Karotte Liebe

by Maria Smirnova and Daria Lukianchuk

Karotte Liebe:

creative installation based on ESP32.

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Description: Did you know that some fruits emit gas?
If you've ever smelled ripe bananas, you've already encountered ethylene. In this project, we present a celebration of both life and decay. Rotting bananas, plums and kiwis are fitted with gas sensors that detect the ethylene they release. These signals are translated into light: an LED ring comes alive with playful animations, embodying the essence of each fruit.

Which fruits emit more gas and which less?
The sensors reveal the answer as the LEDs glow for different lengths of time, making the process of ripening and decay visible. Our idea is based on the concept of the life-and-death cycle. As they rot, the fruits transfer the remains of their life force into the LED ring that lights up in different colours, symbolizing rejoicing in life.

Ethylene accelerates the ripening and rotting process of the fruit. The gas gradually accumulates in the bags with the sensors collecting the input.

The code is designed so that the gas sensors from three bags send data to be compared with each other. Using this data, the code determines which bag with fruit contains more or less gas. Finally, three-color animations are displayed on the LED ring, representing the three types of fruit: yellow for bananas, turquoise for kiwis and purple for plums.

Equipment needs:
Technical list: ESP32, MQ2 gas sensors, NeoPixel 24LED Circle, 5V adapter, jumper wires, alligator clips, USB-C cable.

Other materials: Plastic bags, insulation tape, fabric, bananas, kiwis, plums.
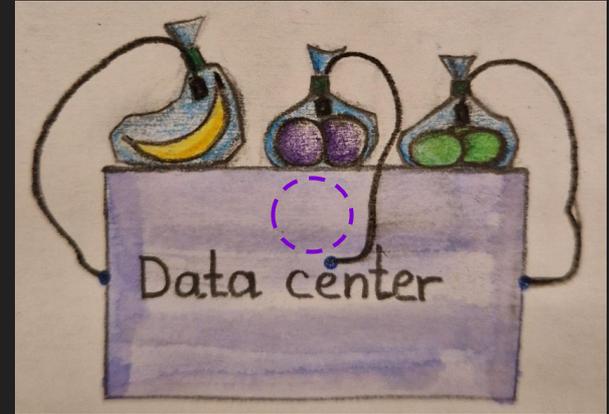
Sketch of the final look. Bags with fruits and gas sensors feed the data center of the exhibition by lighting up the LED ring.

Workflow and process:

After finalizing the concept of the final look, we proceeded with the following tasks:

The first thing was to solder the wires to one gas sensor and the LED ring. Once that was done, they were ready for testing.

The power source for the LED circle is the 5V adapter connected with alligator clips.

The sensor was placed inside a plastic bag with bananas and sealed with tape.
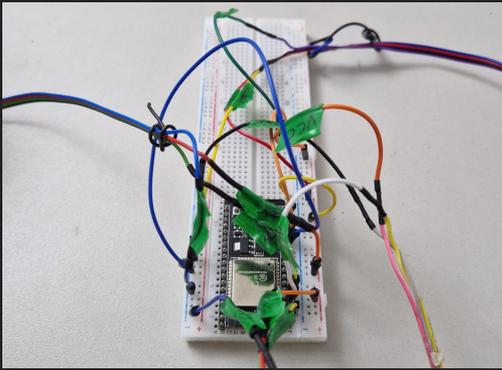
Bananas after 5 weeks in a plastic bag.

The sensor was showing very high readings on the serial monitor through the ESP32. After the successful test, we repeated the entire process with plums and kiwis. Now we were ready to connect all parts of the project together.
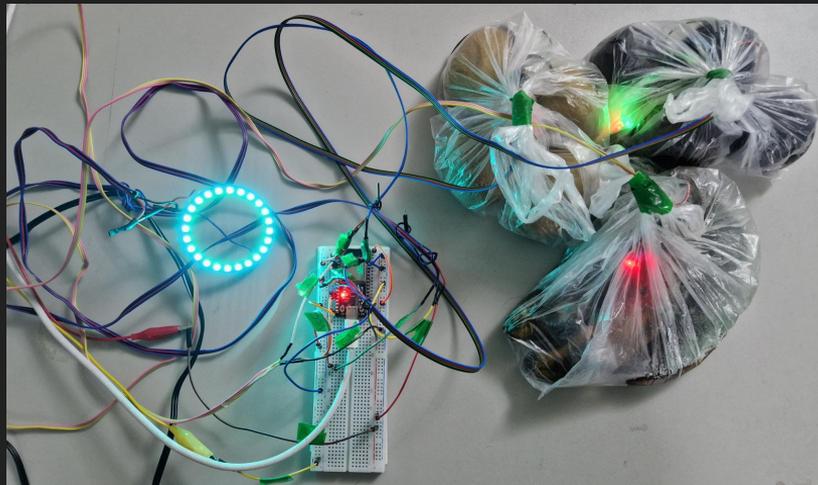

Kiwis.

Everything is connected to the breadboard with ESP32.

Plums.

Everything works properly and as expected.

Next step: preparing the project for the exhibition. However, due to the large amount of mold in the banana bag, it became a health hazard for exhibition visitors, so it was necessary to replace the fruit with fresher ones. After that, it was time to finalize and polish the work.
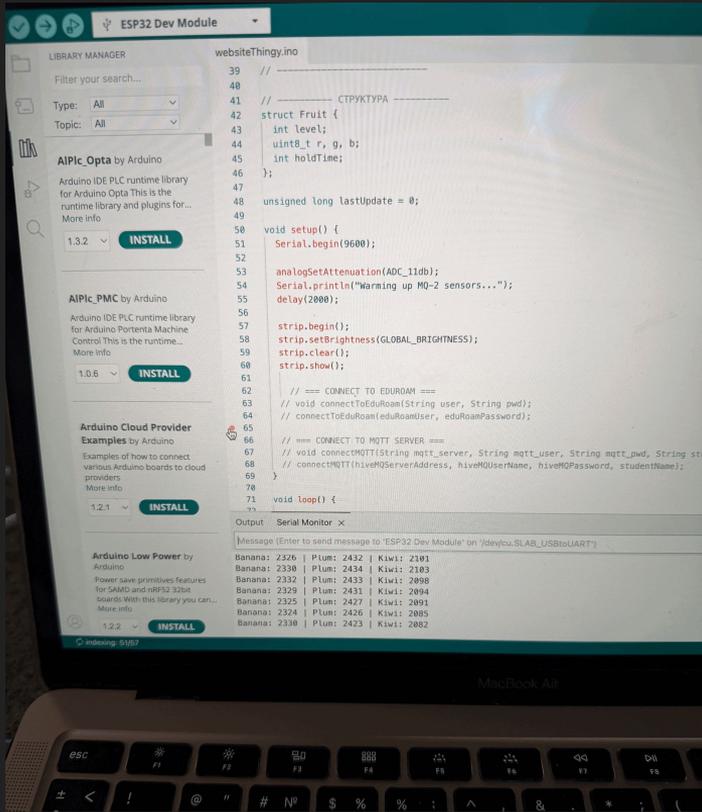
The bags are arranged on dark-coloured fabric and placed on top of a shelf. The breadboard with all the connected cables is situated underneath and hidden behind the cloth.

"Behind the curtain".

The animations consist of all the LEDs glowing the same color, with fade-ins and fade-outs. The colors change sequentially and the duration of the animation varies for each LED, depending on the amount of gas each fruit releases.

The experiment revealed that out of all the fruits plums emit the most gas. For that reason, the glowing cycle begins with purple, which is displayed the longest. Kiwis, on the other hand, came in second - their animation lasts a medium duration. Bananas release the least gas, which is why the yellow LEDs glow the shortest. In addition, this comparison data appears on the website, so the graph clearly shows how the quantity of the gas changes over time.

The code is verified and running correctly, simultaneously sending data to the website.

Final piece: