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SOFTWARE DEVELOPMENT FOR TECHNOLOGY "INTERNET OF THINGS"

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The Internet of Things, along with artificial intelligence and neural networks, is becoming one of the most relevant topics of 2020. Examples of the Internet of Things include many gadgets connected to the Internet. The concept of the Internet of Things (IoT) was introduced when the number of things and objects connected to the Internet exceeded the number of people.

The Internet of Things can be defined as a set of intelligent objects that can respond to the environment and process information, as well as send it to other objects (and users) using Internet protocols (Nowakowski 2015)

The aim of the study is to analyze the existing channels and methods of data transmission from sensors for the collection and accumulation of information flows of the dormitory ecosystem. Based on the obtained data, the logic of operation of monitoring modules with different types of sensors and their communication protocols was implemented and a monitoring system with a user interface with a chatbot was built.

To implement the task of developing software for IoT technology in the concept of smart dormitory, various tools and components of development were used, namely:

1. Open programming language Processing (programming language based on Java);
2. Software development environment for Arduino IDE microcontrollers and ESP8266 microcontroller (MC);
3. Structural elements of the subsystem and program code on the example of the board for the sensor.

The Arduino IDE development environment with the Arduino IDE for ESP8266 package installed is used to program these boards. MK ESP8266 (see Figure 1) is the best option, which has the advantage of high speed, large amount of memory available for programs, support for a large number of popular interfaces.

TelegramBot was chosen as the interface for the concepts of the automated database for data storage of the information system.

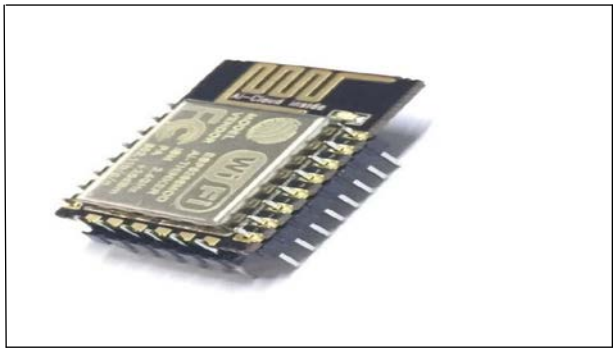

Figure 1- Microcontroller ESP8266

The system allows you to use information about the temperature in the room, the amount of ultraviolet rays, gas levels in kitchens, humidity.

Information about the temperature in the room should be especially monitored in the winter to avoid unauthorized use of heaters, heated bedding and other types of heaters, which can lead to a flammable situation.

All this will make it possible to track data in the room and in common areas in the dormitory where the user lives and send notifications of their excess or deviation from the norm.

Figure 2 shows the data processing process

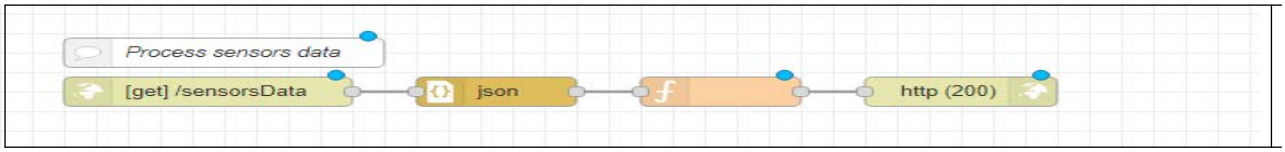

Figure 2- Data processing process

The system was tested and tested in the dormitory № 3 of the MKT faculty.

Hosting for this environment was deployed on Amazon Web Services (AWS) EC2, as part of a free tariff for the year 2021.

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