A
PROJECT REPORT
ON
EMERGENCY FIRE EXIT SYSTEM FOR BUS

For subject CLOUD APPLICATION DEVELOPMENT

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
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CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that students of B.Tech Semester (VII) (COMPUTER SCIENCE & ENGINEERING) has completed his one full semester on project work titled **"EMERGENCY FIRE EXIT SYSTEM FOR BUS"** satisfactorily in subject **"Cloud Application Development"** of Computer Science & Engineering, Ganpat University in the year 2018

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ORIGINALITY PAGE

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Abstract

In a bus most fatal accidents were attributed to defunct, non-operational emergency Windows. So we find the solution that the bus windows will open automatically during emergencies. The system consist of temperature sensor, smoke sensor. In this project, emergency window will open automatically as soon as the sensor will sense the flammable gas. It will send notification to the nearest Fire Station. It will also work during summer season when temperature inside bus increases. Here we also use the cloud technology to store the data of smoke sensor and temperature sensor. For storing the data we use ThingSpeak. It is used to store so we can know in future that for this particular situation of temperature and gases fire can be possible. So we can aware before time.

Contents

1. Introduction

In our project, we studied that there were many fatal accidents occur in bus due to fire, and when fire occurs, the passenger's in the bus reacts in a panic way and there are many issues where emergency window don't open properly, which result's in cause of death for people. So we proposed a system where, when the bus catches fire the smoke sensor (MQ2) will detect the flammable gas and the emergency window of the bus will open automatically. The nearest fire station will also be notified through a mobile application and exact location having longitude and latitude will be displayed on the nearest fire station. This will result in lesser number of injuries to passengers. Further if the bus is parked in the parking and during summer season, due to extreme heat waves the temperature inside the bus arises, as soon as the temperature sensor (AM2302) detects the rise in temperature by the defined limit, it will automatically open the windows allowing the air flow circulation inside the bus, resulting in decrease the temperature inside the bus. The temperature data will also be uploaded on ThingSpeak, where the data will be stored in a private channel that would be helpful in carrying out further studies, to provide more specific solution of the problem.

Purpose

- The main purpose of this project was to save passengers from loosing their life and preventing them from getting hurt badly.
- By storing data in cloud, more effective solutions can also be provided to reduce the number of accidents if they are causing in same area multiple times.
- This system can also be implemented in School buses, as small children's panic the most under this type of situations.

Challenges

- The main challenge was to implement smoke sensor and temperature sensor on a single bread board.
- The smoke sensor data is also to be uploaded on ThingSpeak which will help in future for analysing the events and providing effictive solutions.
- Integrating Arduino IDE with ThingSpeak was also a difficult part as ThingSpeak is having private channel, so it can be only accessed by the owner of the channel or if the owner share's the channel id to other person.

2. Existing System

In existing system there is not a perfect same system like this is exist but there is only electrical part with smoke sensor and temperature sensor is implemented. There is no implementation of Cloud Technology in that.

Limitations

There is no use of cloud so data of smoke sensor & temperature sensor is not stored anywhere.

Technical Specifications

- MINIMUM:
  - OS : Windows® 7/8.1/10
  - Processor : Intel® core™ i3(5^{th} generation or Higher)
  - Memory : 4 GB

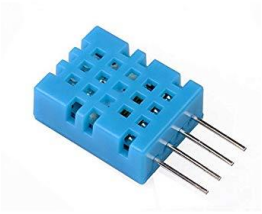
- RECOMMENDED:

  - OS : Windows® 7/8.1/10
  - Processor : Intel® core™ i3(5^{th} generation or Higher)
  - Memory : 8 GB

3. Proposed System

1. Software / Module Description

Temperature Sensor (DHT Sensor)



➔ The temperature display on the serial port monitor which is updated every second.

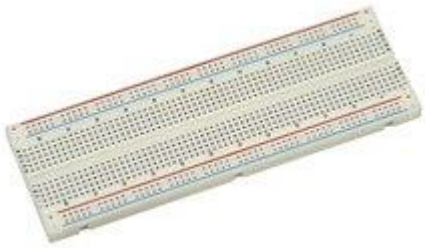
Smoke Sensor

➔ Used in gas leakage like smoke methane and liquefied flammable gas.
➔ Wide detecting scope, fast response and high sensitivity.

Arduino Uno

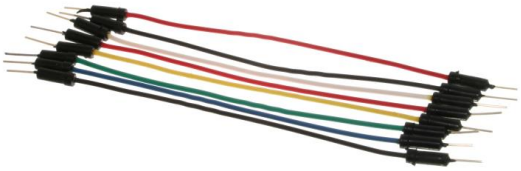
The Arduino UNO is an open-source microcontroller board. The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) by USB cable.

Breadboard



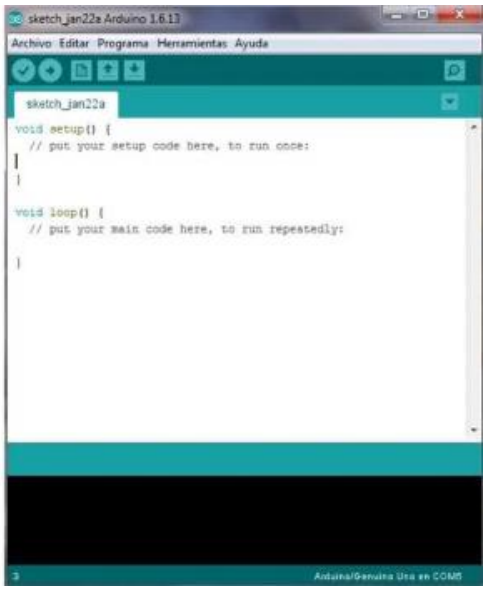
➔ A breadboard is a construction base for prototyping of electronics.
➔ Used to build circuits temporarily.
➔ Do not work on live circuits.

Wires



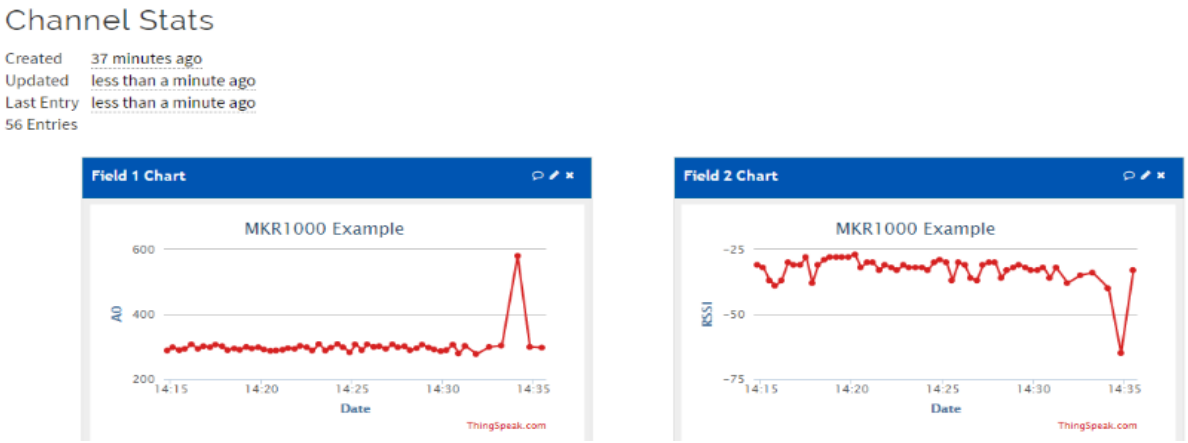
→ A **jump wire** (also known as jumper wire, or jumper) is an electric wire, or group of them in a cable, with a connector or pin at each which is normally used to interconnect the components of a breadboard or other prototype or test circuit, internally or with other equipment or components, without soldering.

Arduino IDE



→ The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.This software can be used with any Arduino board.

ThingSpeak



→ **ThingSpeak** is an Open Sourse Internet of Things (IoT) application and api to store and retrieve data from things using the http protocol over the Internet.

2. Limitations

- The exact location of the bus is only obtained through GPS, but as we were limited on our resources so we used GSM to identify the location.
- The minimum distance from the accident point to the nearest fire station is also a limitation of our project, as Google API was the only way to implement that thing.
- More powerful motor will be needed in order to rotate the shaft which will help in easily/efficiently opent the emergency window.

4. Future Scope

- Firstly we are trying to implement in real time bus system.
- This system also worked for Forest Fire system that will detect fire and report to the near forest department.
- Home automation to open door and other windows in case of fire is detected.

5. Conclusion

- To conclude, it can be said that, the emergency window will open automatically with the help of motor,MQ2 sensor and the temperature sensor the sensor will detect the temperature and on the basis of that the window will open.
- The MQ2 sensor will detect the flammable gases.
- The different temperature will detect by the temperature sensor and the data will continuously uploaded on ThingSpeak cloud and the basis of that data the graph will be created automatically on the ThingSpeak and the uploaded data can also be downloaded in the form of csv file.

6. References

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