SMOKE DETECTION AND FIRE PREVENTION IN CISCO TRACER

A COURSE PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this mini project report " SMOKE DETECTION AND FIRE PREVENTION IN CISCO

TRACER " is the bonafide work of **TANUJA KHAROL(RA2111003011808) , LAKSHMI NIKITHA(RA2111003011810) , DOLA MANI JAGAN(RA21113011820) , NAGA SINDHU(RA2111003011836) , ANISHA KUMARI(RA2111003011837)** who carried out the

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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.

Keywords: *SMOKE DETECTOR AND FIRE PREVENTION, FIRE, SENSORS, DETECTORS, IoT, SOMKE SENSORS*

INTRODUCTION

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.

LITERATURE REVIEWman-made. This paper is to design and implement an automatic fire and smoke detection and prevention system that can be produced at a low cost with effective and competitive usage. This System is designed to be more user-friendly and easy to operate at any level. The creation of faster evacuation technologies and safer living conditions at an affordable cost for everyone. This paper discusses the automatic fire detection system, composition, and working principle. The overall structure of the fire detection system and control software in the design. Low-cost fire detection and control system based on smoke detection is proposed. It is a combination of electrical devices working

together to detect the presence of fire and alert people. These sirens may be activated from smoke detectors which, when detected, smoke.

PROPOSED SYSTEM

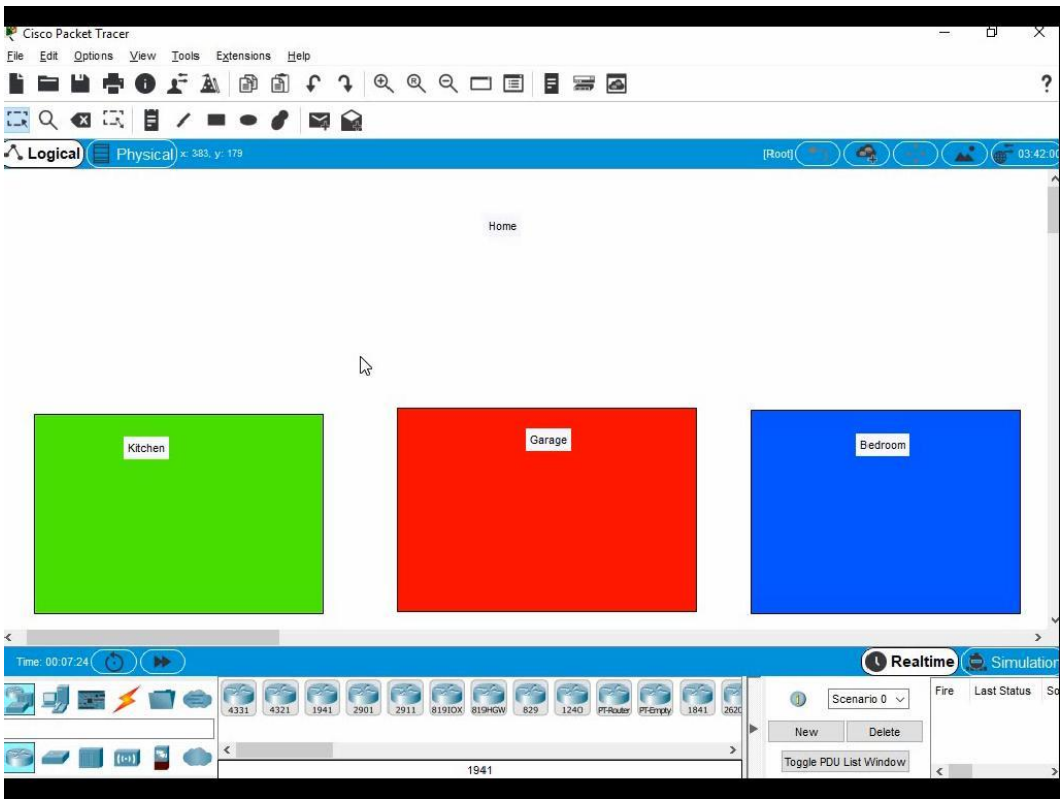
These smoke & fire detection systems use automatic functions to detect the occurrence of an event that may result in a fire. They receive a sign from a fireplace sensing smoke and mechanically transmit it to the fireplace siren panel. The fire siren panel activates sprinklers and opens all windows and doors.

COMPONENTS NEED

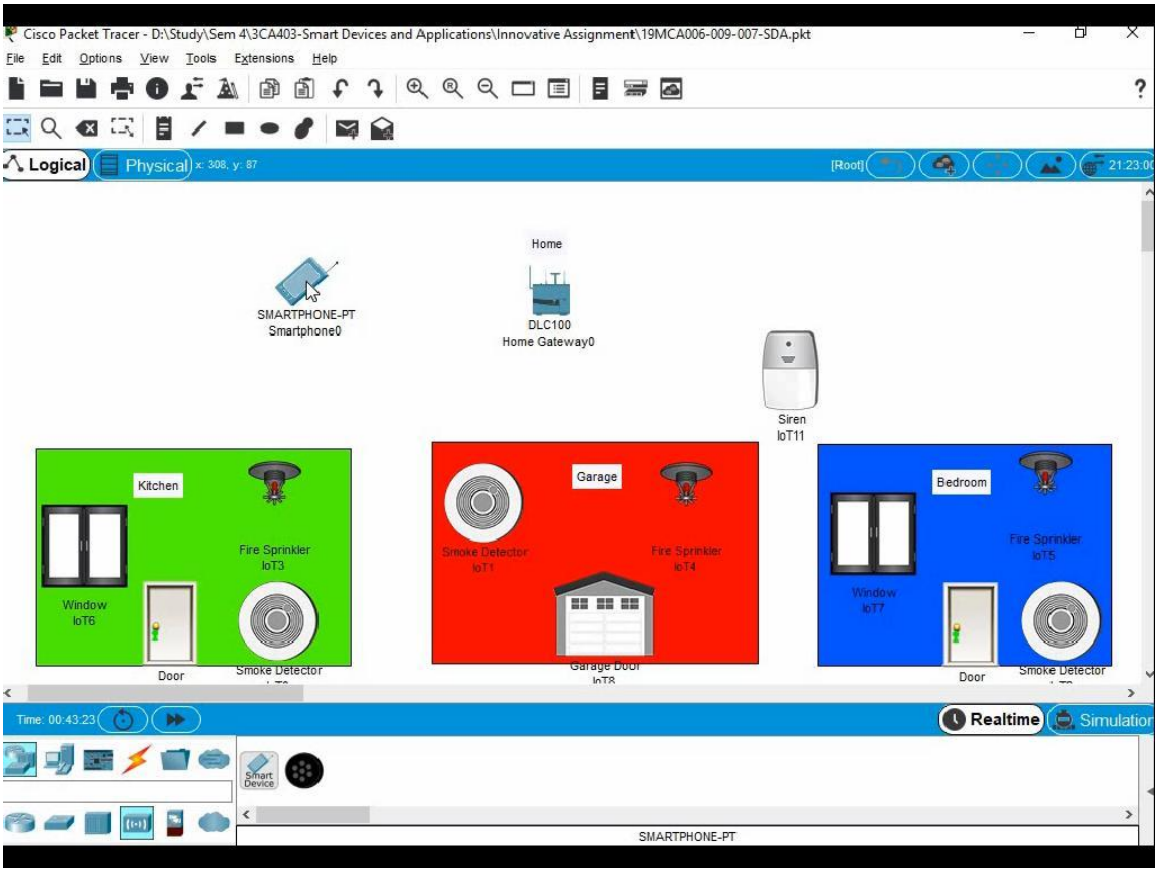
1) Smoke detectors
2) Fire sprinkler
3) Windows
4) Doors
5) Garage door
6) Siren
7) Home Gateway
8) Switch
9) Smart device

IMPLEMENTATION

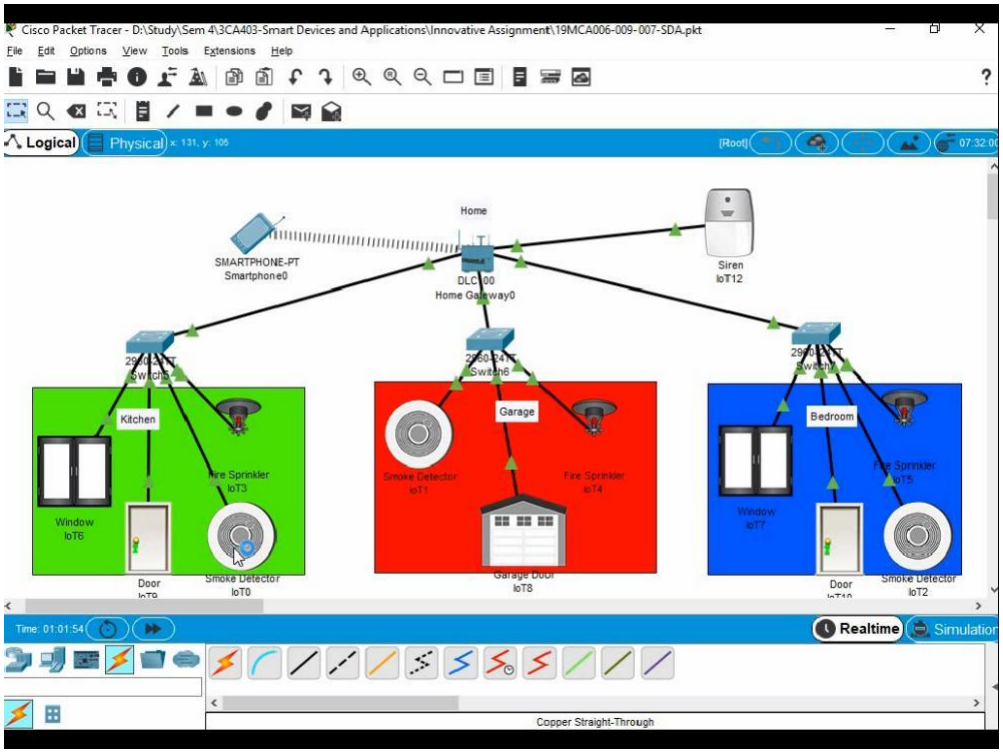
Create a House



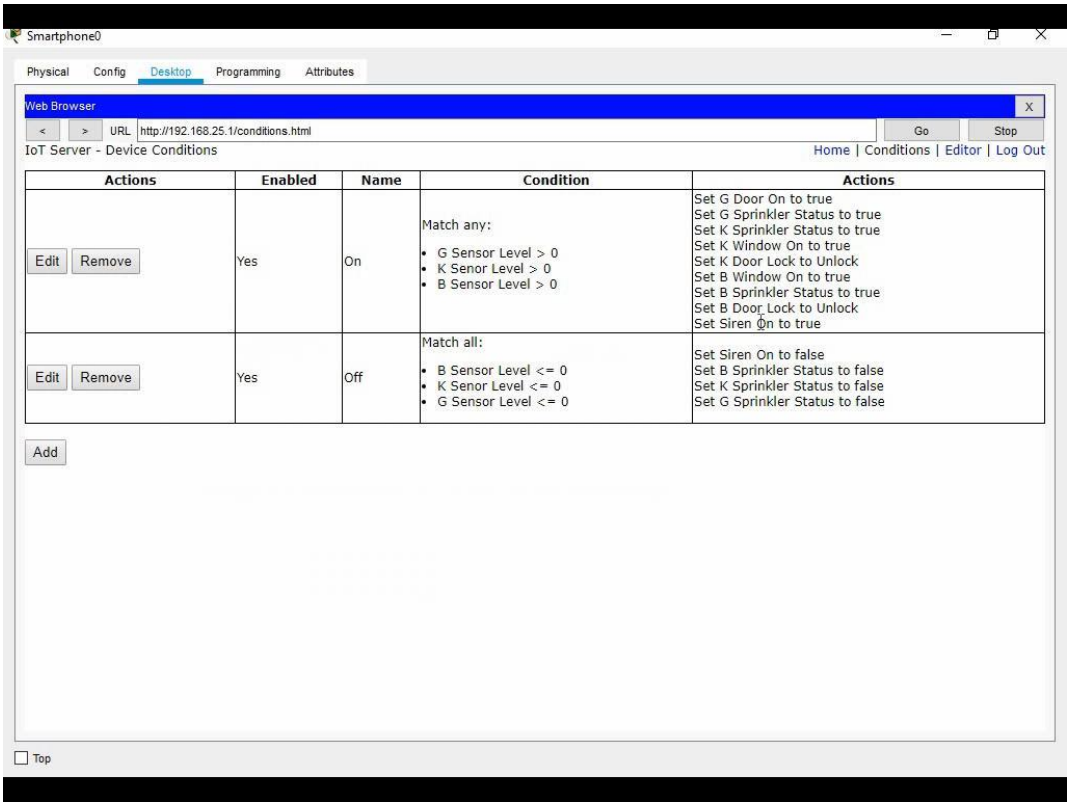
Place the devices in the house



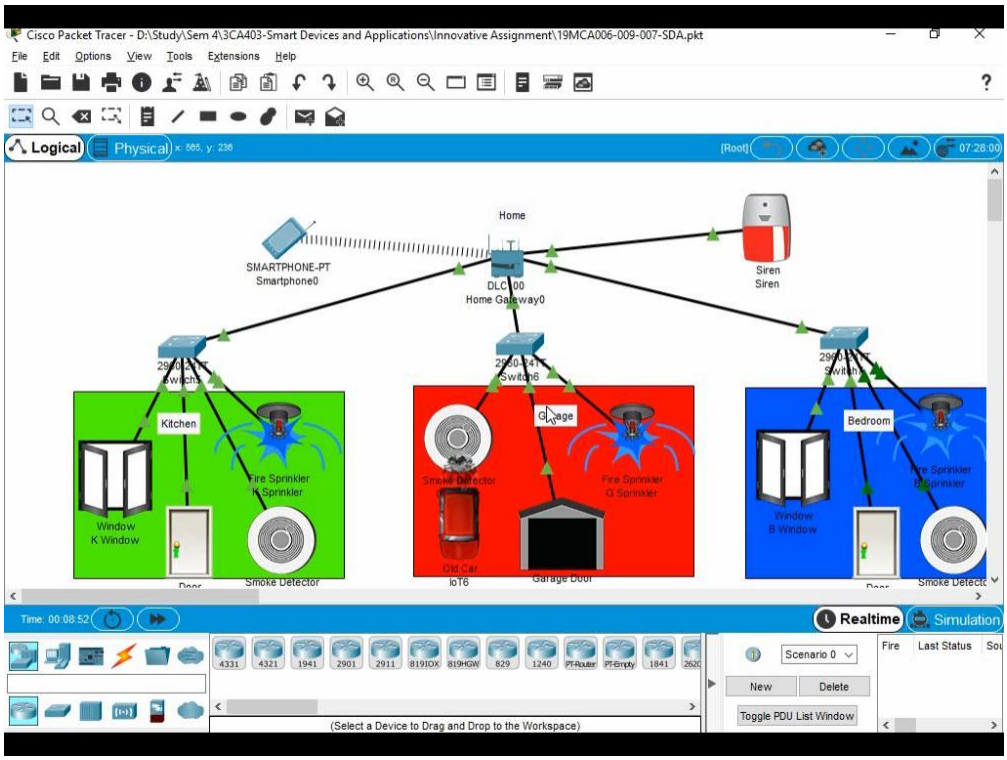
Connect/configure all components with the home gateway



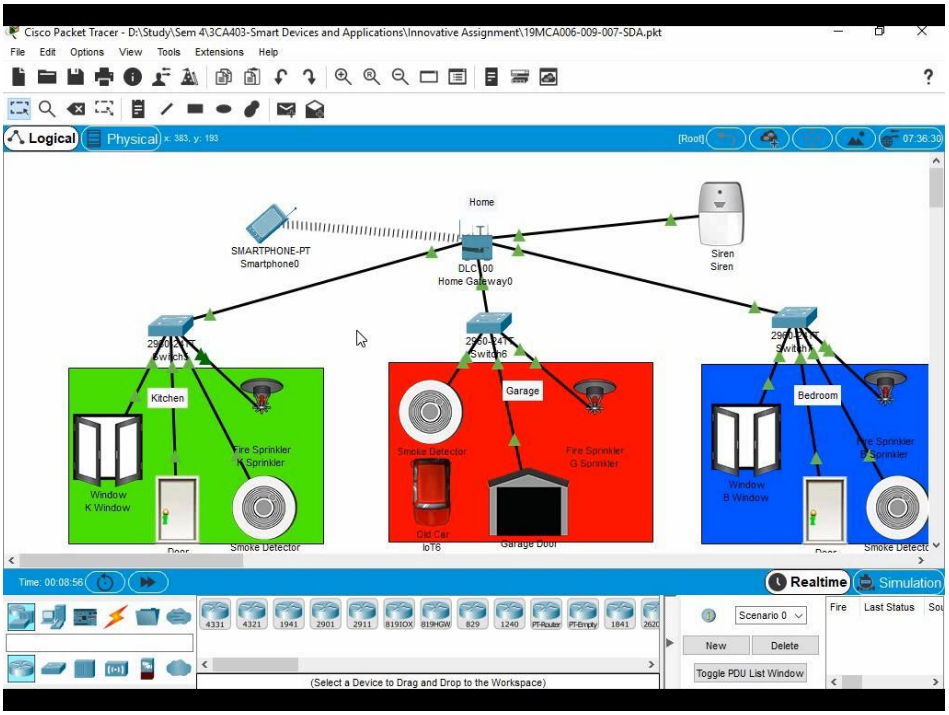
Write condition for automation of fire prevention



Running (On)



Running (Off



CODE

Detecting smoke and preventing fires involves multiple components, including sensors, algorithms, and actuators. The specific code needed will depend on the type of sensor and actuator you are using, as well as the programming language you are working with. Here is some sample code that demonstrates the basic concepts involved in smoke detection and fire prevention:

Smoke Detection:

```
# Import libraries
import RPi.GPIO as GPIO
import time

# Set up GPIO pin for smoke sensor
SMOKE_SENSOR_PIN = 18
GPIO.setmode(GPIO.BCM)
GPIO.setup(SMOKE_SENSOR_PIN, GPIO.IN)

# Wait for smoke sensor to detect smoke
while not GPIO.input(SMOKE_SENSOR_PIN):
    time.sleep(0.1)

# Smoke has been detected
print("Smoke detected!")
```

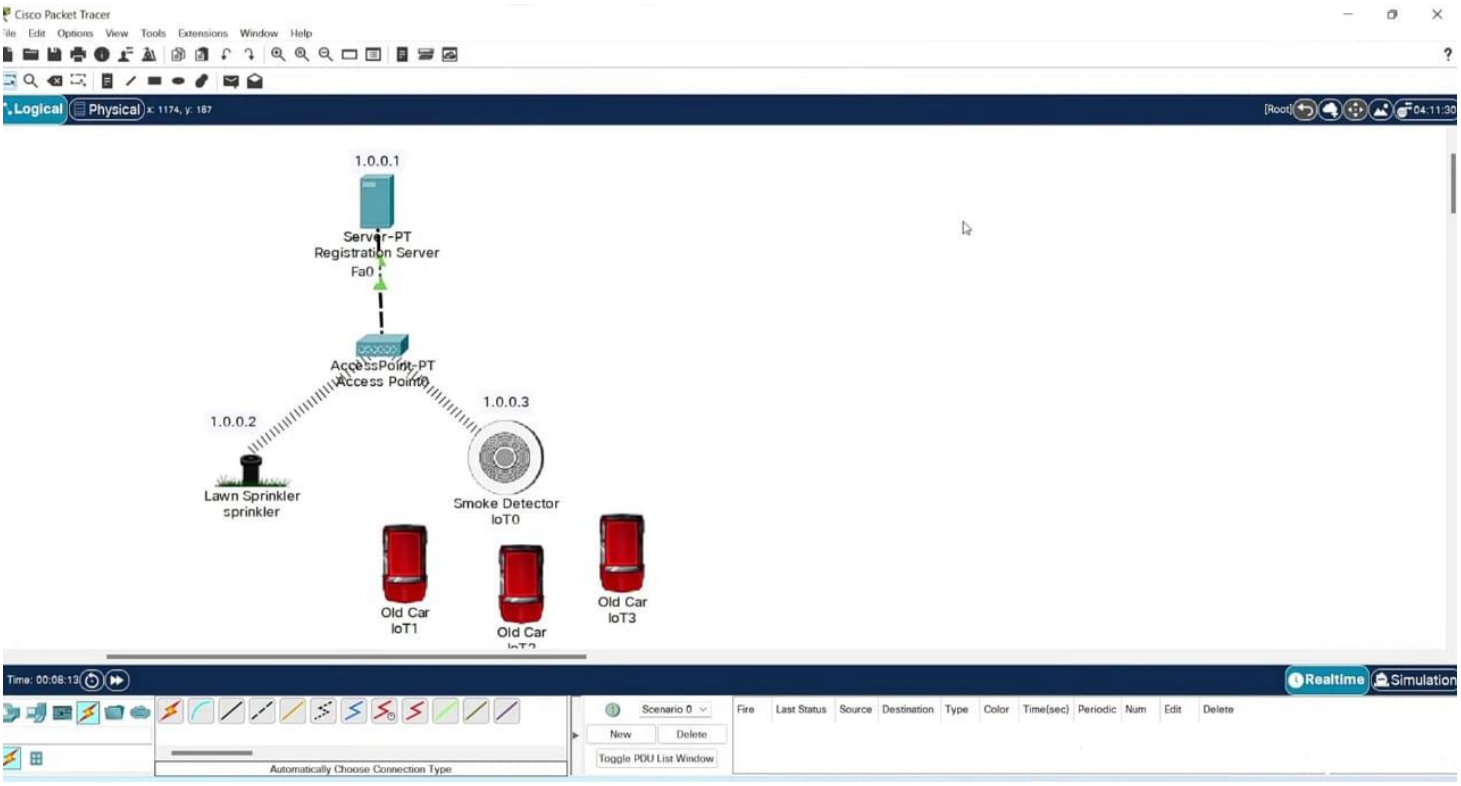
This code uses the Raspberry Pi's GPIO pins to interface with a smoke sensor. It waits for the sensor to detect smoke, and then prints a message indicating that smoke has been detected.

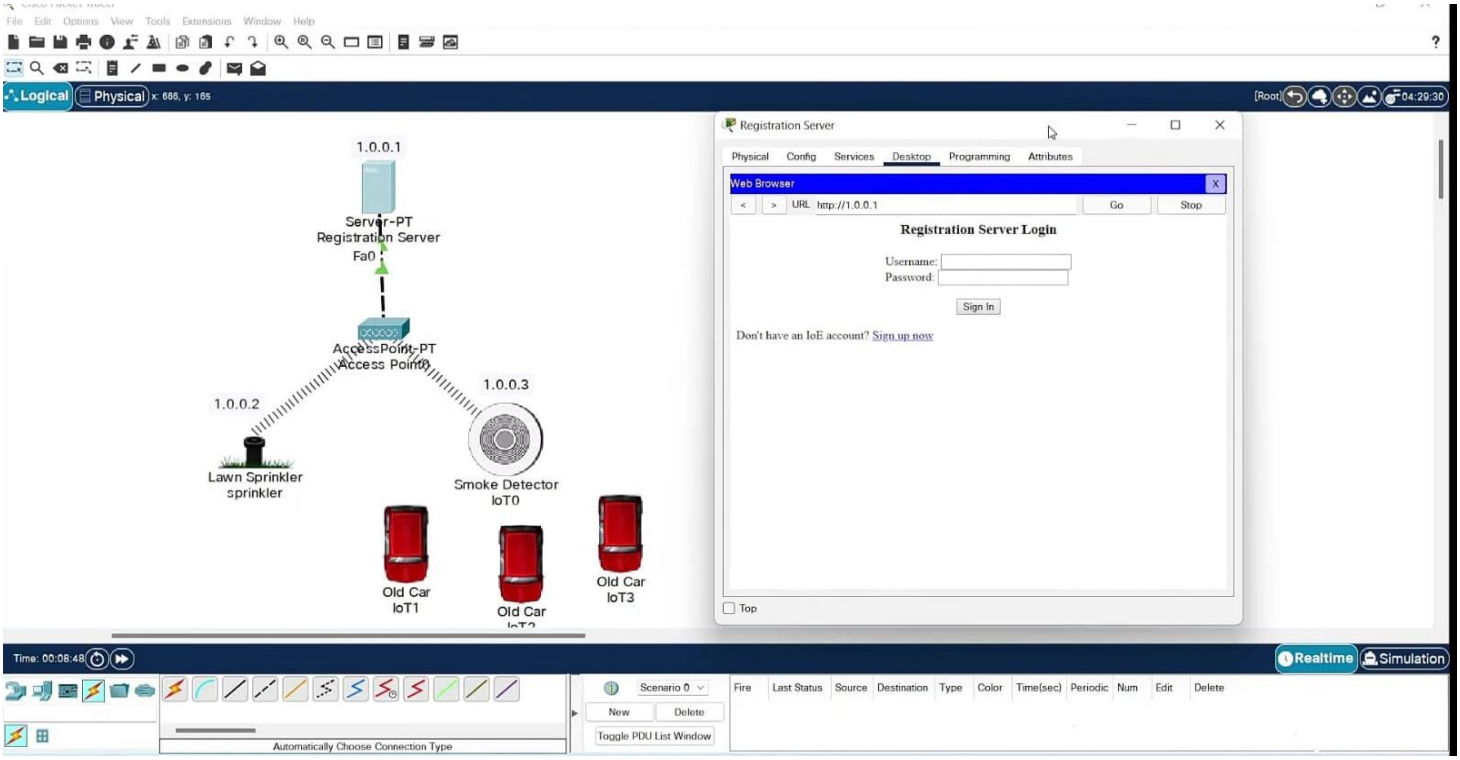
Fire Prevention:

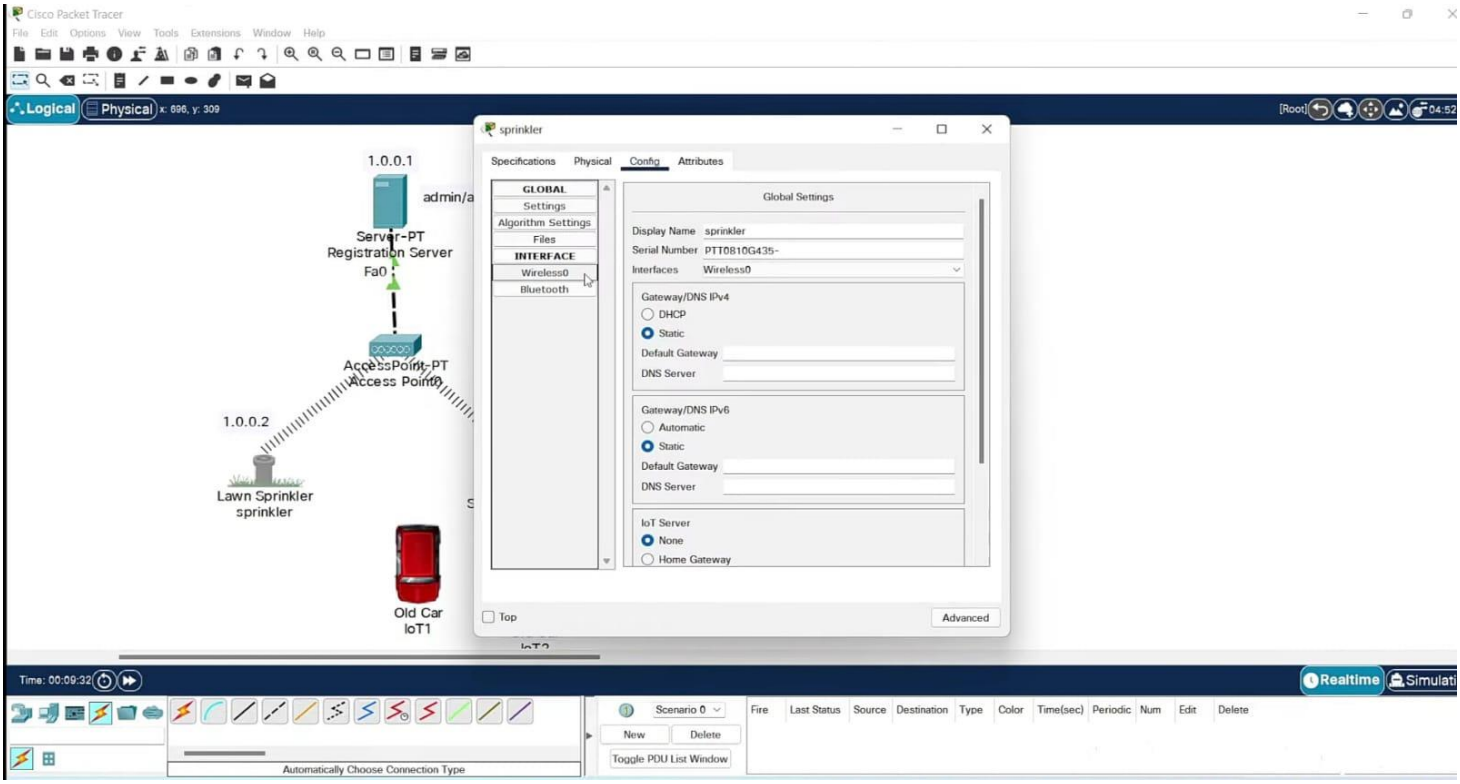
```
# Import libraries
import RPi.GPIO as GPIO
import time

# Set up GPIO pin for fire prevention system
FIRE_PREVENTION_PIN = 17
GPIO.setmode(GPIO.BCM)
GPIO.setup(FIRE_PREVENTION_PIN, GPIO.OUT)

# Turn on fire prevention system
GPIO.output(FIRE_PREVENTION_PIN, GPIO.HIGH)
time.sleep(60) # Keep system on for 60 seconds

# Turn off fire prevention system
GPIO.output(FIRE_PREVENTION_PIN, GPIO.LOW)
```

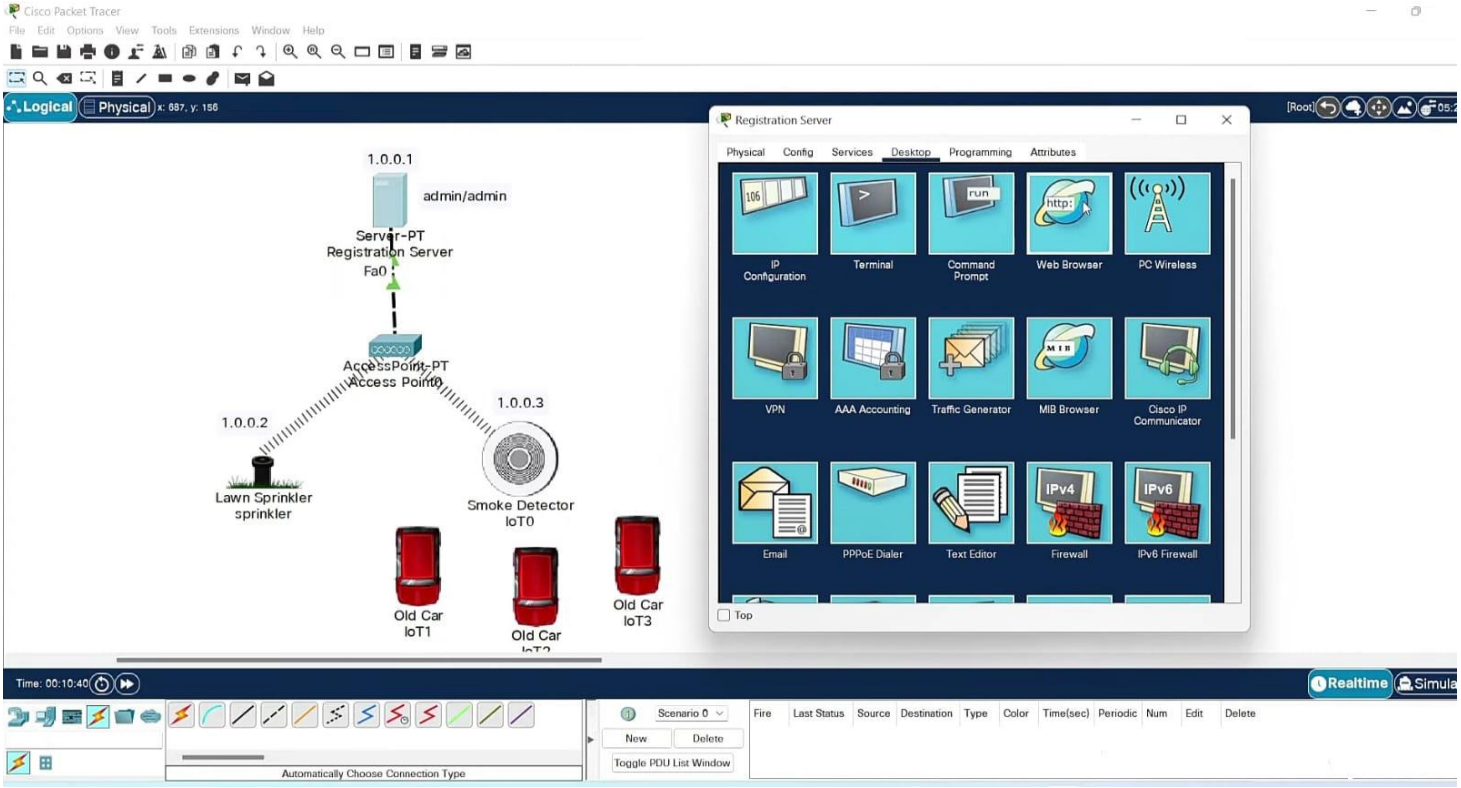
This code uses the Raspberry Pi's GPIO pins to interface with a fire prevention system. It turns on the system for 60 seconds, then turns it off. The specific actions taken by the fire prevention system will depend on the design of the system itself.

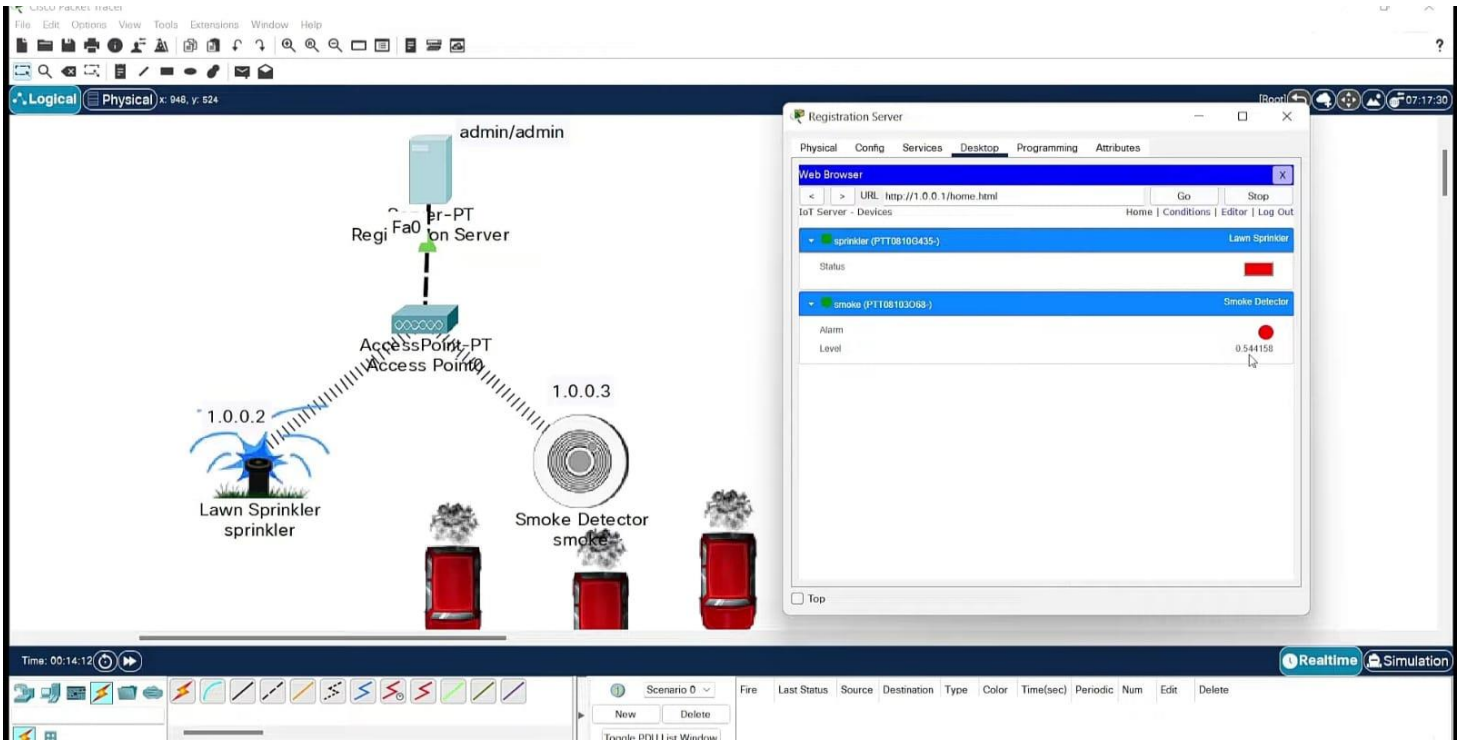
EXPERIMENT RESULT AND OUTPUT




Logical
Physical
1.0.0.1
Server-PT
Registration Server
Fa0
AccessPoint-PT
Access Point0
1.0.0.2
1.0.0.3
Lawn Sprinkler
sprinkler
Smoke Detector
IoT0
Old Car
IoT1
Old Car
IoT2
Old Car
IoT3
Registration Server
Physical
Config
Services
Desktop
Programming
Attributes
Web Browser
URL http://1.0.0.1
Go
Stop
Registration Server Login
Username:
Password:
Sign In
Don't have an IoE account? Sign up now
Top
Time: 00:08:48
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Automatically Choose Connection Type
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete


Cisco Packet Tracer
Logical
Physical
1.0.0.1
Server-PT
Registration Server
Fa0
AccessPoint-PT
Access Point0
1.0.0.2
Lawn Sprinkler
sprinkler
Old Car
IoT1
sprinkler
Specifications
Physical
Config
Attributes
GLOBAL
Settings
Algorithm Settings
Files
INTERFACE
Wireless0
Bluetooth
Global Settings
Display Name sprinkler
Serial Number PTT0810G435-
Interfaces Wireless0
Gateway/DNS IPv4
DHCP
Static
Default Gateway
DNS Server
Gateway/DNS IPv6
Automatic
Static
Default Gateway
DNS Server
IoT Server
None
Home Gateway
Top
Advanced
Time: 00:09:32
Realtime
Scenario 0
New
Delete
Toggle PDU List Window
Automatically Choose Connection Type
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete


Cisco Packet Tracer
File Edit Options View Tools Extensions Window Help
Logical Physical x: 687, y: 156
1.0.0.1
admin/admin
Server-PT
Registration Server
Fa0
AccessPoint-PT
Access Point0
1.0.0.2
1.0.0.3
Lawn Sprinkler
sprinkler
Smoke Detector
IoT0
Old Car
IoT1
Old Car
IoT2
Old Car
IoT3
Registration Server
Physical Config Services Desktop Programming Attributes
IP Configuration
Terminal
Command Prompt
Web Browser
PC Wireless
VPN
AAA Accounting
Traffic Generator
MIB Browser
Cisco IP Communicator
Email
PPPoE Dialer
Text Editor
Firewall
IPv6 Firewall
Top
Time: 00:10:40
Realtime
Simula
Scenario 0
New
Delete
Toggle PDU List Window
Automatically Choose Connection Type
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete


File Edit Options View Tools Extensions Window Help
Logical Physical x: 948, y: 524
admin/admin
Fa0
AccessPoint-PT
Access Point0
1.0.0.2
1.0.0.3
Lawn Sprinkler
sprinkler
Smoke Detector
smoke
Registration Server
Physical Config Services Desktop Programming Attributes
Web Browser
URL http://1.0.0.1/home.html
Go
Stop
IoT Server - Devices
Home | Conditions | Editor | Log Out
sprinkler (PTT0810G435-)
Lawn Sprinkler
Status
smoke (PTT08103O68-)
Smoke Detector
Alarm
Level
0.544158
Top
Time: 00:14:12
Realtime
Simulation
Scenario 0
New
Delete
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete

CONCLUSION

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.

REFERENCES :

https://www.youtube.com/redirect?event=video_description&redir_token=QUFFLUhqbWxDUGhEQzZTZXpUb3FUajJral9VQ3NkLWVvd3xBQ3Jtc0tsdHFQWm85R1BEZHlvQUlyOHhOVTZmTThaWHhSRjZ0NGxVVWdfSUxmNTB6a1Q0cGRhN2Z0T25NWDdMOHFQa09KWEQwZVBLT24wdGFyOE5HYUJIamJVSVRmTTJrbkpsVE5qRTY3cHZHSXY3VVZyX05RZw&q=https%3A%2F%2Fdrive.google.com%2Fdrive%2Ffolders%2F1iRzbLzl6XM00QEG3kNVyH6B804M90li2%3Fusp%3Dsharing&v=PYqIvoPEmRA

https://community.cisco.com/t5/cisco-software-discussions/packet-tracer-smoke-simulation-sensor-problem/td-p/4509065

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