20-PDS-008
20-PDS-019

FIRE DETECTOR AND WATER SPRINKLER

USING CISCO PACKET TRACER

Name **:** Angeline Oviya J.
Glary Amala Monika J.

Department No.: 20-PDS-008
20-PDS-019

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Staff In- Charge: Prof. Mrs. Pooja Sree S

INDEX OF CONTENTS

LIST OF FIGURES

20-PDS-008
20-PDS-019

ABSTRACT:

Fire hazards have been a major problem for years. Thousands of people die every year due to fire hazards, not to mention the loss of property and permanent damage in health and decrement in lifestyle of the survivors. While large scale industries and buildings have taken measures such as high functioning and sophisticated alarm systems and smoke detectors to warn people of fires, small scale industries and personal homes are still majorly vulnerable to loss of life and serious damage to property due to fire. Security has become an important requisite. Everybody looks for an effective and an efficient way of protecting their possessions. This project is a prototype design that acquires both of the aforementioned qualities. It is a perfect product for small scale industries and homes. This project describes a security system that is applicable anywhere and by anyone. It consists of a fire detector which is released using readily available components having high performance. As soon as the detector will sense fire, the water sprinkler will function to put out the fire and minimize the damage for your project.

CHAPTER - 1

INTRODUCTION

Fire hazard is the most common hazard, which is present in all areas of life. Most combustible materials are stored in a normal atmosphere, which contains oxygen, and so the risk of fire is then due to the possibility of an ignition source (see Fig. 3.1). Combustible liquids can vaporise and so form an oxygen–air mixture at their surface that can be ignited. The temperature at which a liquid fuel vapour can ignite is called its flashpoint. The heat needed for combustion to take place depends on the flashpoint if it is a liquid. Solids need a much higher temperature to ignite.

A key aspect of fire protection is to identify a developing fire emergency in a timely manner, and to alert the building's occupants and fire emergency organizations. This is the role of fire detection and alarm systems. Depending on the anticipated fire scenario, building and use type, number and type of occupants, and criticality of contents and mission, these systems can provide several main functions. First, they provide a means to identify a developing fire through either manual or automatic methods and second, they alert building occupants to a fire condition and the need to evacuate. Another common function is the transmission of an alarm notification signal to the fire department or other emergency response organization. They may also shut down electrical, air handling equipment or special process operations, and they may be used to initiate automatic suppression systems. This section will describe the basic aspects of fire detection and alarm systems. This system will help in minimizing loss of lives and property. It can be time efficient compared to waiting for the fire ambulance. The sound can alert the neighboring houses as well and make them alert as well.

CHAPTER - 2

SYSTEM SPECIFICATIONS

We are implementing our project in Cisco Packet Tracer.

Software Requirements:

- Programming Language : Python
- Tools : Cisco Packet Tracer

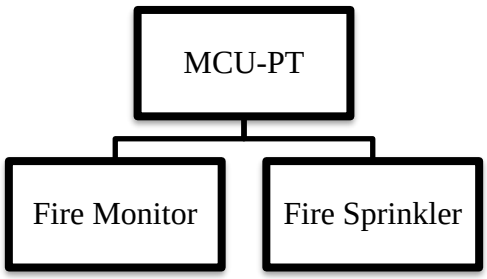
Hardware Requirements:

- Operating System : Windows 10
- RAM : 8 GB
- Memory :500 GB

CHAPTER - 3

SYSTEM DESIGN

ARCHITECTURE DESIGN



Flowchart

CONNECTIONS

- The fire sprinkler and fire monitor are connected to Microcontroller.
- Custom cables are used for connection between Microcontroller and fire sprinkler.

WORKING

- The coding part of the Micro controller and the Fire are given
- The Micro controller controls both Fire detector and fire sprinkler.
- The Micro controller is programmed with python code.
- When any element reaches the fire sprinkler then the fire detector detects if it is a heating element and the lets the fire sprinkler to break out with water to put off the heating element.

COMPONENTS

The components we used in the project are:

1. Micro Controller
2. Fire Detector
3. Fire Sprinkler
4. Heating Element

CHAPTER - 4

SCREENSHOTS

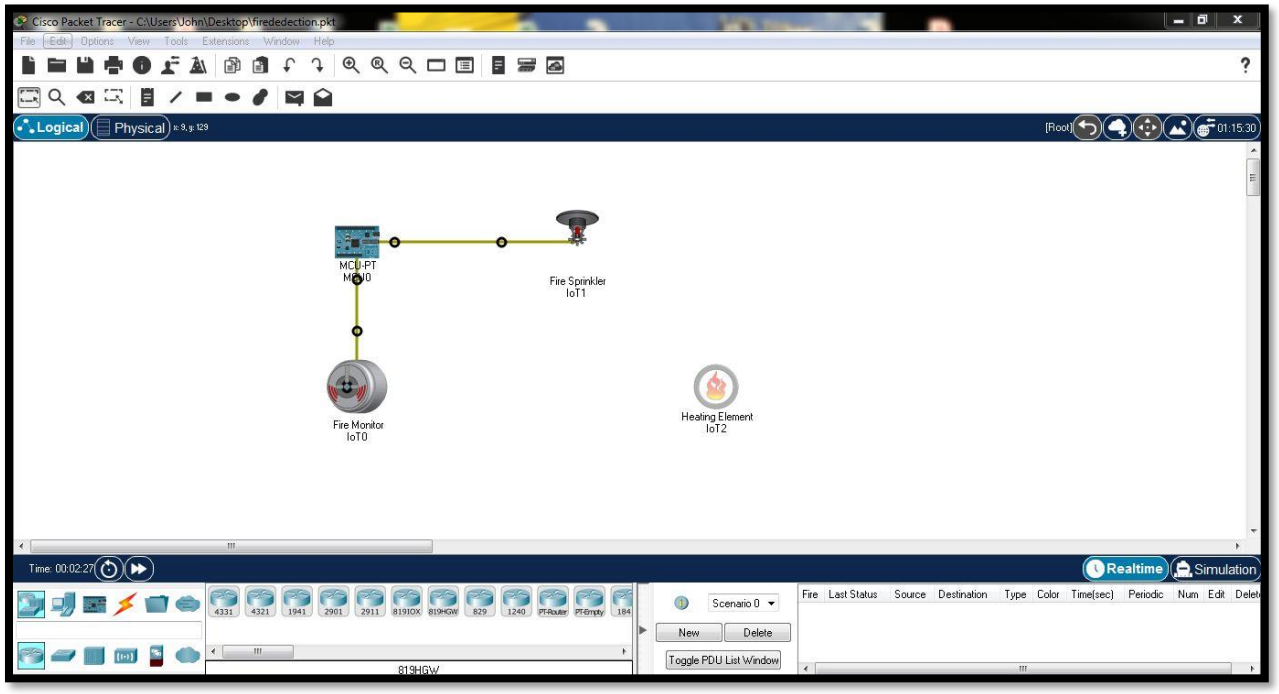


Fig. 01

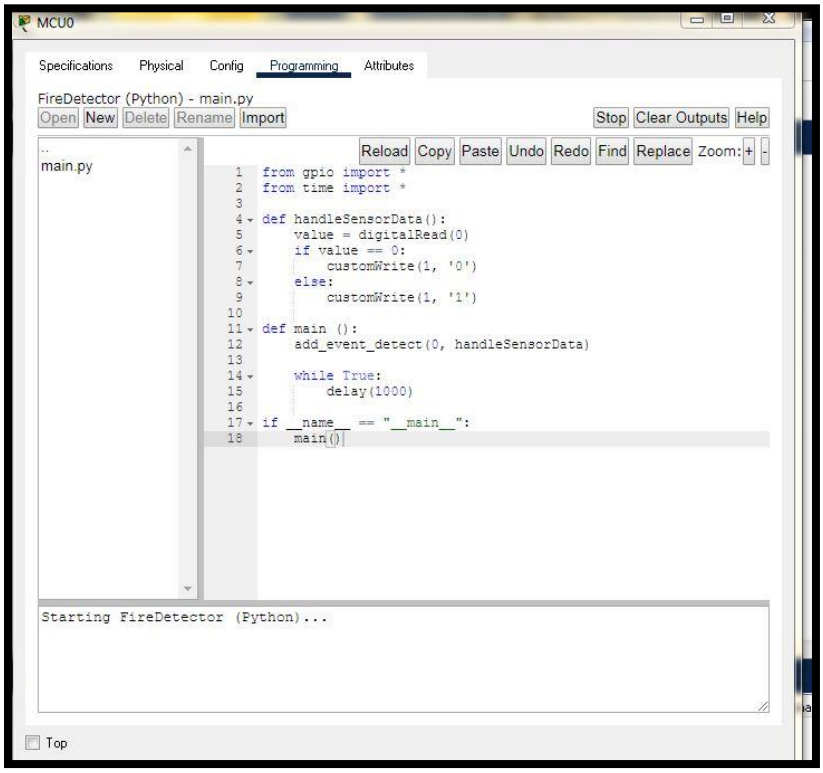


Fig. 02

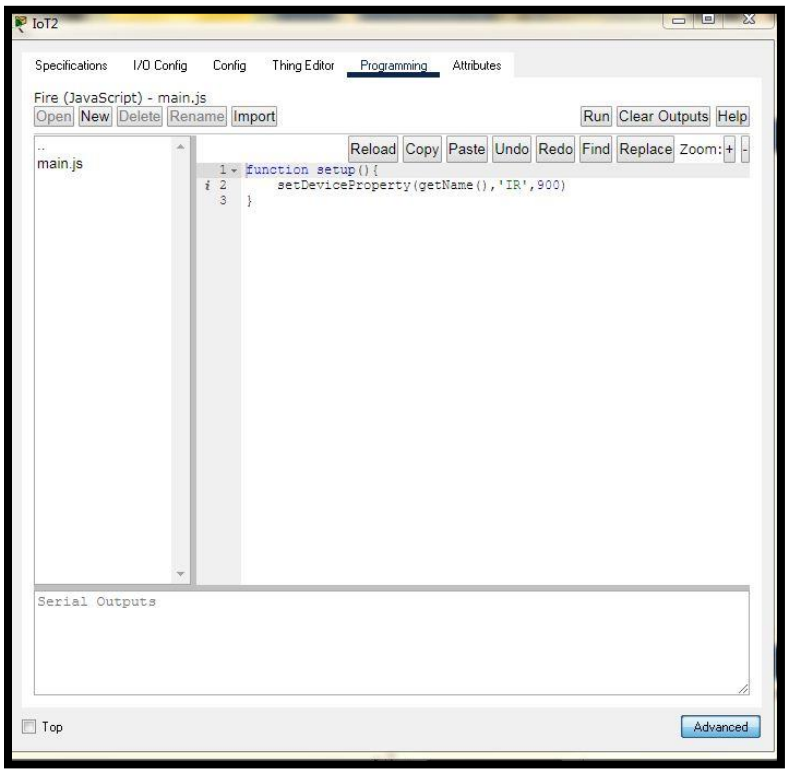


Fig. 03

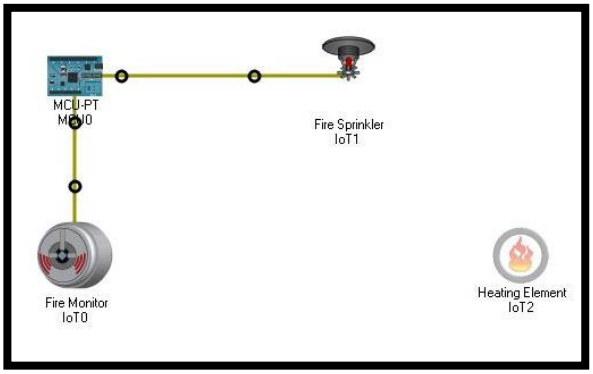


Fig. 04

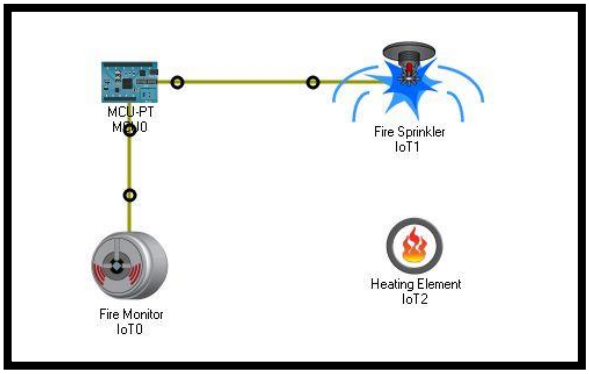


Fig. 05

CHAPTER – 5

CONCLUSION

The problems faced during fire accidents are

1. The valuable life of a person will be lost or may get injured a lot.
2. It costs to get recovered after a fire accident.
3. People may get a phobia (fear) to move out.
4. The soil in the area will be completely destroyed.
5. Millions of rupees are spent repairing these damages and re-building homes and areas of vegetation.
6. Global warming.
7. Ozone layer depletion.

Hence, we conclude that “Life Is A Boon Don't Let It Go Soon!”

Therefore, we establish this for the welfare of the society and for the safety precaution for the people.

CHAPTER - 6

FUTURE WORK

For further accuracy use of Neural Networks for decision making can be made and GSM module can also be implemented for sending SMS to nearby fire station in case of severe fire. Water sprinklers can also be incorporated. By research and analysis, the efficiency of the proposed Fire detection system can be increased. The margin of false alarms can be reduced even further by developing algorithms to eliminate the detection of red colored cloth as fire. By proper analysis, suitable location height and length for camera installment can be decided, in order to remove blind spot areas.

REFERENCES

1. https://youtu.be/KQP2TUZmd08