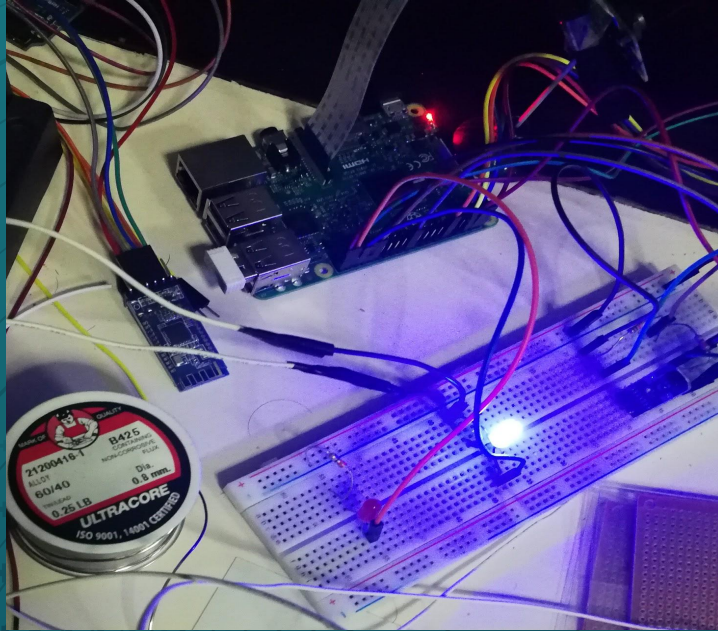
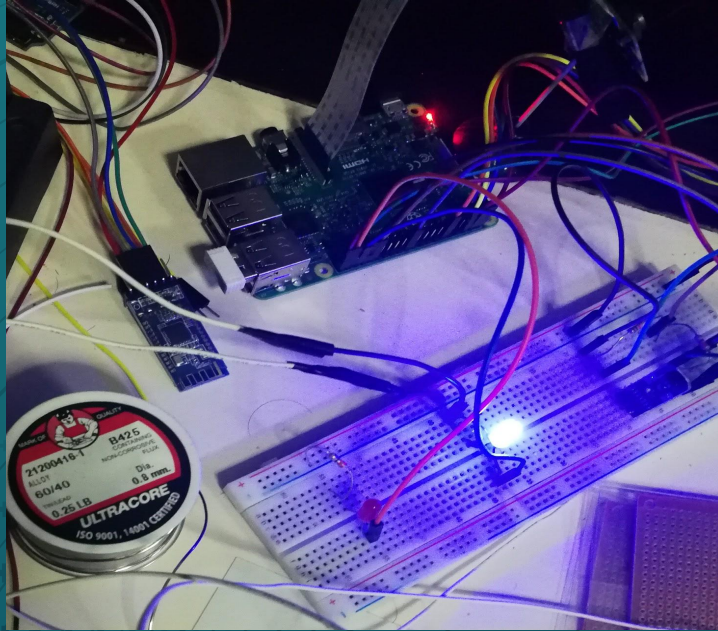


Home Security System



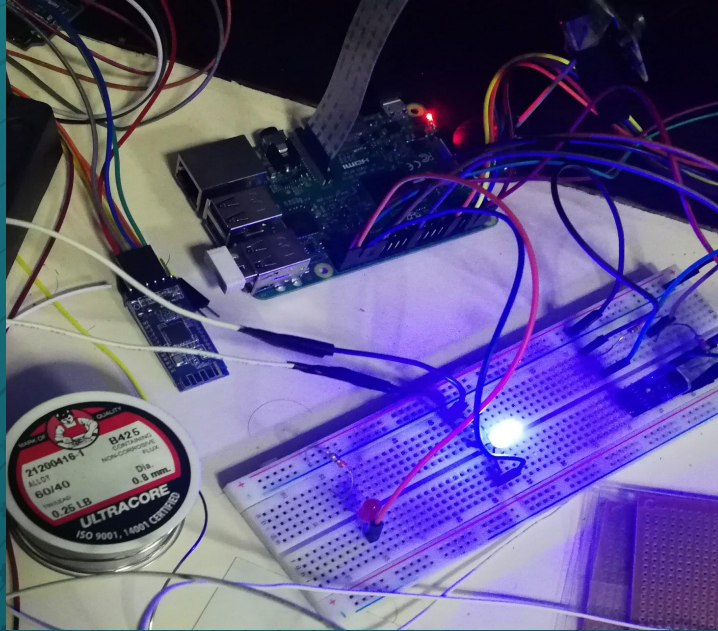
- Scan continuously for signs of intrusion through use of ultrasonic sensor
- Trigger alarm upon detecting intrusion
- Take snap of intruder by using camera
- Report intrusion to the user [via email]

Home Security System



- Execute remote commands sent to the system [locally]
- Deactivate intrusion detection module if the system detects presence of whitelisted bluetooth HWID [e.g: Smartphone bluetooth]

Home Security System



- Coded from scratch in Python
- Makes extensive use of multiprocessing module to make sure different parts can work independently
- Resource locking mechanisms are used to avoid conflicts

Hardware Overview



Raspberry Pi



Pi Camera

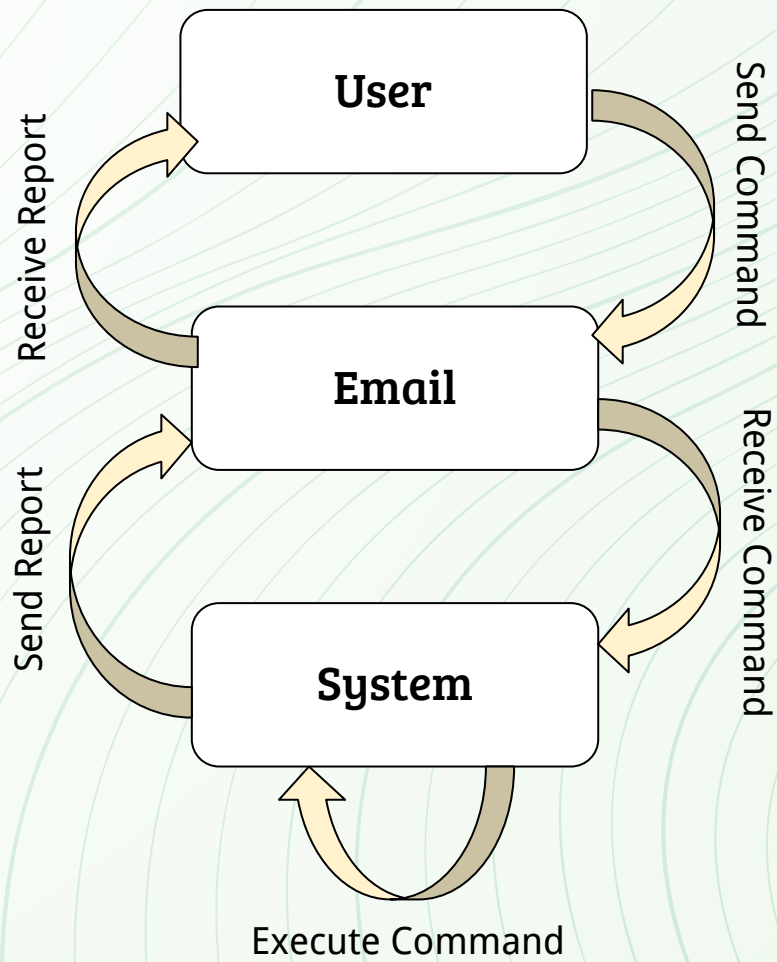


Speaker Phat



Ultrasonic Sensor

System Overview



Remote Commands

Arm: Activate Intrusion Detection

Disarm: Deactivate Intrusion Detection

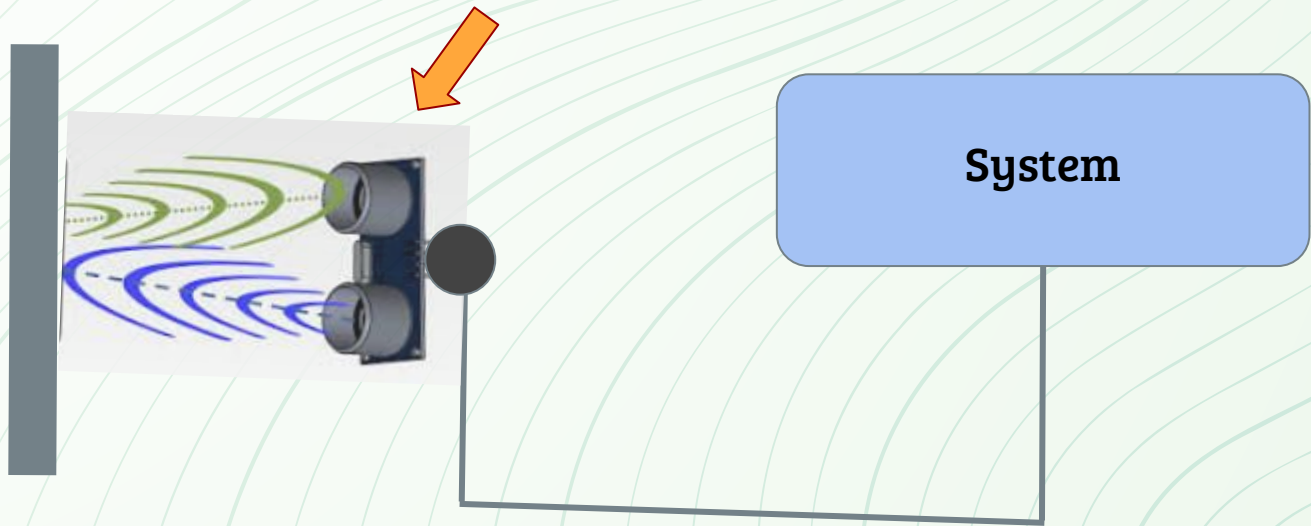
Snap: Take photo of environment using Pi Camera

Text: Speak specified text using TTS

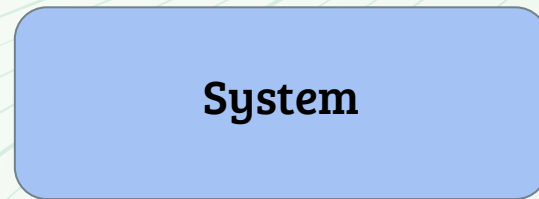
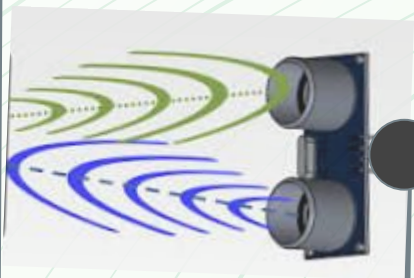
Quote: Speak a randomly generated quote

Demonstration: Intrusion Detection

Ultrasonic Sensor

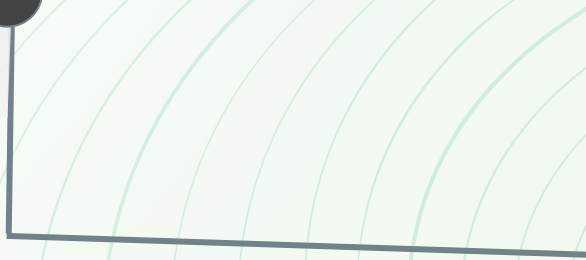
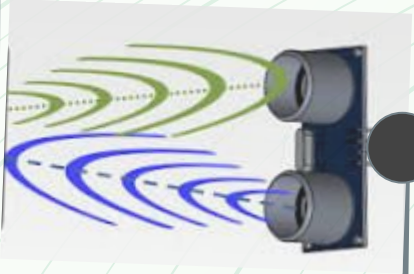


Door

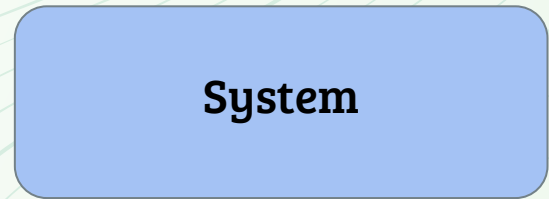
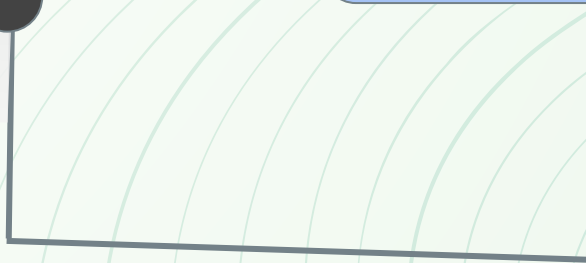
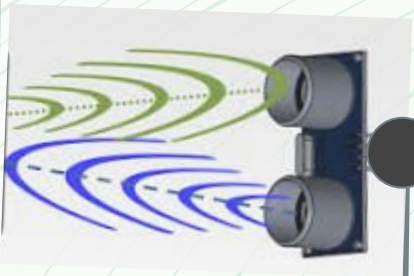


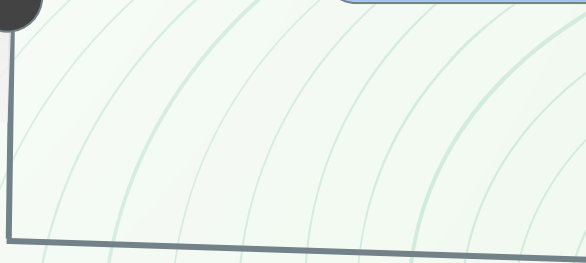
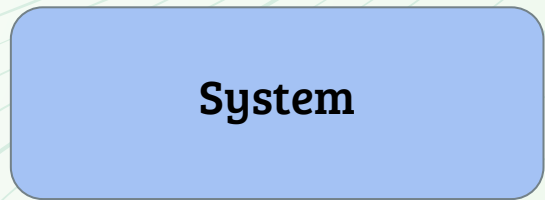
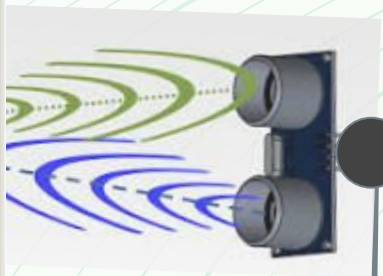
System

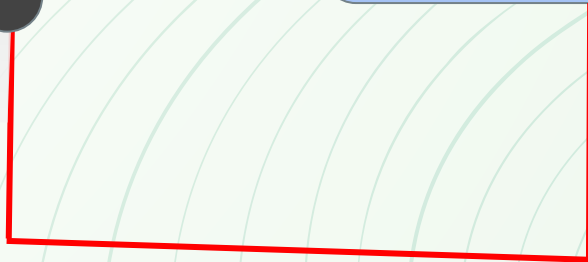
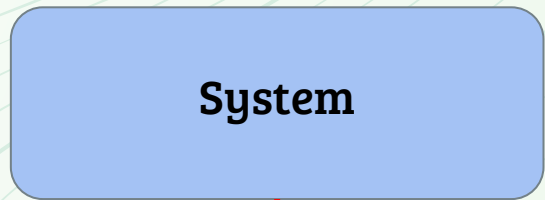
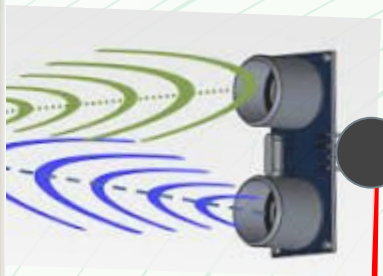
Intruder

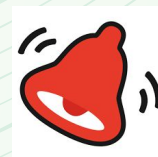
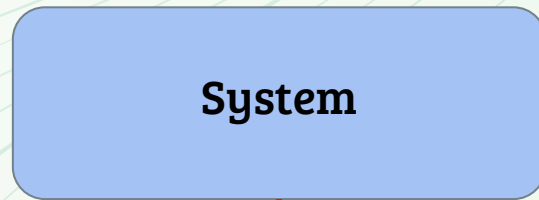
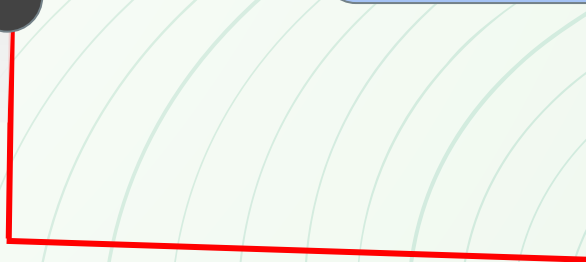
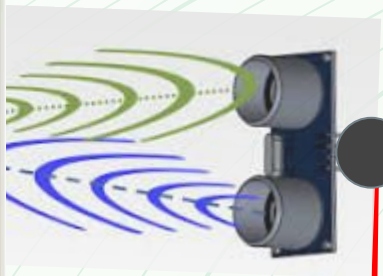


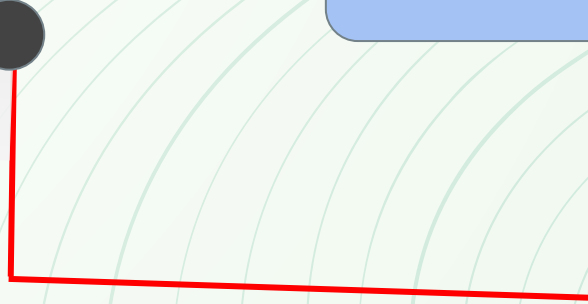
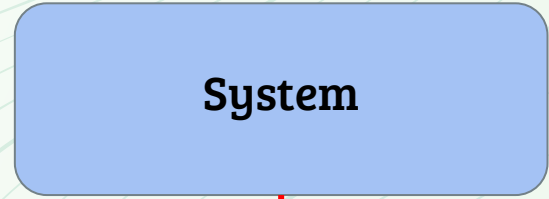
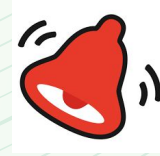
System

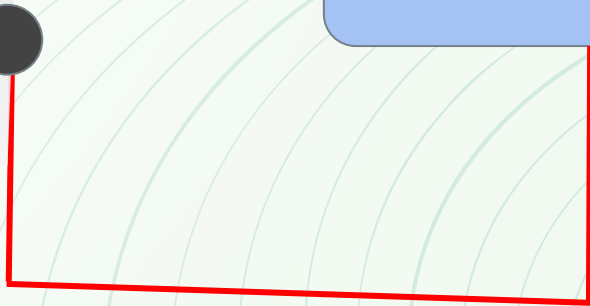
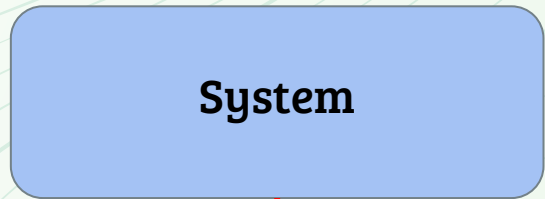
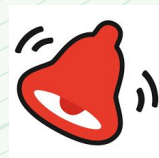
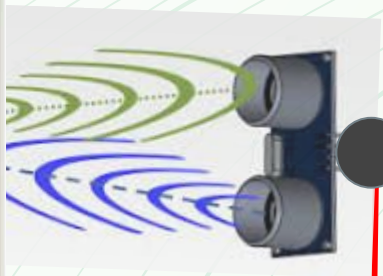


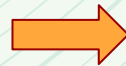
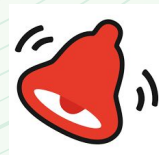




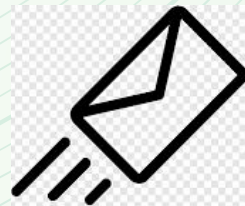
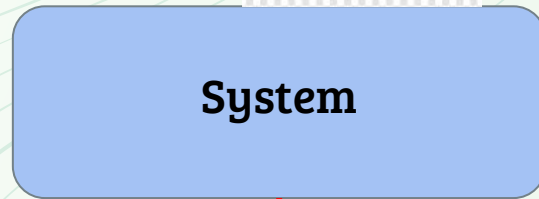
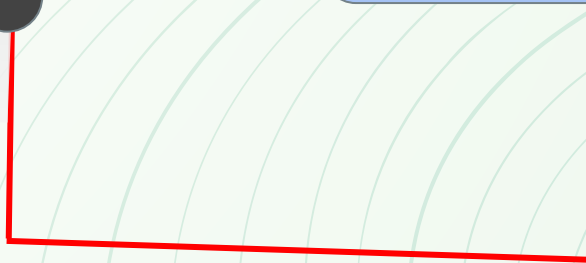
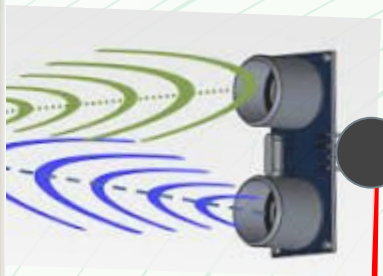


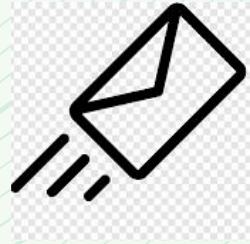
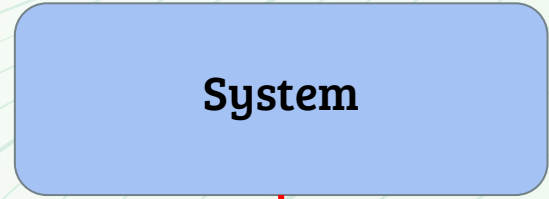
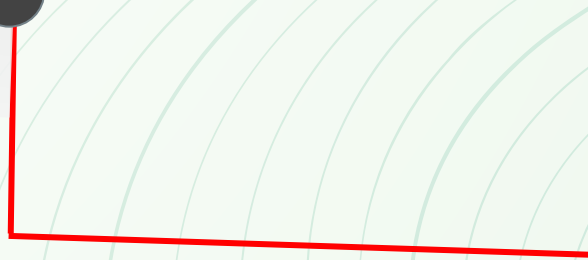
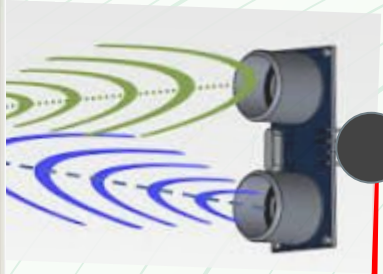


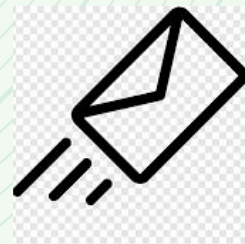
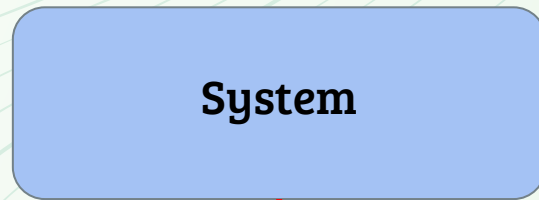
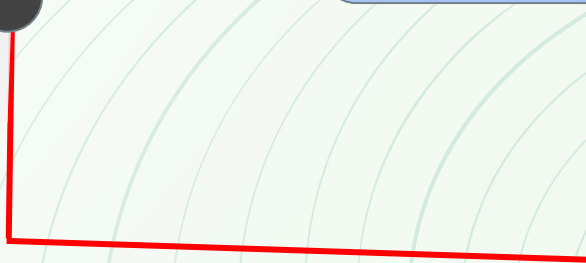
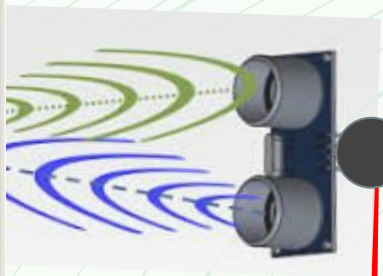




System





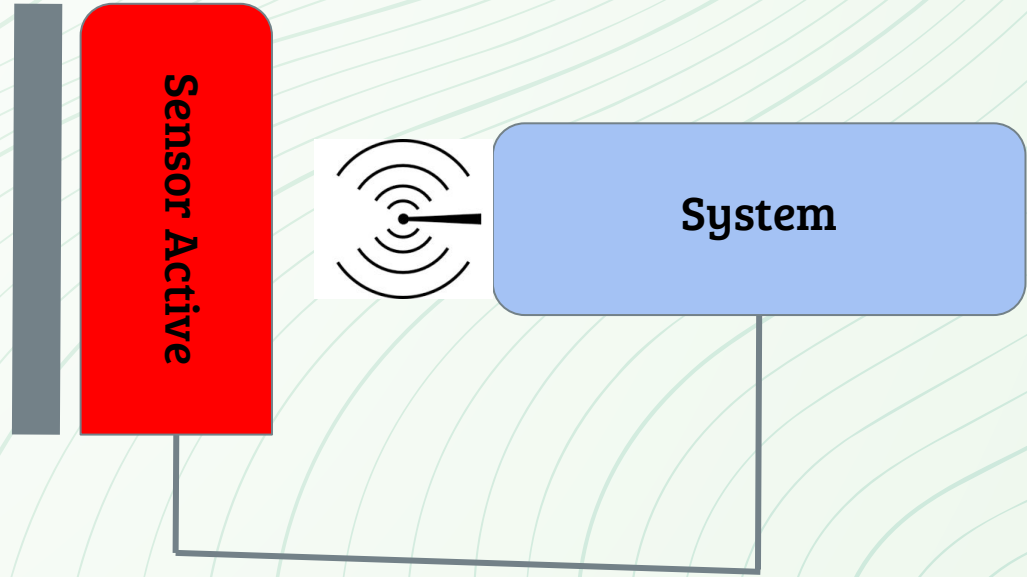


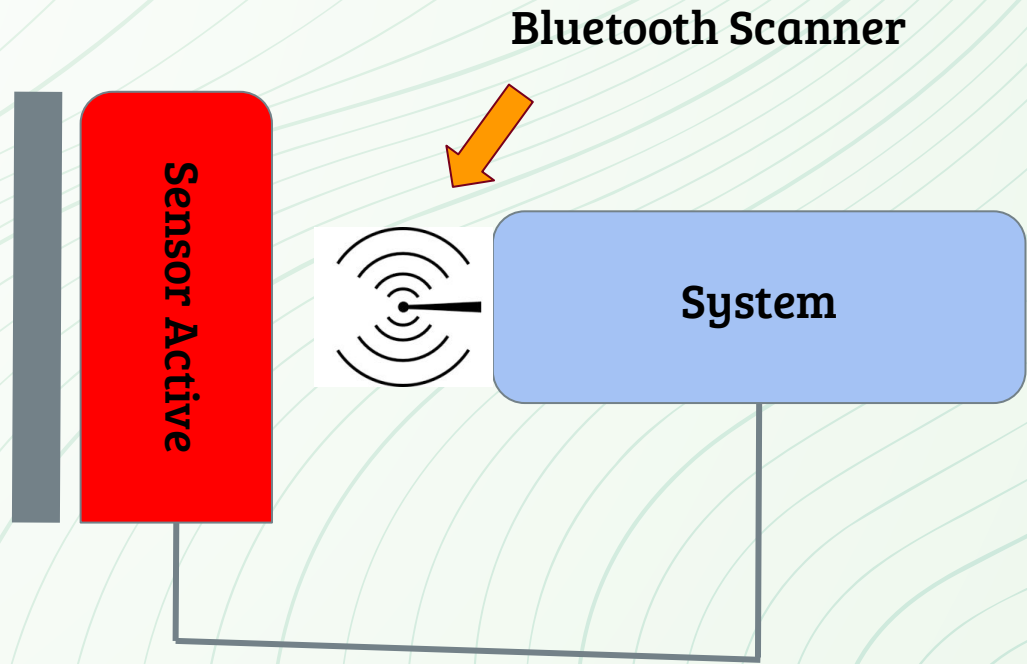




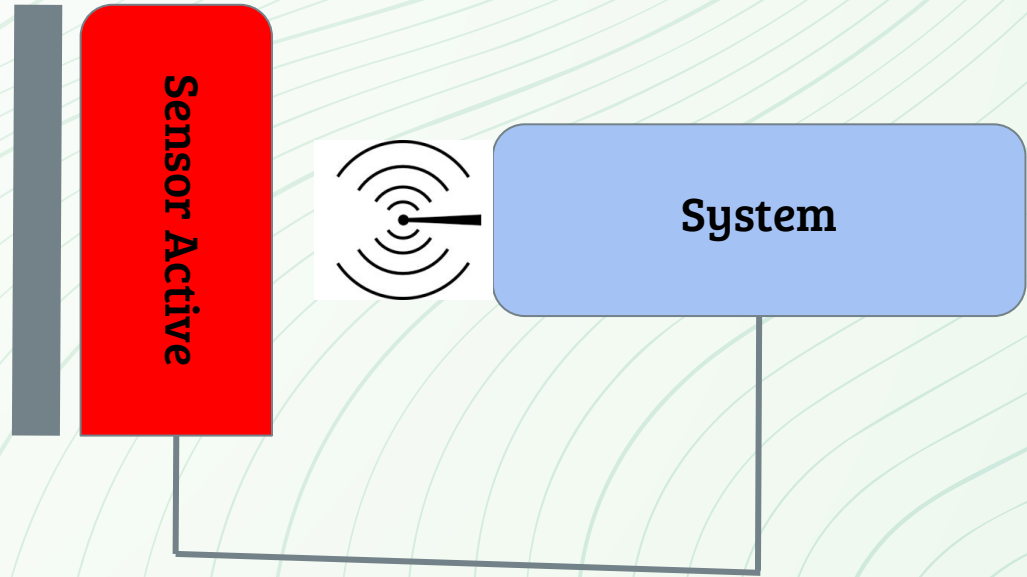
- User receives report of intrusion by email
- Report consists of photo of intruder and time stamp
- User can send remote commands to be executed on the system at home to assess the situation further

Demonstration: Bluetooth Scan

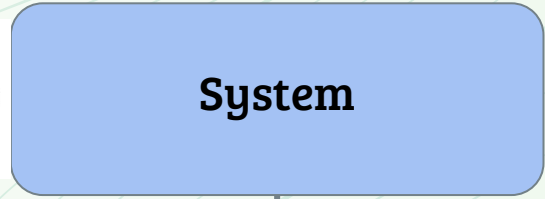




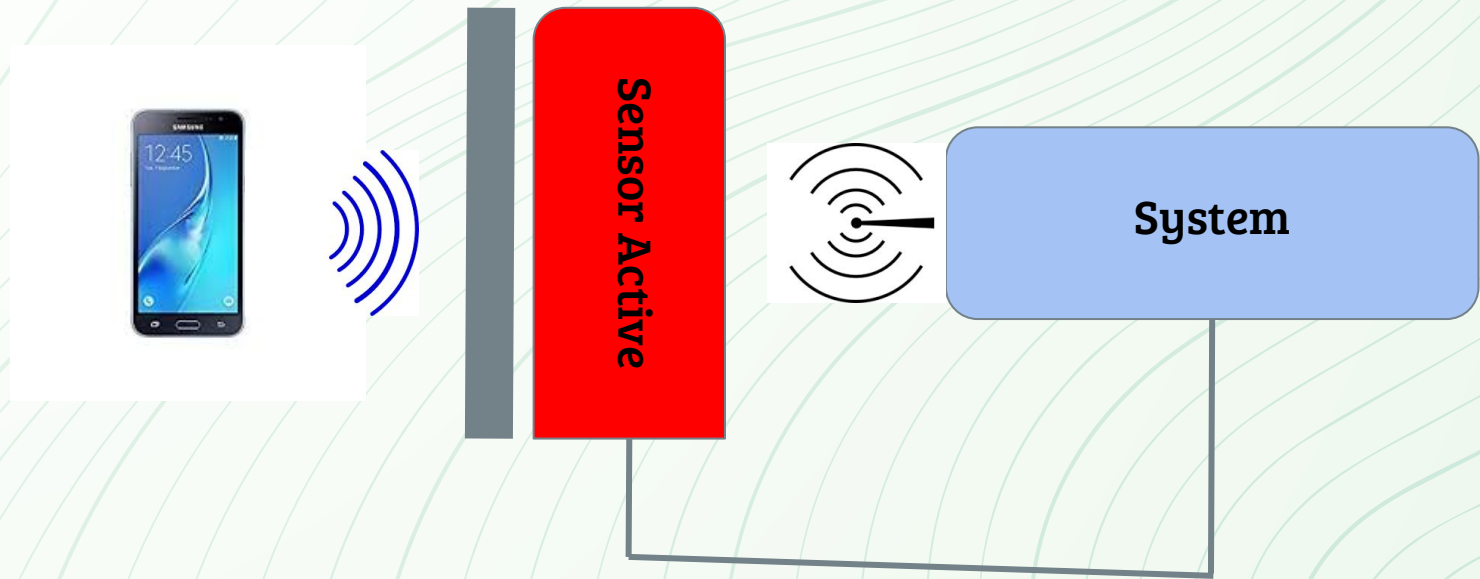
Intrusion Detection Enabled



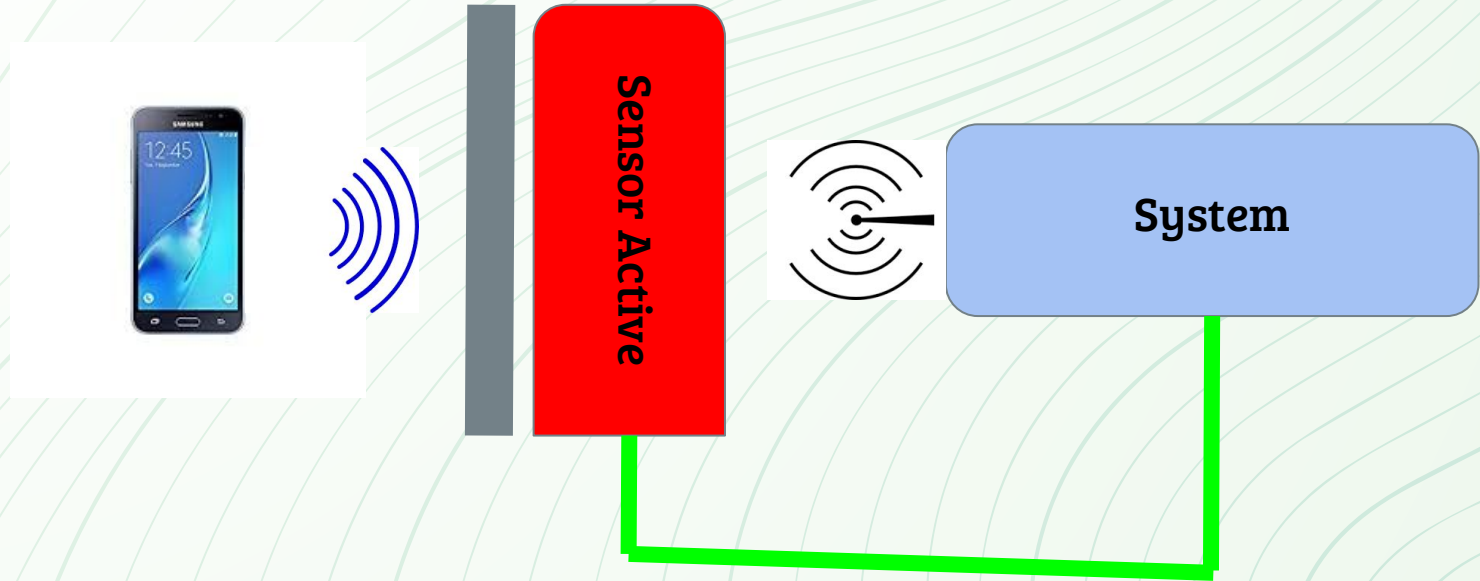
Intrusion Detection Enabled



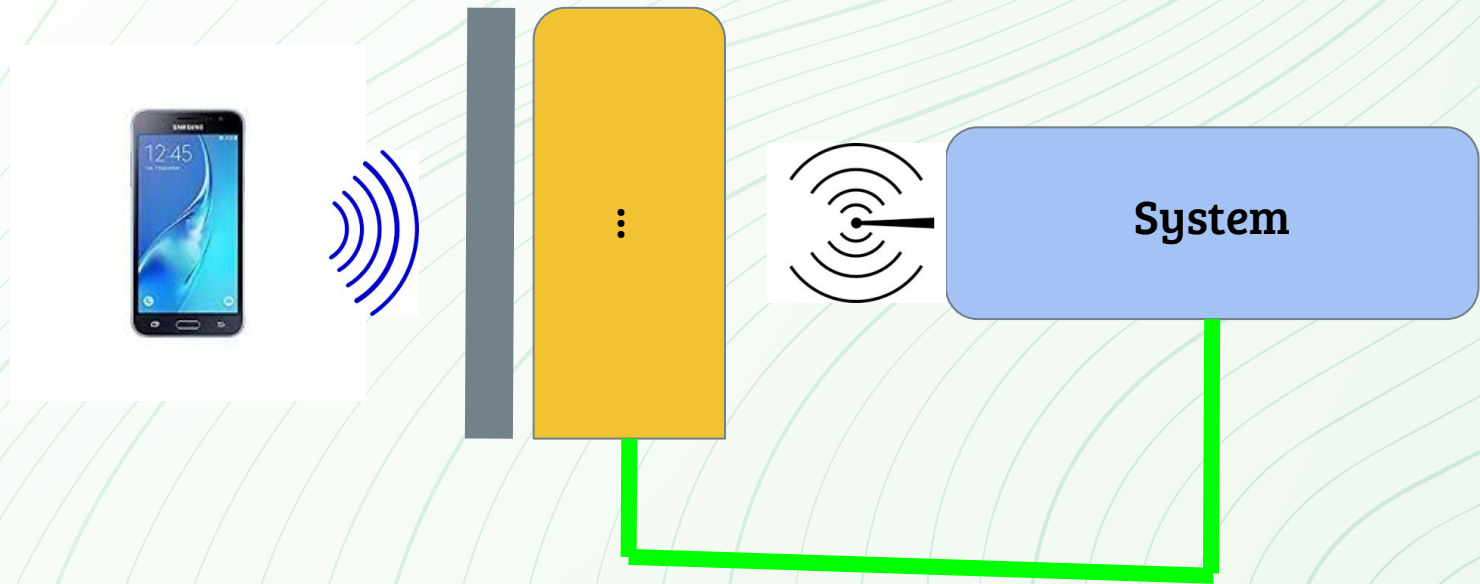
Intrusion Detection Enabled



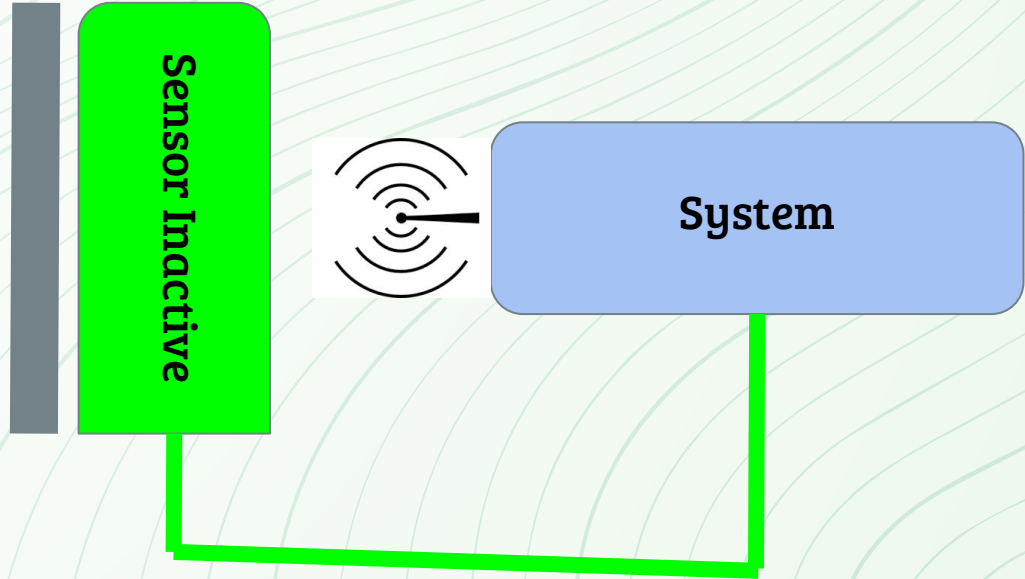
Intrusion Detection Enabled



Intrusion Detection Enabled



Intrusion Detection Disabled



The background is a solid teal color. It features a pattern of thin, dark teal wavy lines that flow from the top left towards the bottom right. Additionally, there are two rectangular areas on the left and right sides, each filled with a grid of small, light teal cross symbols. The word "END" is centered in the middle of the image in a white, bold, sans-serif font.

END