats in a very modern and digitalized way. So, we present our project, Smart Home, a home with automated technology to ease our lifestyle and help us tackle security threats in a very smart and efficient way.

## **SPECIFICATIONS**

*Sensor-controlled Switches*: One kind of switch will turn the lightbulbs on or off based on the light of the room environment. One other kind will detect people in front of the doors and then send signals to Automated Door Control components to open or close the door.

*Temperature & Humidity Measurement:*Calculate the temperature and humidity of the home environment and display them on a LCD screen.

*Automated Door Control:*Based on the decision of the sensor-controlled switch, doors will automatically open or close.

*Fire & Gas Leak Alert:* Detect gas leak or fire, generate alarm and alert the members of the home of the event so that proper steps might be taken to confront that.

*Theft Protection & Alert:* There will be a Theft Protection mode for all the sensor-controlled switches so that house members can be notified of any intruder and alarms will also go off.

*Smartphone Connectivity:*All of the components will be connected to the smartphones with which the components can be controlled. Turning theft protection mode on/off or other changes can be controlled via the smartphones.

## **COMPONENTS**

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| ***Name*** | ***Usage*** |
| Arduino Uno | Control other components |
| LDR 5mm | Sensor-controlled Switch |
| Sonar Sensor (HC-SR04) | Sensor-controlled Switch |
| DHT22 Digital Temperature Humidity Sensor | Temperature & Humidity Measurement |
| LCD Display 16x2 | Temperature & Humidity Measurement |
| Servo Motor SG91R | Automated Door Control |
| Smoke Sensor (MQ-6) | Fire & Gas Leak Alert |
| Gas Sensor Module (MQ-5) | Fire & Gas Leak Alert |
| Flame Sensor | Fire & Gas Leak Alert |
| Buzzer | Fire & Gas Leak Alert |
| Theft Protection & Alert |
| SIM900 GSM GPRS Shield | Smartphone Connectivity |
| Arduino Bluetooth Module (HC-05) | Smartphone Connectivity |
| Android App | Smartphone Connectivity |