SMOKE DETECTION WITH FIRE PREVENTION

OBJECTIVE

1. a fire protection device that automatically detects smoke/gases & also gives us warning to be aware of it with some protection system to handle the situation.
2. Many fire accident occurs in our surrounding due to absence of human in the right place at the right time. That is the importance of the project, it can minimize such accidents. Thus it got immense importance in our practical life.

ABSTRACT

Cisco packet tracer is being used to implement this project because it allows us to simulate different types of network virtually,especially,wireless networks and Internet Of Things(IoT) devices.

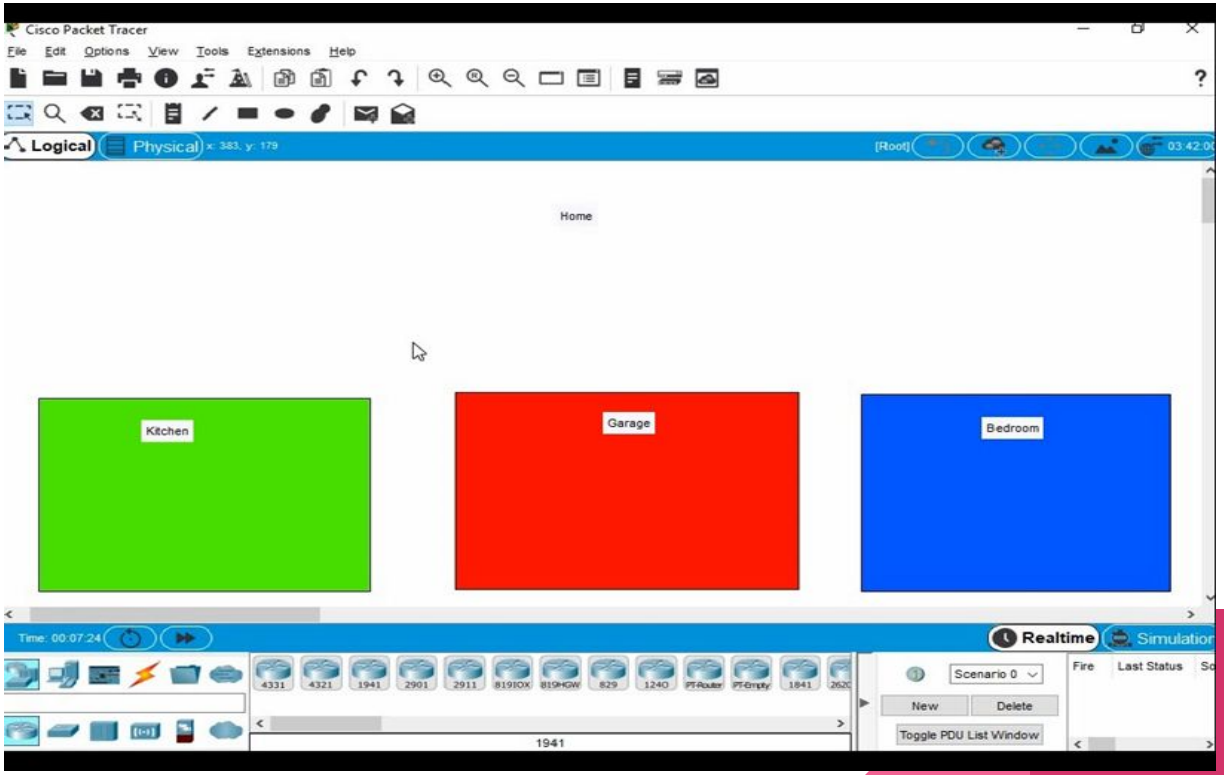
In the Cisco Packet Tracer, the devices appear as they are in reality, and users can monitor and interact with various wireless and IoT devices. Fire is the major cause of accidents claiming valuable lives and property. Smoke detectors play an important role in a fire prevention management program. Timely 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 smart sensors 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 Cisco Packet Tracer, Switches, Smoke detectors, Fire sprinklers, Smoke sensor, Wifi Module, and Siren. 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 Cisco Packet Tracer which operates the entire system.

INTRODUCTION

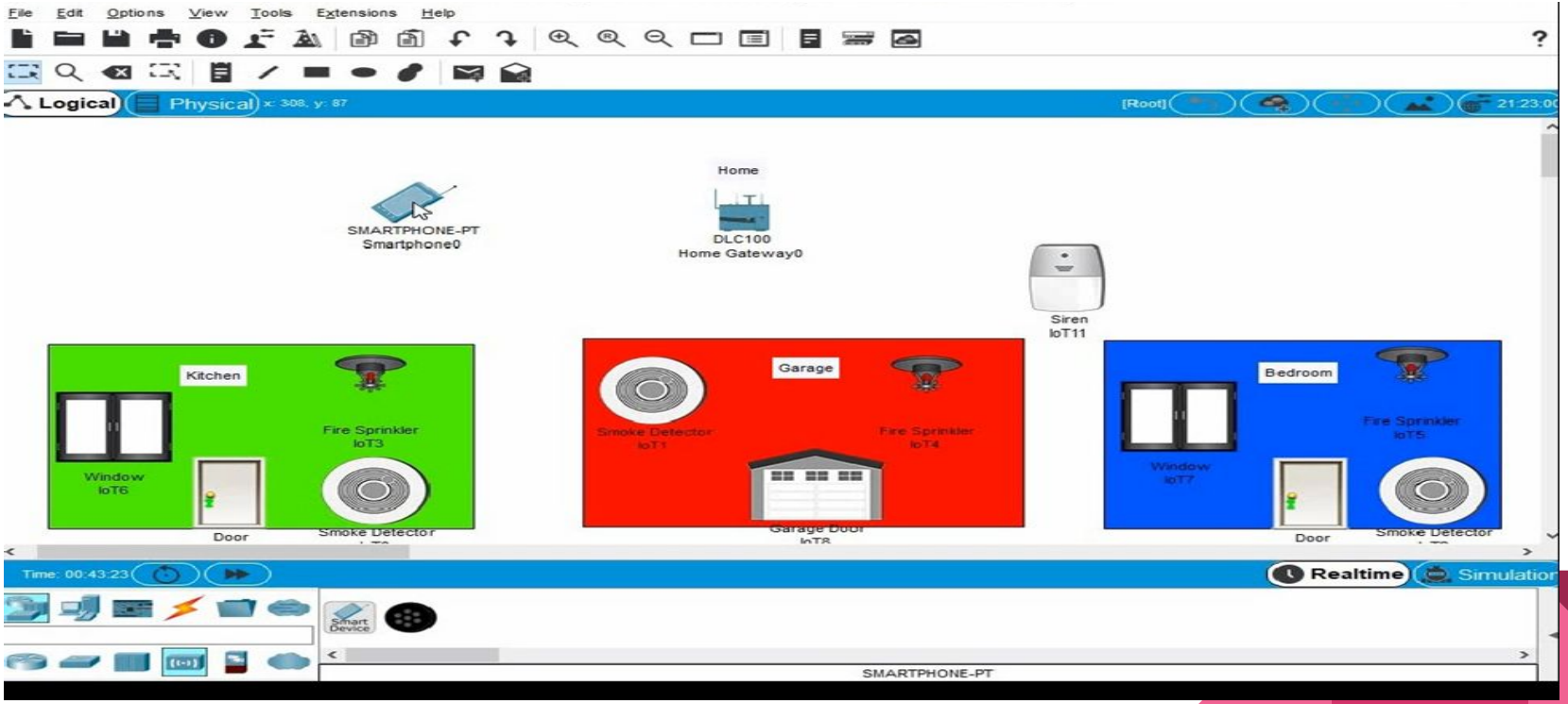
Home fire detection is a matter of great concern, and thus many efforts are devoted in most developed countries to the design of automatic detection systems. A fire prevention system should reliably and in a timely way notify building occupants about the presence of fire indicators, such as smoke or 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.

IMPLEMENTATION

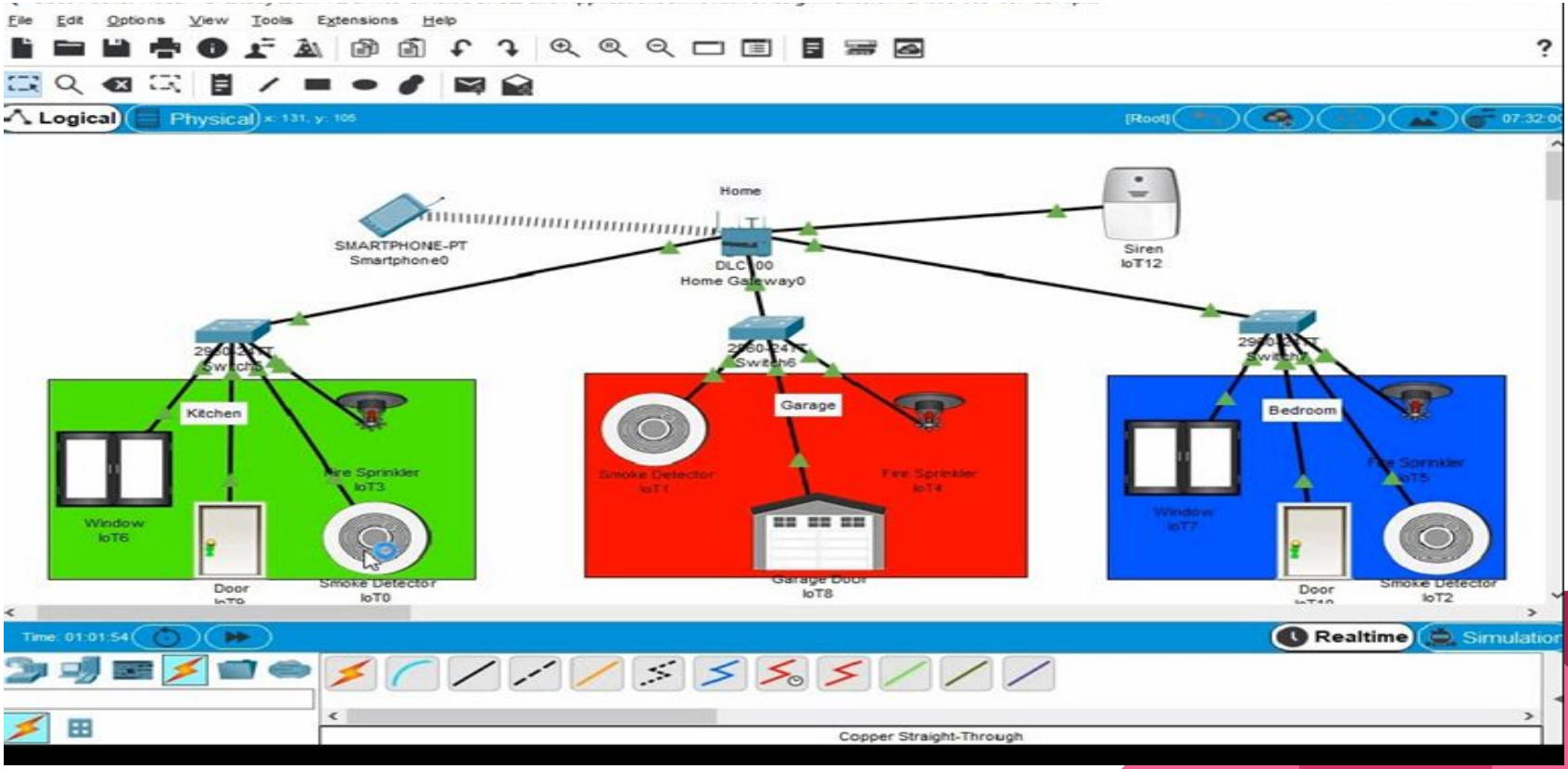
Create a House



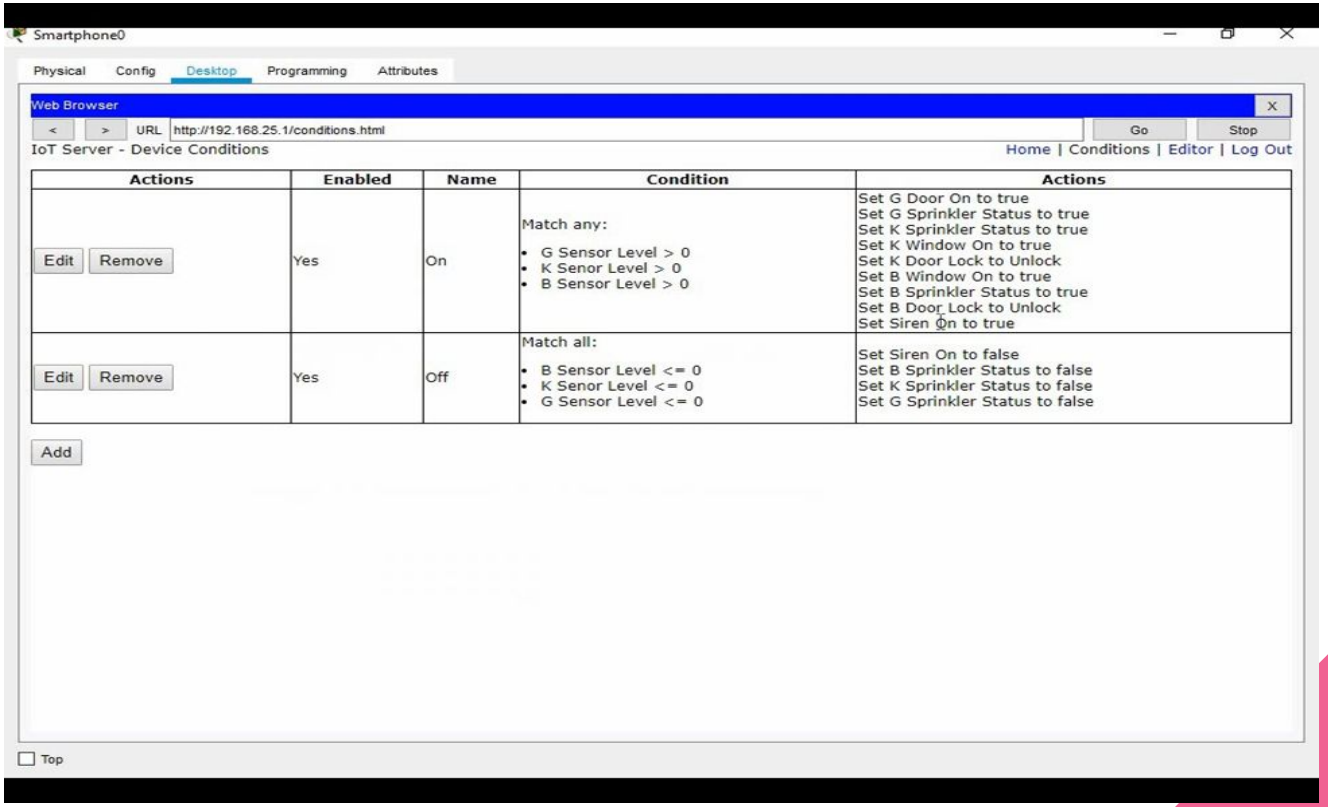
Place the devices in the house



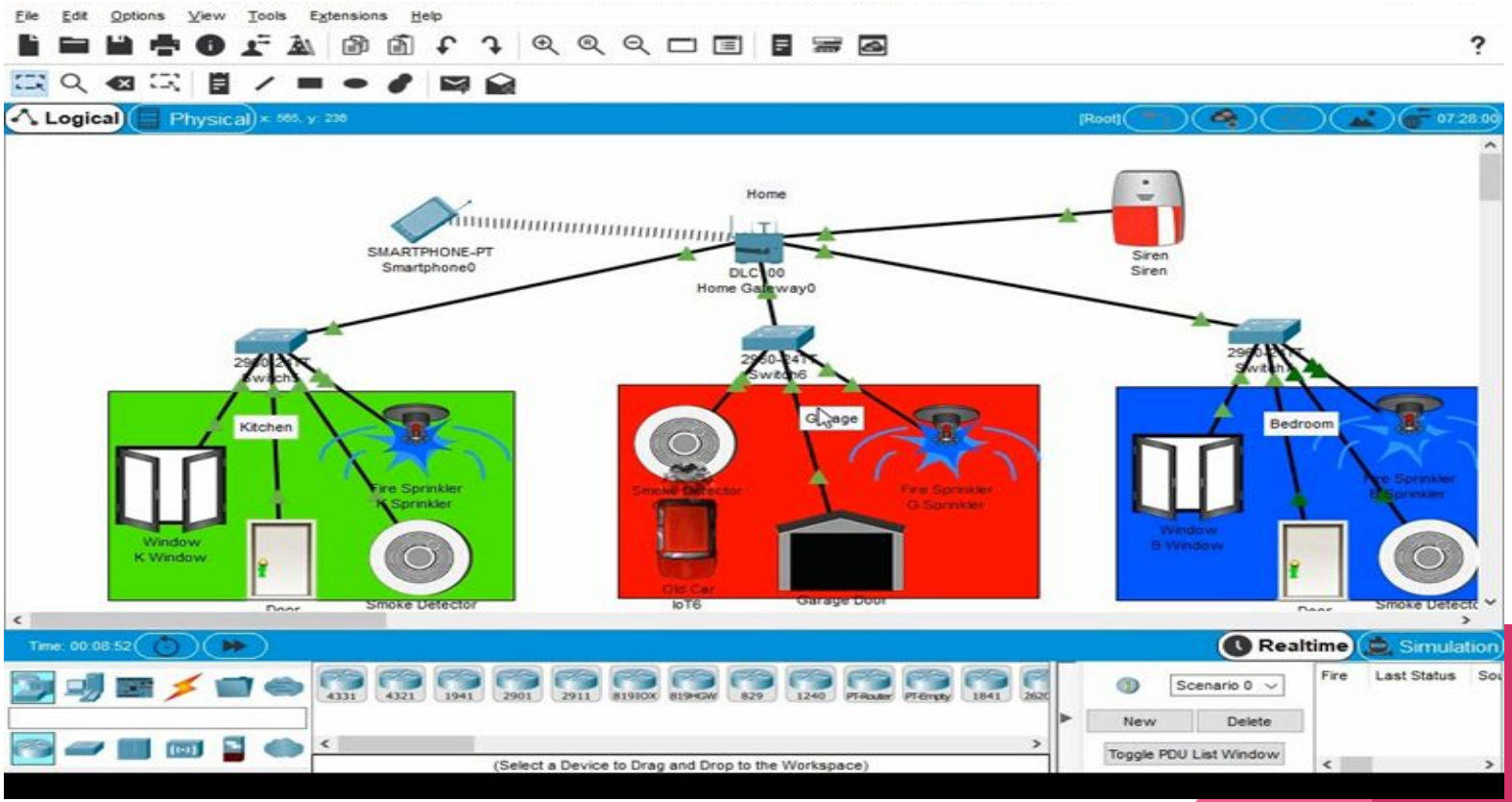
Connect/configure all components with the home gateway



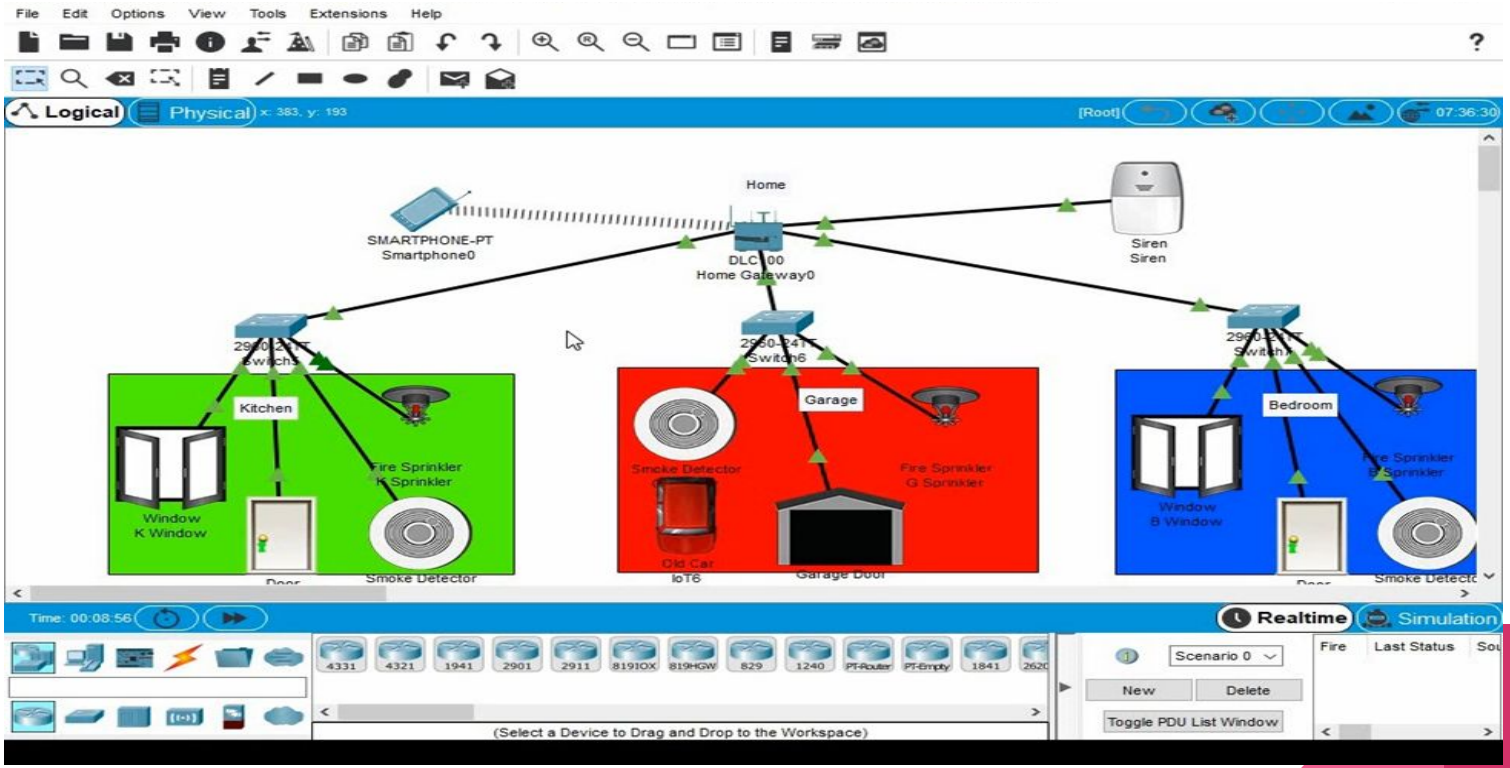
Write condition for automation of fire prevention



Running (On)


File Edit Options View Tools Extensions Help
Logical
Physical
Home
SMARTPHONE-PT
Smartphone0
Home Gateway0
Siren
Kitchen
Garage
Bedroom
Window
K Window
Fire Sprinkler
K Sprinkler
Smoke Detector
Fire Sprinkler
G Sprinkler
Old Car
IoT6
Window
B Window
Time: 00:08:52
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
(Select a Device to Drag and Drop to the Workspace)

Running(Off)


File Edit Options View Tools Extensions Help
Logical
Physical
[Root]
Home
SMARTPHONE-PT
Smartphone0
DLC 100
Home Gateway0
Siren
Siren
Kitchen
Window
K Window
Fire Sprinkler
K Sprinkler
Smoke Detector
Garage
Smoke Detector
Old Car
IoT6
Fire Sprinkler
G Sprinkler
Garage Door
Bedroom
Window
B Window
Time: 00:08:56
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
(Select a Device to Drag and Drop to the Workspace)

LITERATURE SURVEY

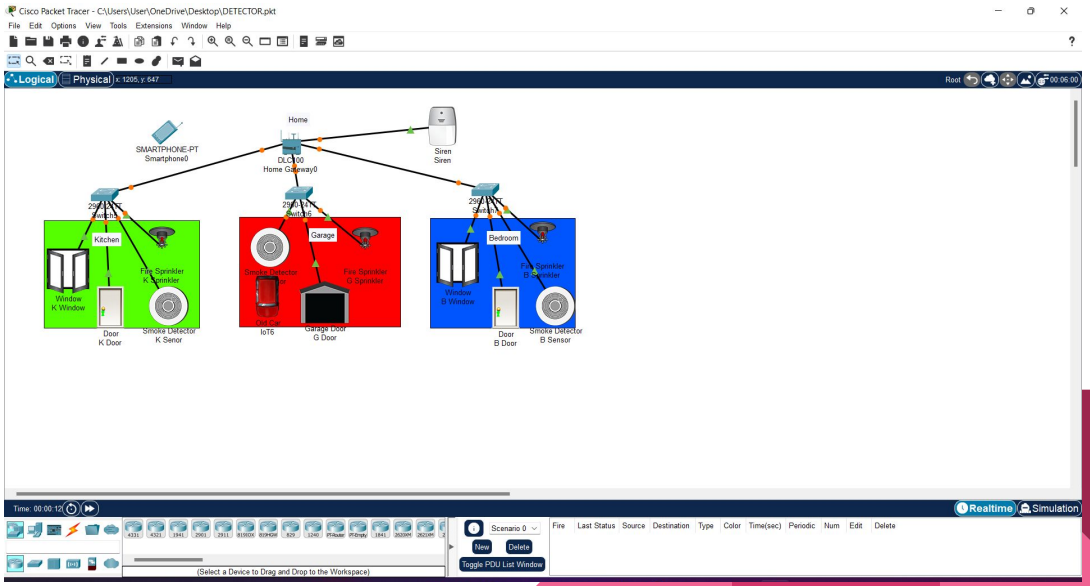
As discussed detection of fire is very crucial parameter in many fields of industrial area, forest area, etc. After many researches and study going on the smoke detection, some algorithms are specially designed for this purpose. These algorithms designed till now on fire detection through videos are, statistical colour model, and Dynamic Texture Analysis and now a day's optical mass flow estimators is getting attention. The Scientists Kosmas Dimitropoulos, Panagiotis Barmpoutis and Nikos Grammalid are focuses on different modelling algorithms used in flame detection. Also their advantages and disadvantages with respect to application over each other.The Automated fire extinguishing system that we made is more realistic in its structure, cost, and activities .This system is more feasible than other system that is being used in present time. Besides it has low production cost than other and it has the capability in extinguishing the fire at root level so that we can reduce the losses. At present, we can see that, the materials that are used as extinguisher are very expensive like carbon-dioxide, vaporizing liquid, wet material etc .Besides; we cannot use all materials as an extinguisher. Because it depends on fire what materials should be used in proper place? In this sense, our system is viable and time consuming also.

OVERVIEW

Though smoke detection system is quite a simple project but it has immense importance and necessity in our practical life. We programmed this device that is implemented and the value of the concentration of the smoke is given high so that normal smoking gas will not be the reason of the device alarm. We can also add some further improvement in this project. We are planning to use the dc water pump without servo directly with the Arduino for more reliable and fast response.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. It will be beneficial when no one at home or at a vacant place.Smoke detectors are great because they save lives.

RESULT

Hence , we have successfully completed the project on Smoke Detection with Fire prevention in Cisco Packet Tracer.



REFERENCE

1) https://community.cisco.com/t5/cisco-software-discussions/packet-tracer-smoke-simulation-sensor-problem/td-p/4509065
2) https://github.com/karandoshi98
3) https://www.coursehero.com/file/73331750/SMOKE-DETECTION-WITH-FIRE-PREVENTION-USING-CISCO-PACKET-TRACERdocx/