# 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 project work under my supervision.

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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**

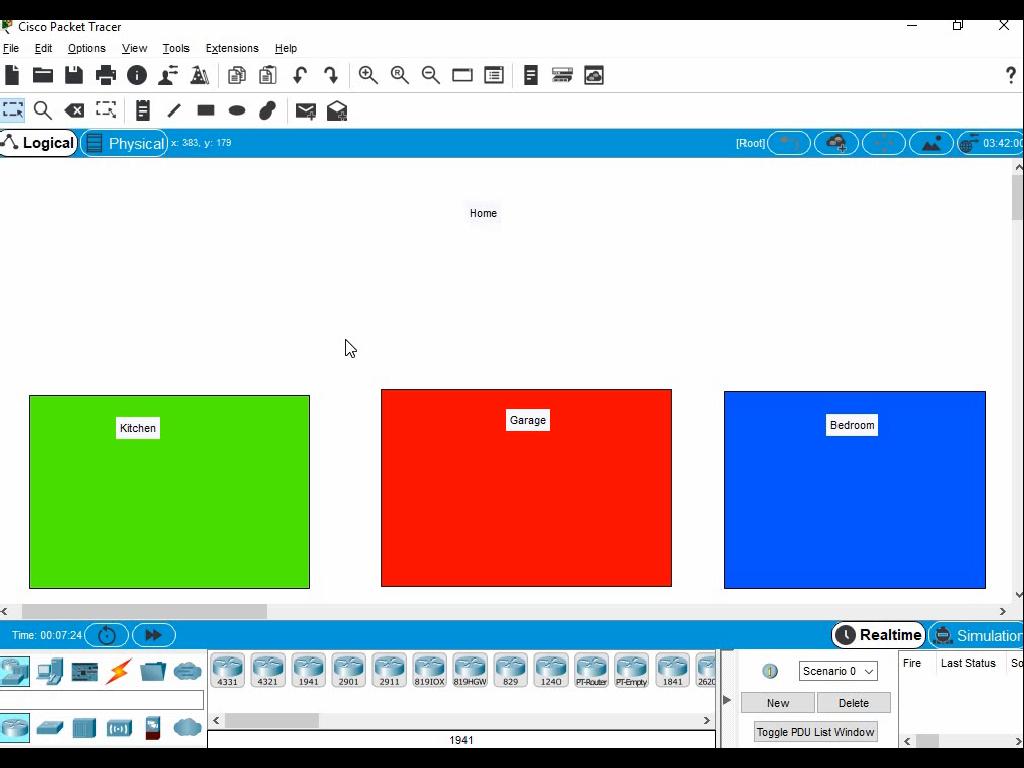
These smoke & fire detection systems use automatic functions to detect the occurrence of an event that may result in a fire. They receive a sign from a fireplace sensing smoke and mechanically transmit it to the fireplace siren panel. The fire siren panel activates sprinklers and opens all windows and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

**COMPONENTS NEED**

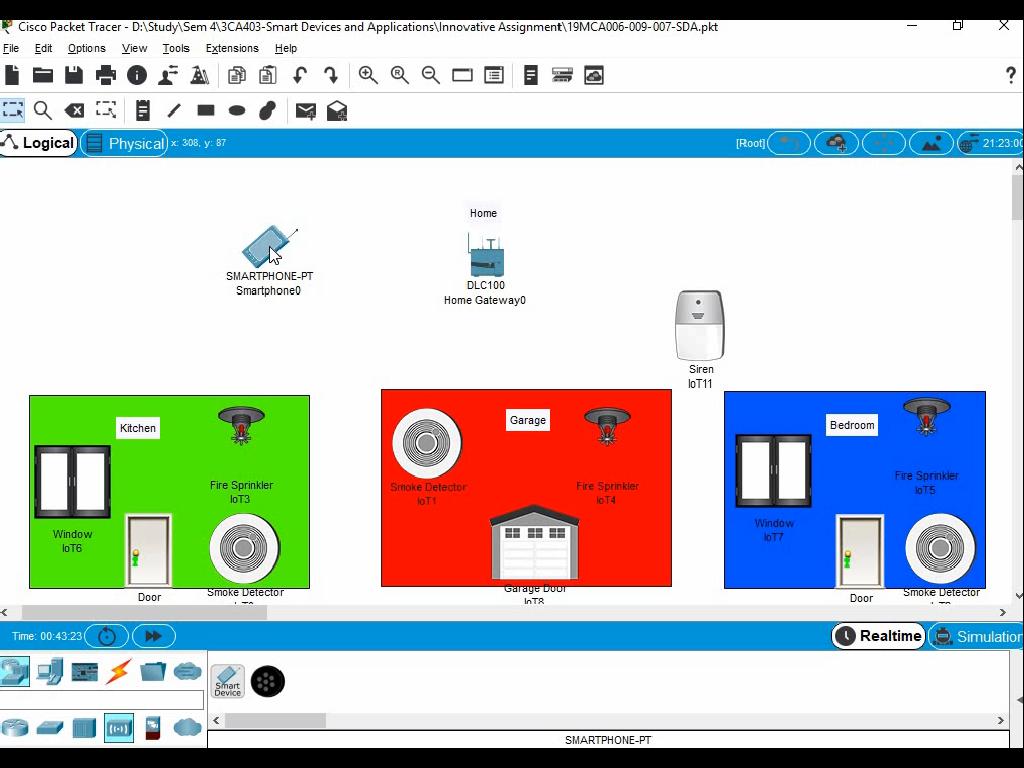
1. Smoke detectors
2. Fire sprinkler
3. Windows
4. Doors
5. Garage door
6. Siren
7. Home Gateway
8. Switch
9. Smart device

**IMPLEMENTATION**

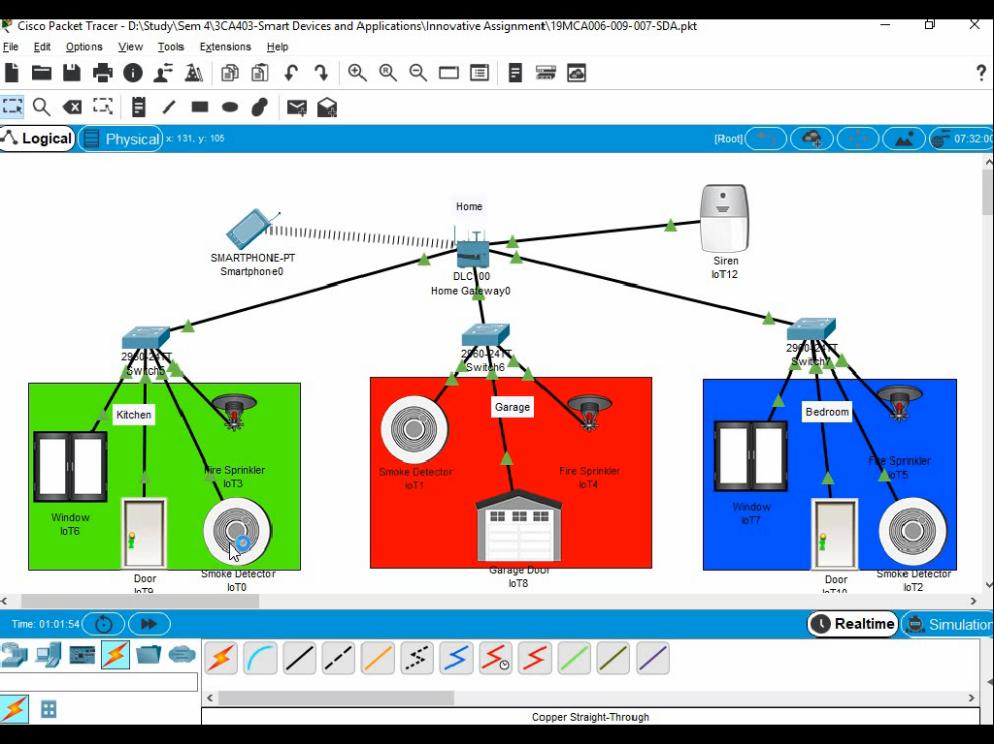
Create a House

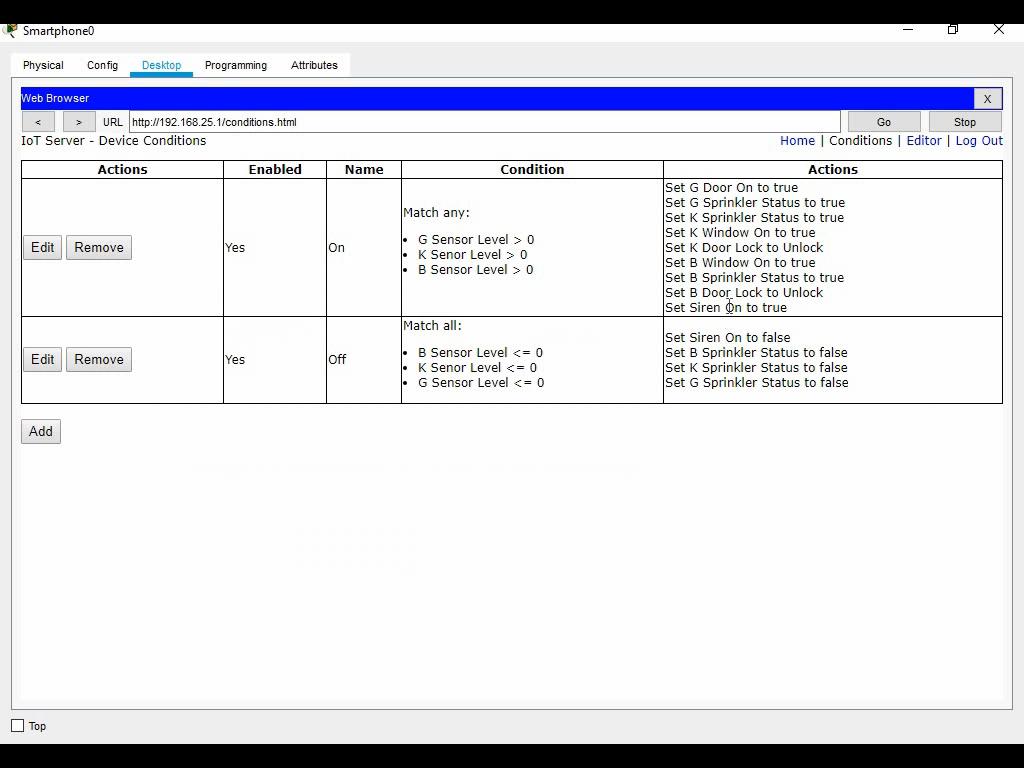


Place the devices in the house



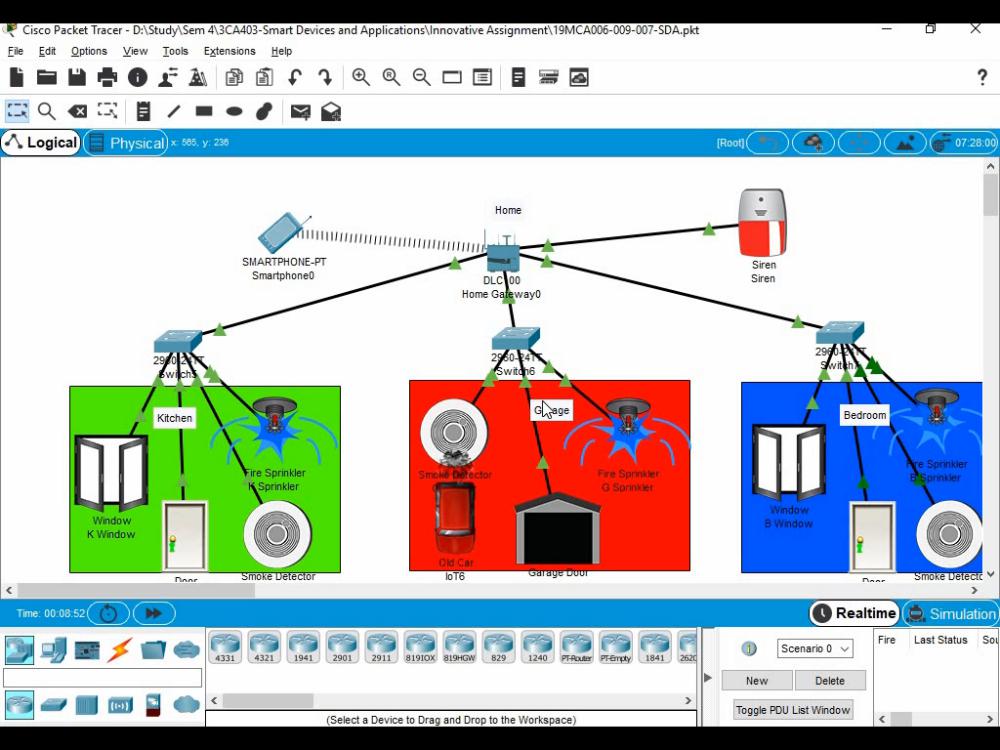
Connect/configure all components with the home gateway

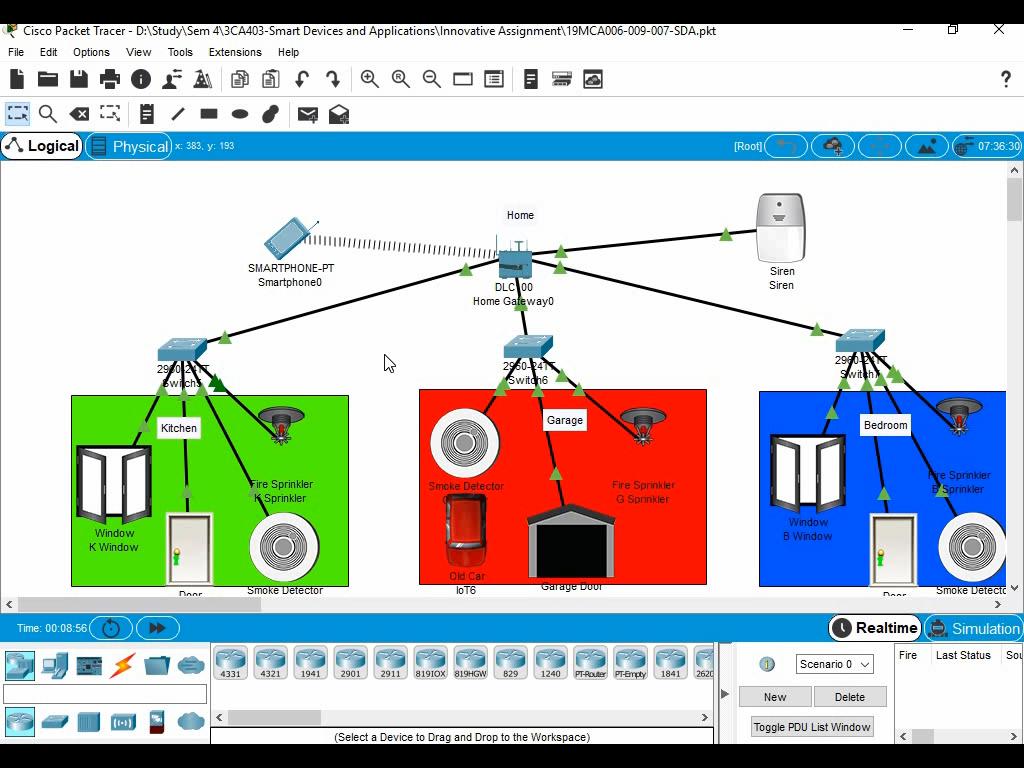




Write condition for automation of fire prevention

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)

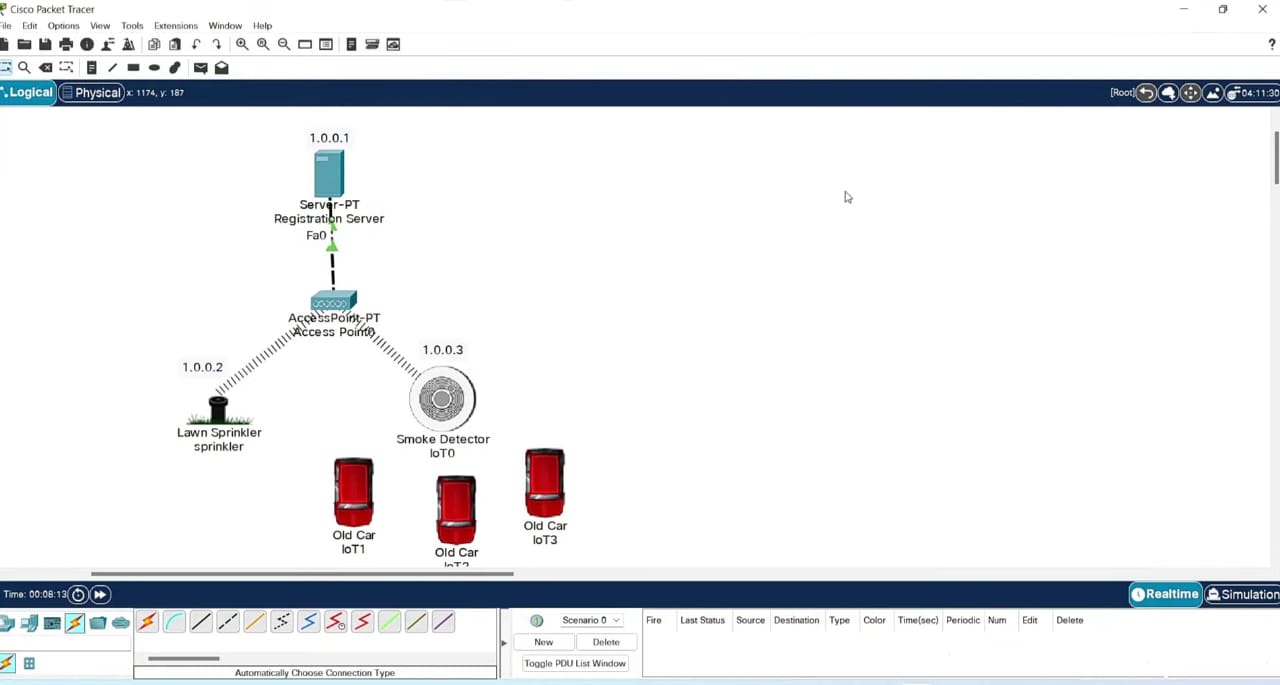
time.sleep(60) # Keep system on for 60 seconds

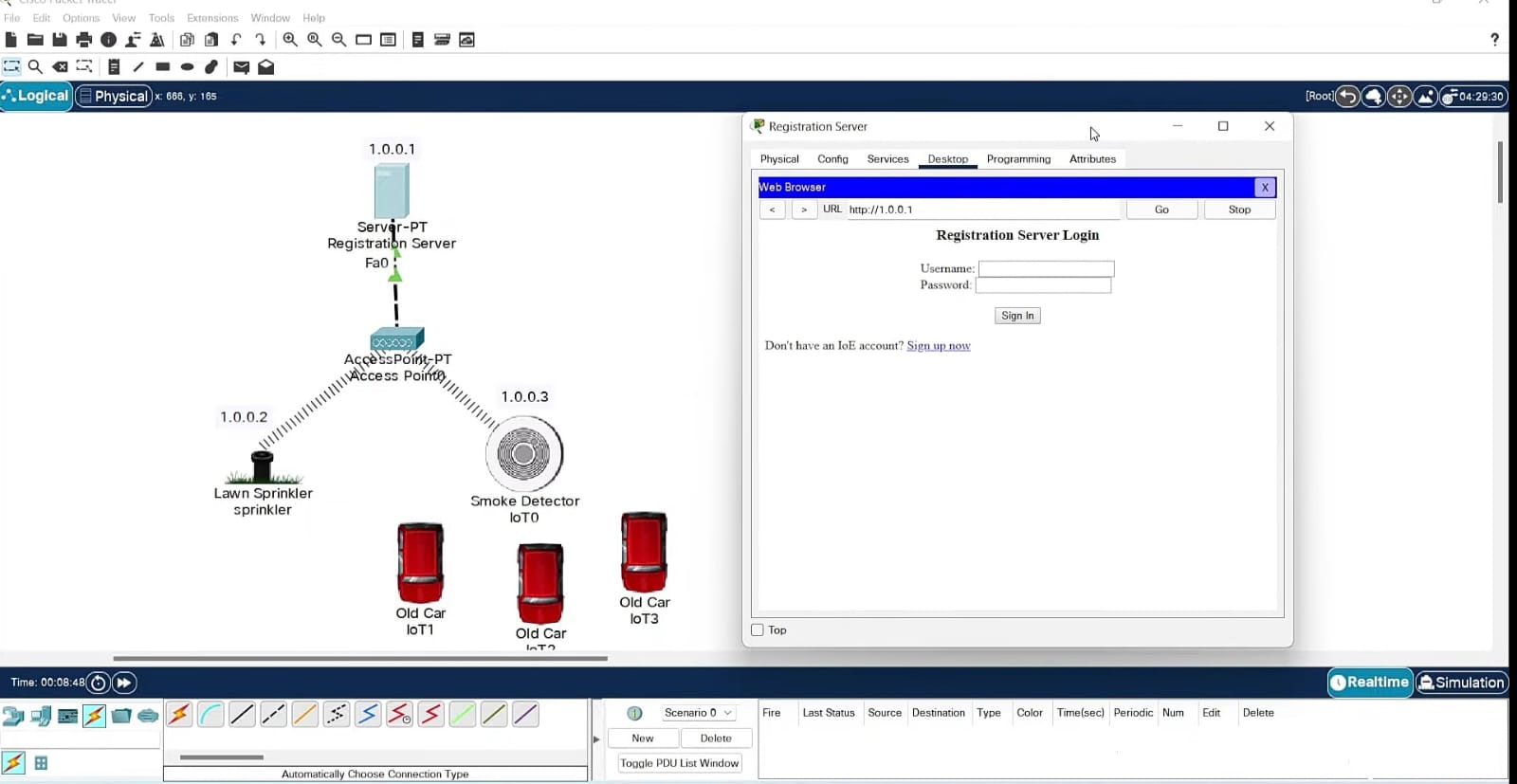
# Turn off fire prevention system

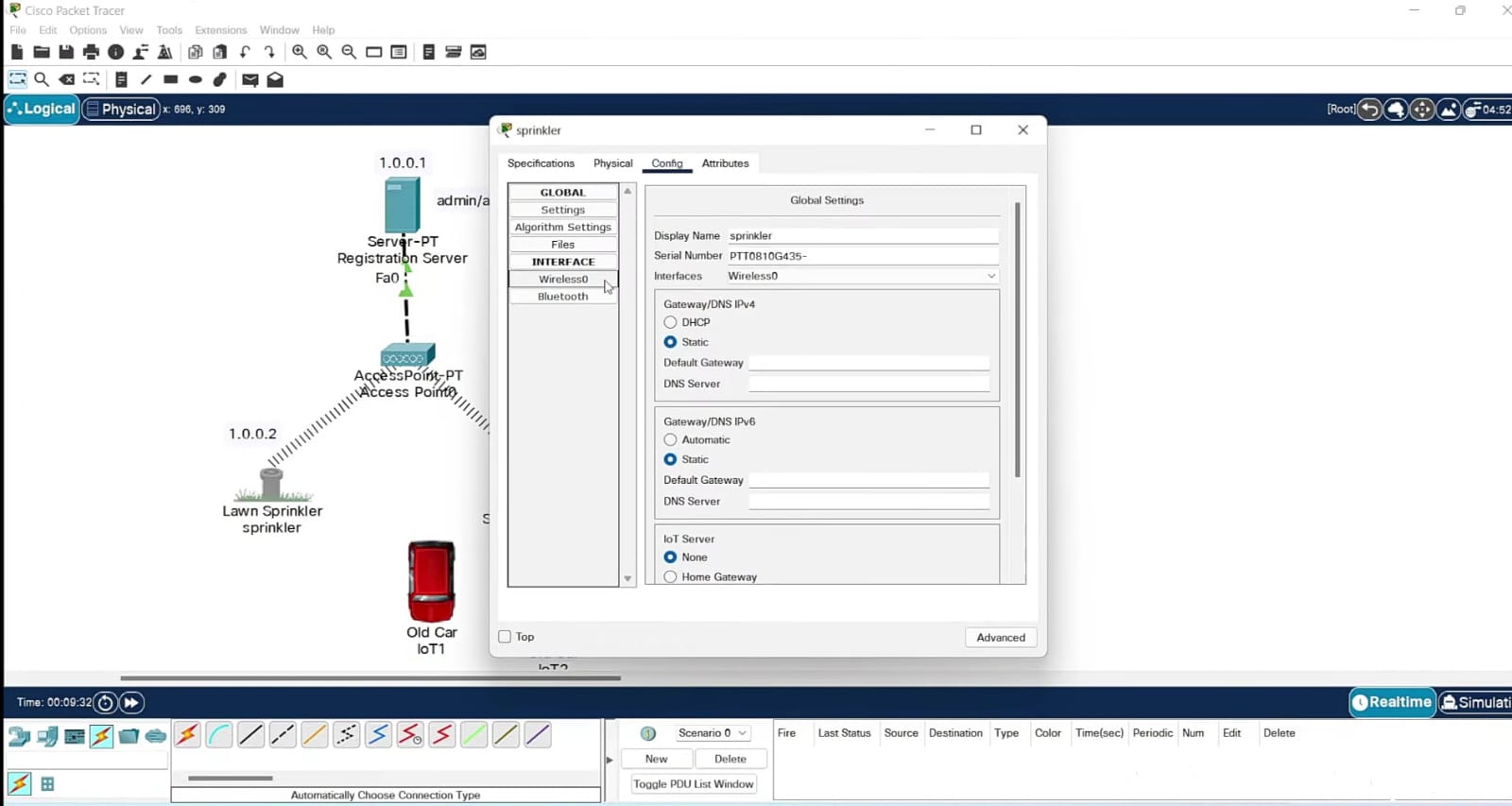
GPIO.output(FIRE\_PREVENTION\_PIN, GPIO.LOW)

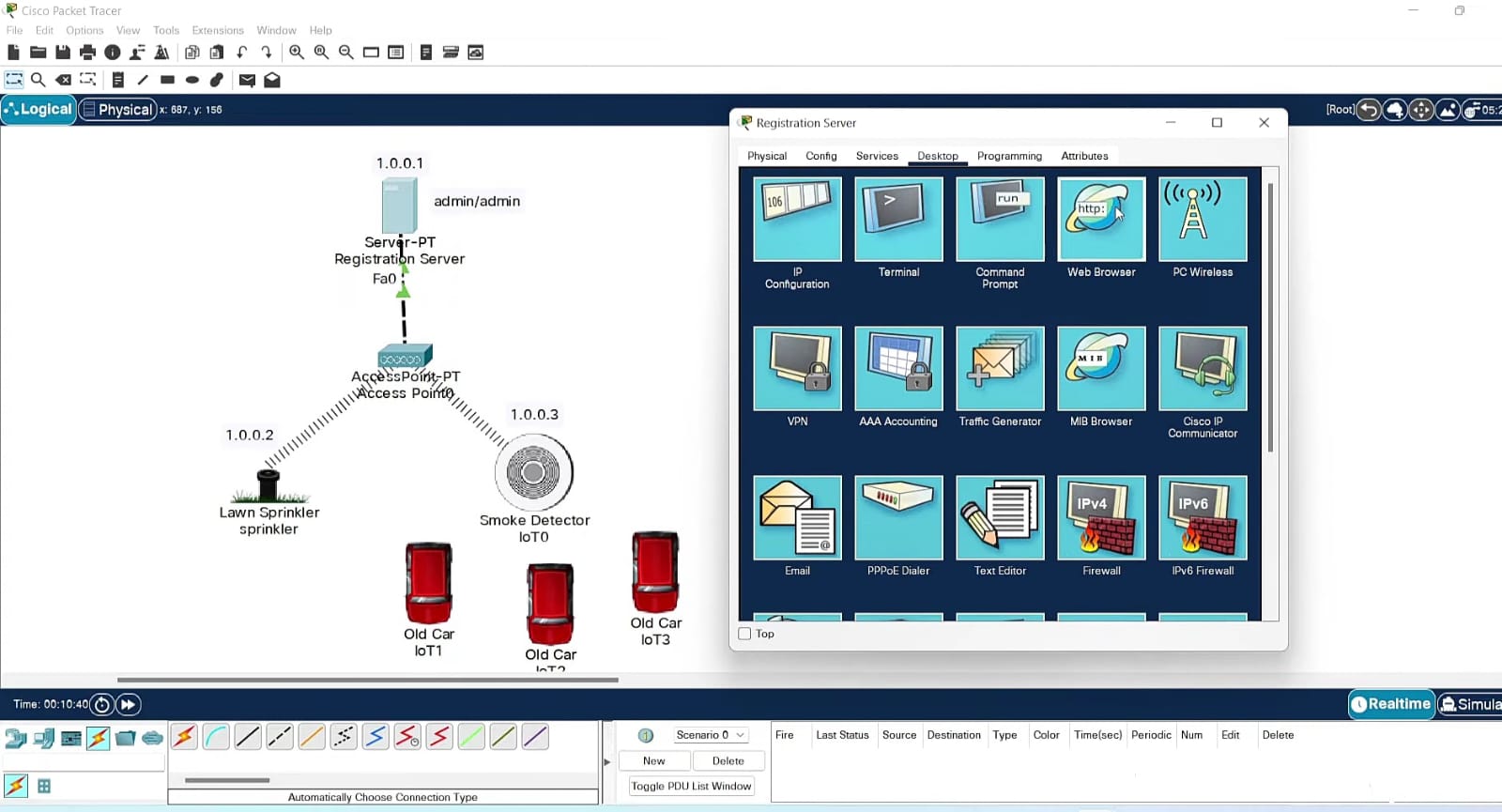
This code uses the Raspberry Pi's GPIO pins to interface with a fire prevention system. It turns on the system for 60 seconds, then turns it off. The specific actions taken by the fire prevention system will depend on the design of the system itself.

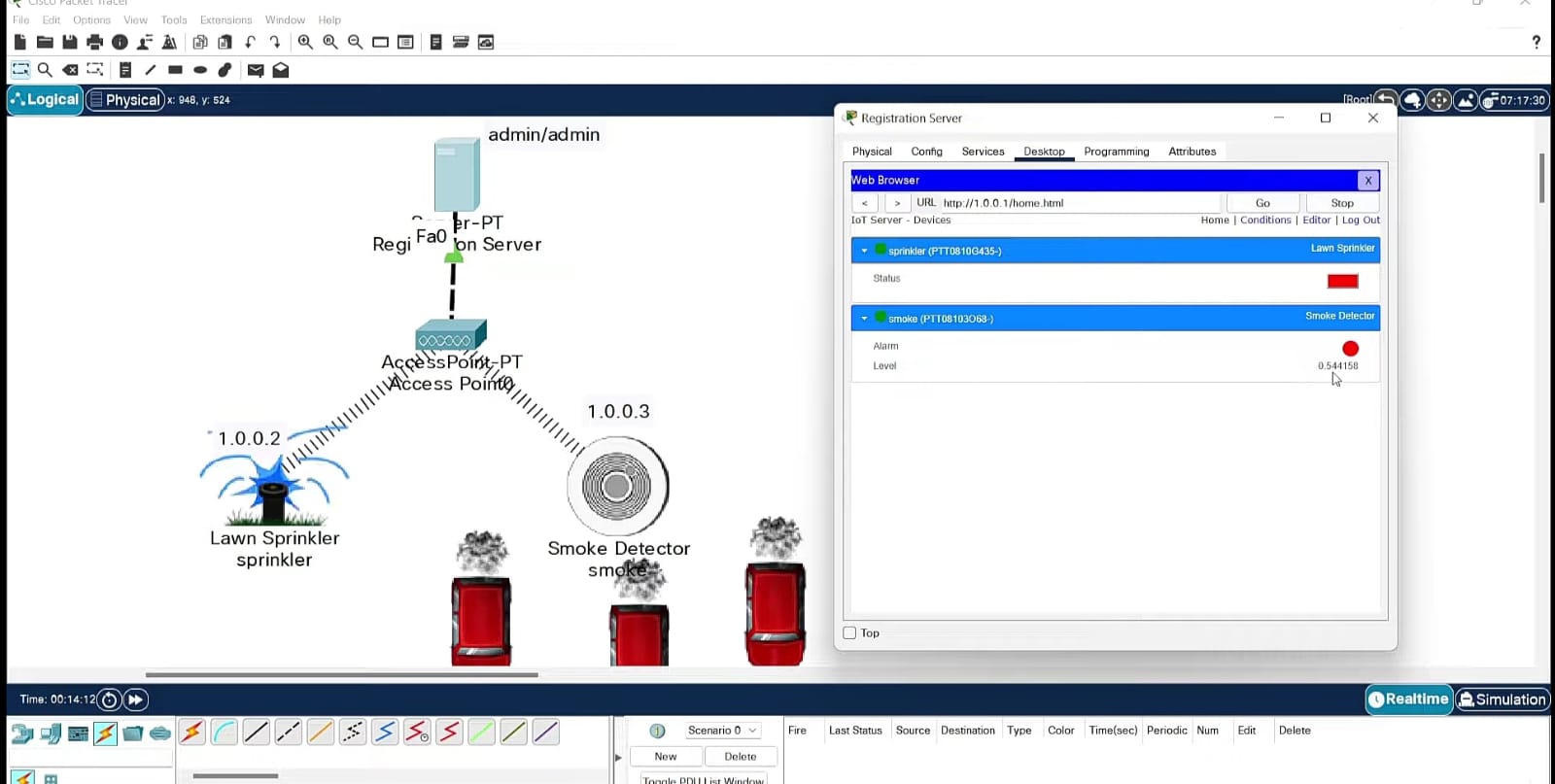
EXPERIMENT RESULT AND OUTPUT











**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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