Minor Project- Report

Oct-2021-Feb-2022

Course Faculty: Professor Ramya K N

Course Name & code: Computer Networks & 19CS5DCCNW

Semester:5 Semester Date:07/01/2022

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TITLE OF THE PROJECT | Smoke Detection and Fire Prevention | | | |
|  |  | | | |
| STUDENT NAME | MUDASSIR AHMED | VARAD MUNDRA | NAGA SWAROOP S N | NAGARAJ K |
| USN | 1DS19CS093 | 1DS19CS094 | 1DS19CS095 | 1DS19CSC096 |
| INDIVIDUAL  CONTRIBUTION | Design of Network | Project Plan | Conditions for working of the network | Configuration of  Network |
| GUIDE | Deepak G and Akshatha | | | |
|  |  | | | |
| PROJECT ABSTRACT: | Fire is the major cause of accidents claiming valuable lives and property. Smoke detectors play an important role in a fire prevention management program. Timely detection of the fireplace is vital for avoiding a serious accident. In this project, a Fire prevention and Smoke detection system is developed. It can sense smoke and the rise in temperature and alert the user by activating the siren and also send commands on the virtual terminal of the android phone through the WIFI module. Fire hazards are not uncommon. To avoid injury from fire accidents, smoke detectors are put in high-security places. The hardware used is HomeGateway, Switches, Smoke detectors, Fire sprinklers, Smoke sensor, WIFI Module, and Siren. Software used HomeGateway for mobile applications. These smoke sensors detect smoke because the fire break associated invokes an early alarm. This way, before the fire spreads to different components of the building, people can be evacuated and countermeasures can be done immediately. The detection system operates as a fire detector and smoke detector sensor. In this, we discuss the design and implementation of a smoke detection system using the HomeGateway which operates the entire system. | | | |
|  |  | | | |
| INTRODUCTION | **A smoke detector is a device that detects smoke, typically as an indicator of fire. Commercial, Industrial, and mass residential devices issue a signal to a fire alarm system, while household detectors, known as smoke alarms, generally issue a local audible or visual alarm from the detector itself.**  A smoke detector's purpose is a simple one, to give you ample notification in case of a fire in your house. Without a smoke detector, by the time you realize that there is a fire, your house could be so badly engulfed that you cannot find a safe exit or the smoke can be so overwhelming that you suffocate trying to get out. The National Fire Protection Association reports that while 75 percent of homes have at least one working smoke alarm, between 2003 and 2006, 66 percent of fire deaths happened in homes with no working smoke alarm.  Home fire detection is a matter of great concern, and thus many efforts are devoted in most developed countries to the design of automatic detection systems. A fire prevention system should reliably and in a timely way notify building occupants about the presence of fire indicators, such as smoke or high temperatures. A fire detector is usually implemented as a smoke sensor due to its early fire detection capability, fast response time, and relatively low cost. Other options for fire detection are based on gas sensors or temperature sensors fire detectors that use a single sensor, generally a smoke sensor, and present high false-siren rates due to temperature changes. | | | |
|  |  | | | |
| DESIGN | * In the above Project that is implemented has three Scenarios where the Smoke Detectors and Fire Sprinklers are being placed. KITCHEN, GARAGE & BEDROOM are the three locations where the smoke detectors have been placed. * The Kitchen consists of window, Door & Fire Sprinkler. * The Garage Consists of a Vehicle (Car), Garage Door & Fire Sprinkler. * The Bedroom Consists of Window, Door & Fire Sprinkler. * All the Above Smart IOT devices are Connected to the Smart Phone through the Home Gateway. * In the Web Browser of the Smart Phone the IOT devices are Detected when logged in to the smartphone using the IP address of the home gateway through the Credentials in this Project Credentials are **USER: admin** and **Password: admin.**   Now open the Conditions in the Web browser and Set Conditions According to the Needs. In the above example there are Two conditions they are ON and OFF. The on condition executes is when the smoke is detected, and OFF conditions when there is no smoke in the locations.  The conditions like when the Smoke level in the Garage, Kitchen or Bedroom is Greater than 0 [i.e., if the Smoke is present] then it is turned **ON** the listed events to be performed are:   * Set GARAGE\_DOOR On to true * Set GARAGE\_SPRINKLER Status to true * Set KIT\_SPRINKLER Status to true * Set KIT\_window On to true * Set KIT\_DOOR Lock to Unlock * Set BED\_WINDOW On to true * Set BED\_SPRINKLER Status to true * Set BED\_DOOR Lock to Unlock * Set SIREN On to true.   And the When the Smoke in the Locations are <= 0 [i.e., NO smoke] then it is Turned **OFF** then the events to be performed are:   * Set KIT\_SPRINKLER Status to false * Set KIT\_window On to false * Set KIT\_DOOR Lock to Lock * Set BED\_SPRINKLER Status to false * Set GARAGE\_DOOR On to false * Set BED\_DOOR Lock to Lock * Set SIREN On to false * Set GARAGE\_SPRINKLER Status to false * Set GARAGE\_DOOR On to false * Set BED\_WINDOW On to false | | | |
| PLATFORM USED  (H/W & S/W TOOLS TO BE USED | CISCO PACKET TRACER | | | |
|  |  | | | |
| PROJECT SOURCE CODE LINK (GITHUB/ GOOGLE DRIVE) |  | | | |
|  |  | | | |
| CONCLUSION /FUTURE ENHANCEMENT | Smoke detectors are great because they save lives. There are smoke detectors formed as noses, to smell for smoke. There should be a minimum of two or three smoke detectors in your home. You should install a smoke detector on each floor of a house. Always have a smoke detector and fire prevention system in your home for your safety | | | |
|  |  | | | |
| UI SCREENSHOTS | * When There is NO Smoke it is in **OFF** state     Fig.1 **OFF STATE**    Fig.2 **IOT devices Detected**    Fig.3 **Conditions and Actions Applied**   * When There is Smoke, it is in **ON** state     Fig.4 **Actions Performed**    Fig.5 **Window**  Fig.6**. Door Opened**  **Opened [Green light on]**    Fig. 7. **Fire water Sprinkler is ON**    Fig.8. **Siren is ON**  Fig.9 **Garage Door is open** | | | |
|  |  | | | |