Echipa 1:

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Name: Alarm System

Hackster.io link: https://www.hackster.io/350517/alarm-system-0fc5c5

Video: https://www.youtube.com/watch?v=JJuKNLbELjI&feature=youtu.be

Photos:

Hardware components:

→Raspberry Pi3 B+

→Breadboard (generic)

→LED

→Buzzer

→Pir Motion Sensor

→Resistor

Software Apps:

→Raspberry Pi Raspbian

→Python3

Setting Up Process:

→Install Python3:

Update Raspbian

sudo apt-get update

sudo apt-get install -y build-essential tk-dev libncurses5-dev libncursesw5-dev libreadline6-dev libdb5.3-dev libgdbm-dev libsqlite3-dev libssl-dev libbz2-

dev libexpat1-dev liblzma-dev zlib1g-dev libffi-dev tar wget vim

Download Python:

wget https://www.python.org/ftp/python/3.8.0/Python-3.8.0.tgz

Install Python:

sudo tar zxf Python-3.8.0.tgz

cd Python-3.8.0

sudo ./configure --enable-optimizations

sudo make -j 4

sudo make altinstall

Check:

python -V

→Install GPIO:

sudo apt-get update

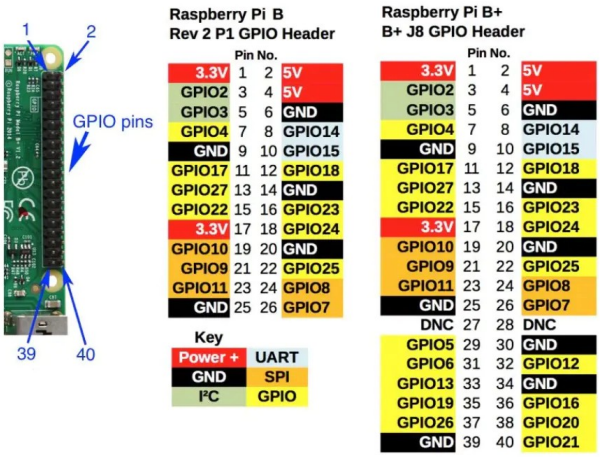
sudo apt-get install rpi.gpio

Story:

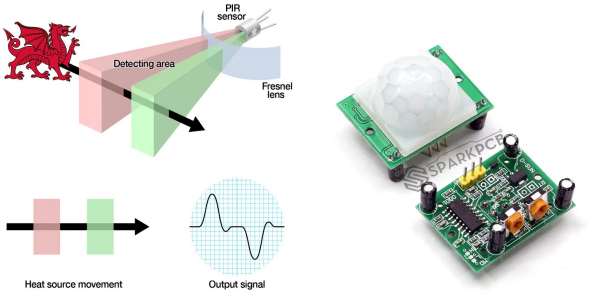
The purpose of this project is to create an alarm system which will turn a led and a buzzer on when it senses motion.

This project will present how to interface a PIR motion sensor with the Raspberry Pi and how to use the GPIO (general purpose input/output) pins on it. The GPIO pins on the Raspberry Pi are essential when it comes to making a hardware project, whether it's a robot or home automation system.

The Raspberry Pi GPIO can be accessed through a Python program. Each pin on the Raspberry Pi is named based on its order (1,2,3, ...) as shown in the diagram below:



For this experiment we used a PIR motion sensor- PIR stands for passive infrared. This motion sensor consists of a fresnel lens, an infrared detector, and supporting detection circuitry. The lens on the sensor focuses any infrared radiation present around it toward the infrared detector. Human bodies generate infrared heat, and as a result, this heat is picked up by the motion sensor. The sensor outputs a 5V signal for a period of one minute as soon as it detects the presence of a person. When the PIR motion sensor detects a person, it outputs a 5V signal to the Raspberry Pi through its GPIO.



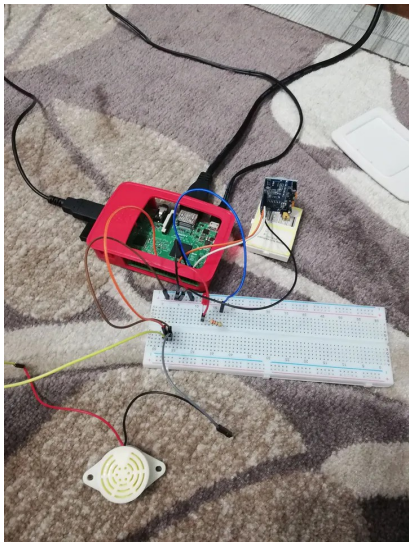
We connected a led to the board which will blink when the sensor detects an intruder.

We also used an active buzzer in the process. An *active* buzzer can be connected just like a LED, but as they are a little more robust, it doesn't need a resistor to protect them.

LED

Buzzer

Final circuit:



Schematics