Echipa 1:

Condurache Andreea - <u>andreea.condurache@student.tuiasi.ro</u> losub lustina - <u>iustina.iosub@student.tuiasi.ro</u>

Name: Alarm System

Hackster.io link: <u>https://www.hackster.io/350517/alarm-system-0fc5c5</u> Video: <u>https://www.youtube.com/watch?v=JJuKNLbELjl&feature=youtu.be</u> Photos:



Hardware components:

- →Raspberry Pi3 B+
- →Breadboard (generic)
- \rightarrow LED
- →Buzzer
- \rightarrow 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 libncursesw5dev libreadline6-dev libdb5.3-dev libgdbm-dev libsqlite3-dev libssl-dev libbz2dev libexpat1-dev liblzma-dev zlib1g-dev libffi-dev tar wget vim Download Python: wget <u>https://www.python.org/ftp/python/3.8.0/Python-3.8.0.tgz</u> 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

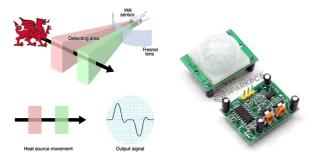
Story:

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:

	Raspberry Pi B Rev 2 P1 GPIO Header Pin No.	Raspberry Pi B+ B+ J8 GPIO Header Pin No.
	3.3V 1 2 5V	3.3V 1 2 5V
9	GPIO2 3 4 5V	GPIO2 3 4 5V
	GPIO3 5 6 GND	GPIO3 5 6 GND
GPIO pins	GPIO4 7 8 GPIO14	GPIO4 7 8 GPIO14
	GND 9 10 GPI015	GND 9 10 GPI015
	GPI017 11 12 GPI018	GPI017 11 12 GPI018
		GPIO17 11 12 GPIO18 GPIO27 13 14 GND
	GPIO27 13 14 GND	
	GPIO22 15 16 GPIO23	GPIO22 15 16 GPIO23
2	3.3V 17 18 GPIO24	3.3V 17 18 GPIO24
	GPIO10 19 20 GND	GPIO10 19 20 GND
	GPIO9 21 22 GPIO25	GPIO9 21 22 GPIO25
	GPI011 23 24 GPI08	GPIO11 23 24 GPIO8
	GND 25 26 GPI07	GND 25 26 GPI07
		DNC 27 28 DNC
	Кеу	GPIO5 29 30 GND
39 40	Power + UART	GPIO6 31 32 GPIO12
	GND SPI	GPI013 33 34 GND
	I ² C GPIO	GPI019 35 36 GPI016
		GPIO19 33 30 GPIO18 GPIO26 37 38 GPIO20
		GND 39 40 GPI020

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.

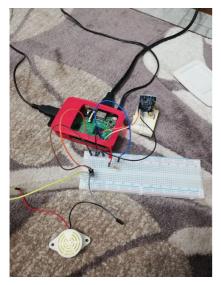


We connected a led to the board which will blink when the sensor detects an intruder.

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.



Final circuit:



Schematics

