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Group name:	IA-2002
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Project name:	Home Automation
Project type:	Group

INTRODUCTION

Hello. My name is Amir, I am a student of Astana IT University, from Industrial Automation 2002. The topic of my project is Home Automation.

MAIN PART

Home Automation based on Arduino.

The links I used to find information: https://www.arduino.cc/ , https://en.wikipedia.org/wiki/Arduino , https://create.arduino.cc/projecthub/jithinsanal1610/home-automation-using-arduino-arduino-diy-project-6c03ba.

I also watched a lot of different videos on YouTube, the names of these channels: "Mr Innovative", "Заметки Ардуинщика", "Azhar Electronics".

I have divided our project into 5 main parts.

- Introduction
- Definition of Arduino
- Advantages
- The project itself with examples
- Conclusion

o What is Arduino?

Arduino is a small board with its own processor and memory. The board also has a couple of dozen contacts to which you can connect all sorts of components: light bulbs, sensors, motors, kettles, routers, magnetic door locks, and in general everything that runs on electricity.

You can load a program into the Arduino processor that will manage all the data according to a given algorithm. Thus, you can create an endless number of unique cool gadgets, made by yourself and according to your own idea.

Arduino is the heart of the construction set, in which there is no finite, fixed set of parts, and there are no restrictions on the variety of what can be assembled. Everything is limited only by your imagination. It's a new world, a killer hobby, and a great gift.

- o In fact, Arduino has a lot of advantages, such as:
- Simple and straightforward programming environment.
- Maximizing home security.
- Not so expensive.
- Managing all of your home devices from one place.
- Interesting activity.
- Remote control of home functions from a distance.
- Cross-platform.
- Increased energy efficiency.
- Fast automation.

- o And the "Home Automation" project.
  - First, I made the layout of our house, then after examining the Arduino sensors, I placed them so that it was convenient.
  - The project is made as a theory without real interaction with the Arduino platform.
  - I've gone further and made smart homes more convenient, easier to use and more affordable by connecting most of them to Wi-Fi. Thus, as they are connected, we can control the house from any authorized device. I chose Telegram as the platform for home management.
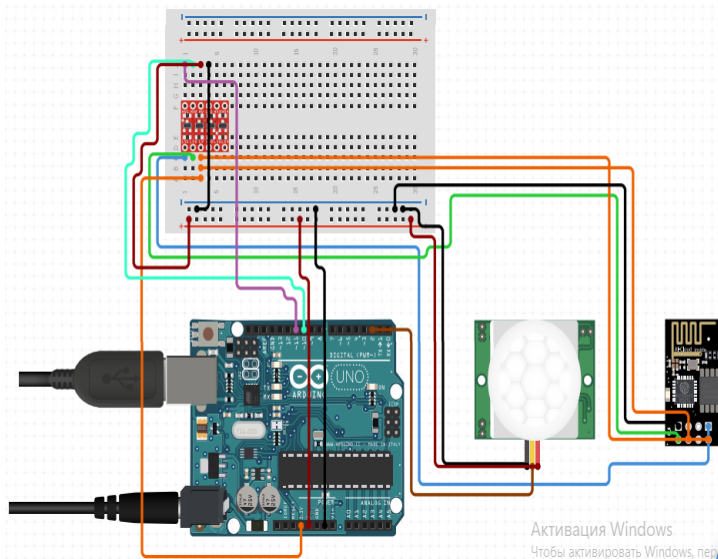
Layout
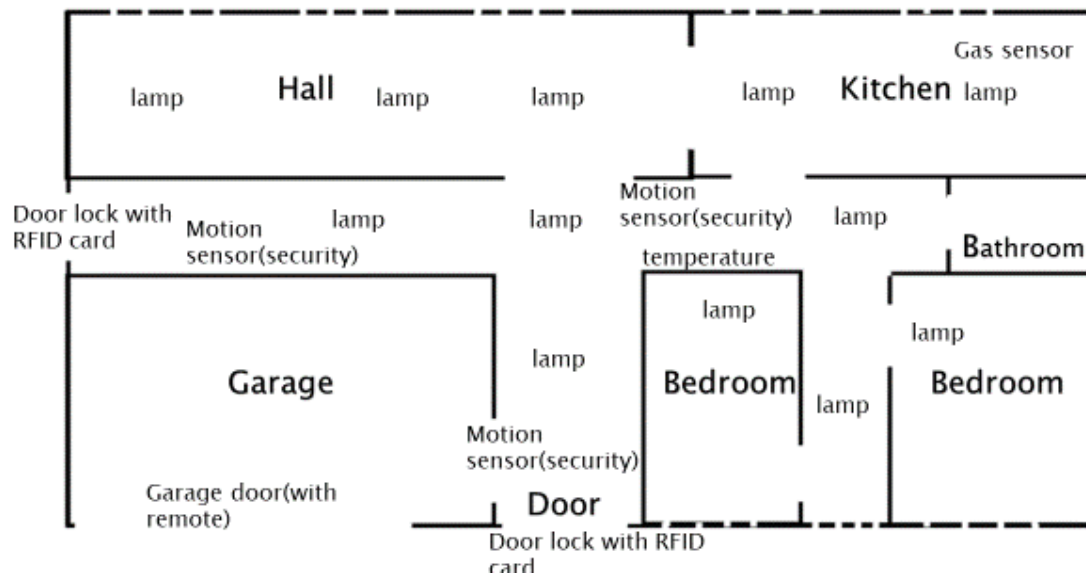
Our layout, here you can clearly see the names and locations of rooms and sensors.

Now I provide you some schematics and examples of use.
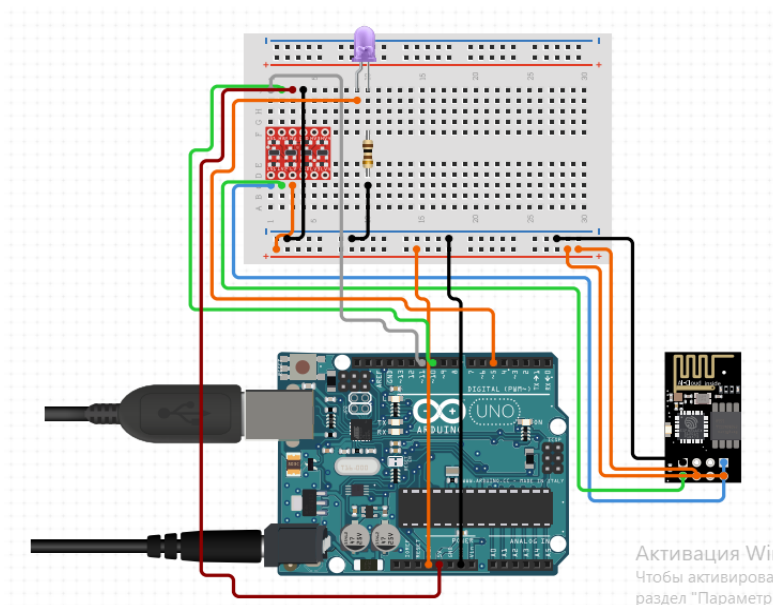
Lamp with Wi-Fi module

Lamps can be turned on from the device, or additional sensors can be used.

Активация Win
Чтобы активироват
раздел "Параметры

Motion Sensor with Wi-Fi module

- Automatically turn on the light in front of the front door when a person appears in it.
- Turning on the lighting in the bathroom, toilet, hallway.
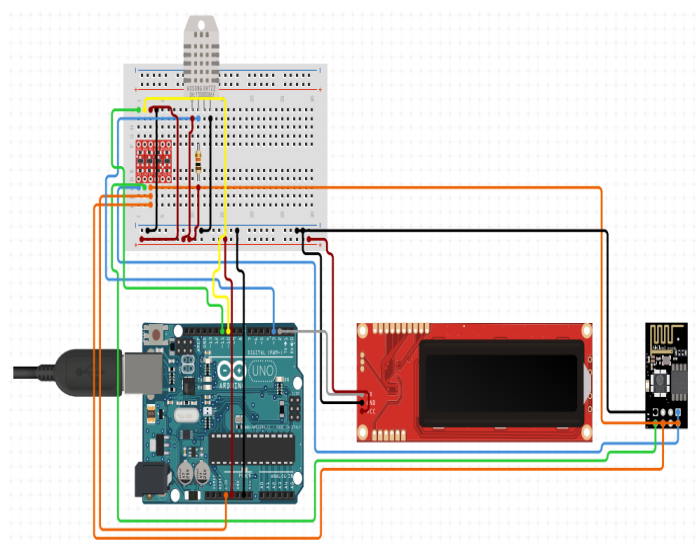- An alarm is triggered when a heat movement appears in the reachable area.
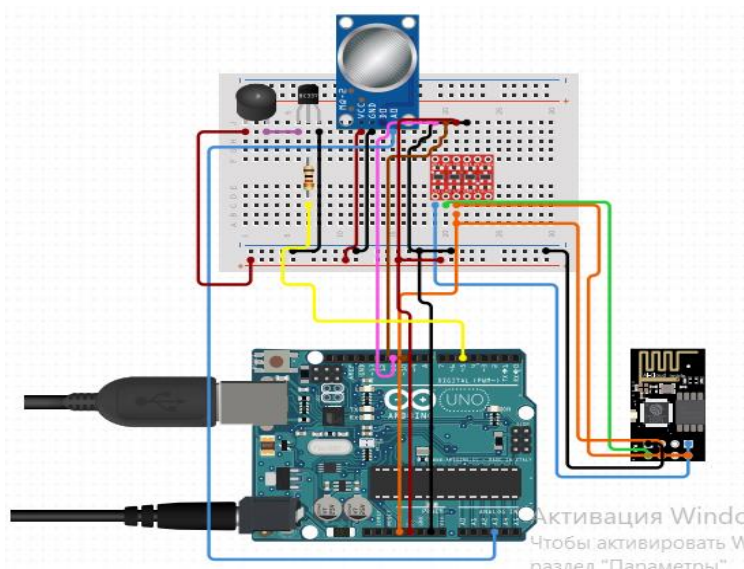
Gas leak sensor with Wi-Fi module

It is used to detect and respond to elevated propane concentrations. Used in the kitchen.
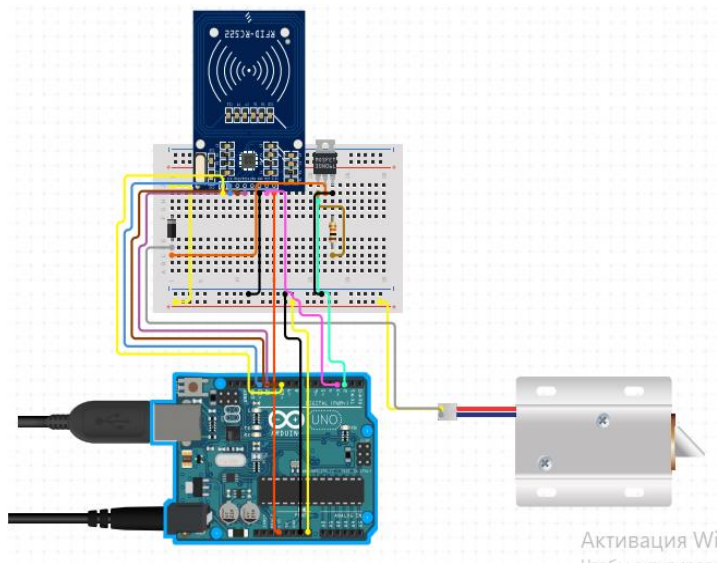
RFID Card

Used at front doors to open them with a card.

Temperature sensor with Wi-Fi module

Used to detect temperature, used in the hall.

Sound sensor. The digital versions of this device are used to activate an event with claps or voice. Analog models allow audio recognition and processing. For home automation, a sound sensor can be used to turn on lights with a clap, other preset sounds can also be used, or a voice command can be configured.

Current sensor. Measurement and control of the flowing current. They are used to detect non-working electrical appliances (burned out lamps) or to analyze voltage to prevent overloading.

Air pressure sensor. The sensor records an important parameter - atmospheric pressure. Using them you can predict the weather.

Rain sensor. Reacts to water ingress on its surface. A rain and leak sensor can be used in Arduino to create devices that react to moisture in the form of drops. It can also be used to alarm for leaks in the water supply or heating circuit.

The Arduino has a sensor such as a motor. It can be used to open garage doors, blinds, and even make an automatic pet feeder.

Air humidity sensor. This sensor can be used indoors to find out the humidity in the air. You can also use it outdoors, for the same actions, and you can also learn about the probability of rain.

In general, this is all that came to my mind, but I think there are still a lot of possibilities for Arduino, as it was said it all depends on your imagination. And for implementation, you just need a little practice.

CONCLUSION

And in conclusion I would like to say that making a smart home based on Arduino is not so difficult and expensive, you don't need to have huge skills to perform these actions, also you develop very useful skills in yourself. Useful skills I mean programming and engineering skills, also in the field of robotics.