Cheesecake Flow

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INTRODUCTION

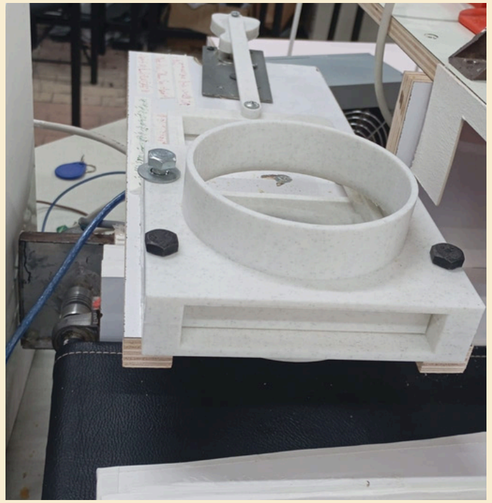
Cheesecake Flow is an automated cheesecake production line designed to reduce manual effort and improve consistency in dessert preparation. The system integrates mechanical components, electronic control, and a user interface that allows customers to place customized orders and track their progress in real time. By automating the production process, the project ensures uniform quality, faster operation, and minimal human intervention, making it suitable for modern automated service environments.

What is the Cheesecake Flow

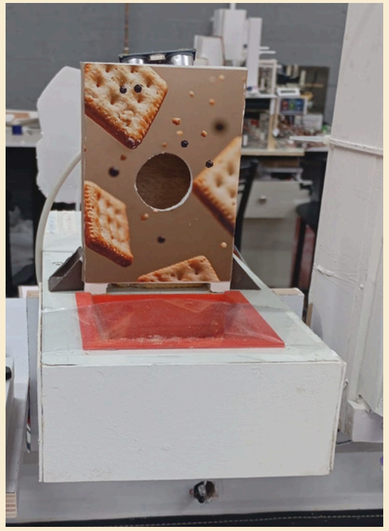
Cheesecake Flow is an automated production system designed to prepare ready-made cheesecake cups with minimal human intervention. The project is based on a fully automated production line where the user places an order through a user interface and selects specific options such as biscuit layer height and jelly type. The system then automatically processes the order through several stages, including cup dispensing, biscuit crushing, cream dispensing, jelly preparation and pouring, cooling, and final lid sealing. The main goal of the project is to reduce manual labor, ensure consistent product quality, and provide a modern, efficient, and user-friendly dessert production solution.

FEATURES

User Interface



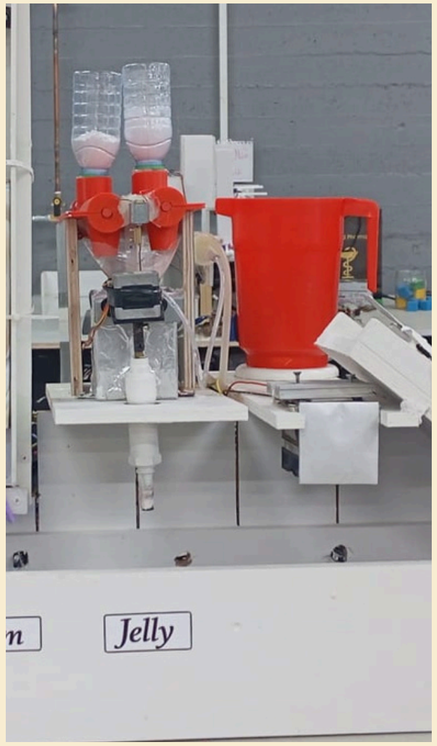
Cup Dispensing



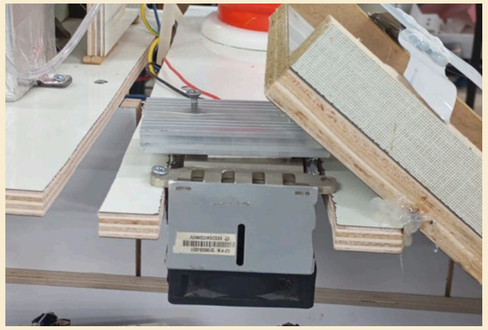
Biscuit Crushing

FEATURES

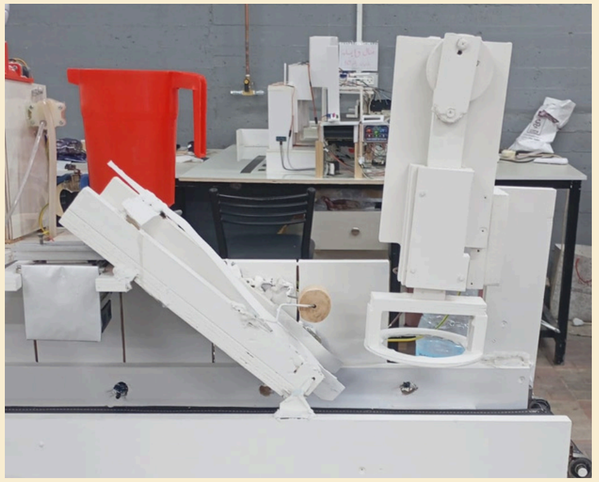
Cream Dispensing Unit



Jelly Preparation and Dispensing Unit



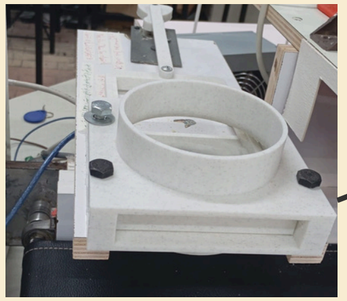
Cooling Stage

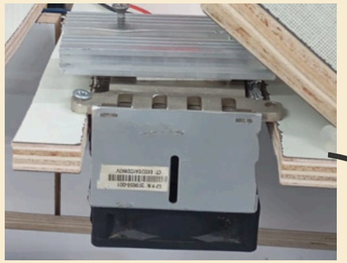


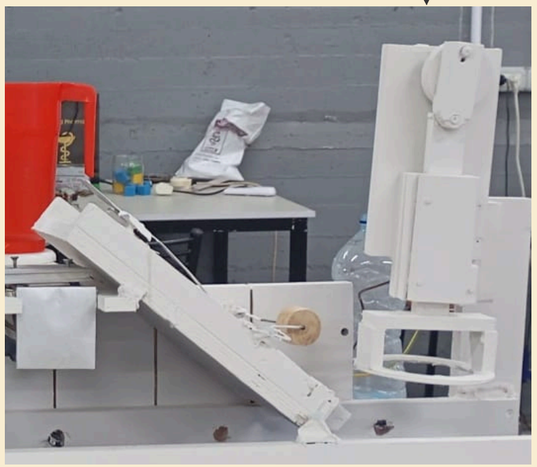
Lid Placement Unit

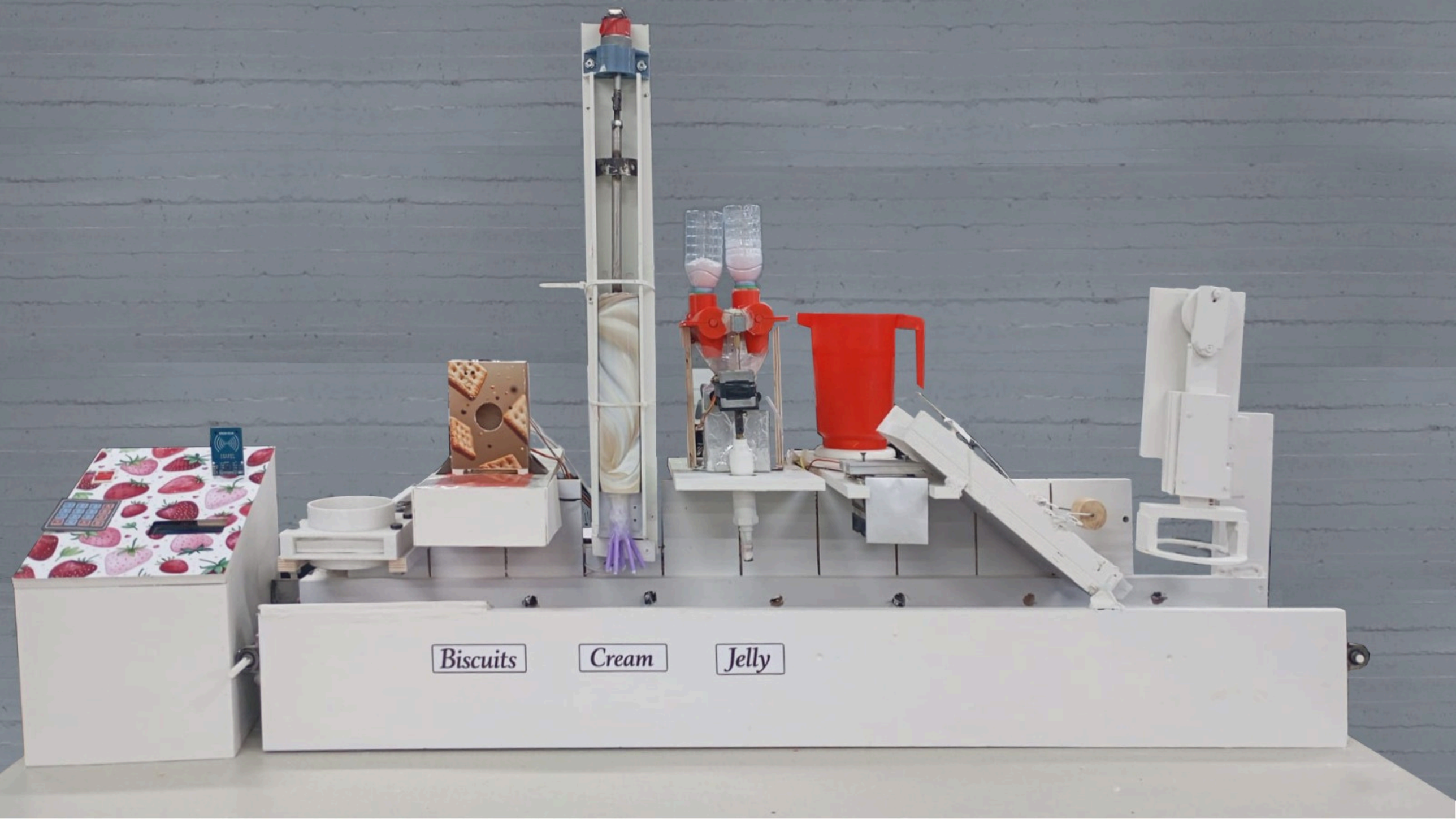
FLOW CHART

Start

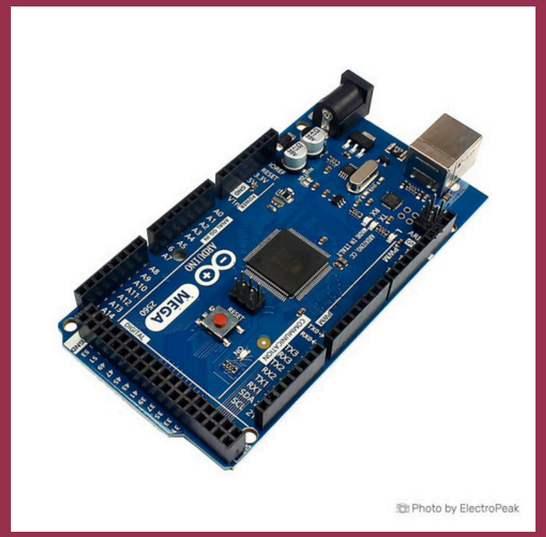






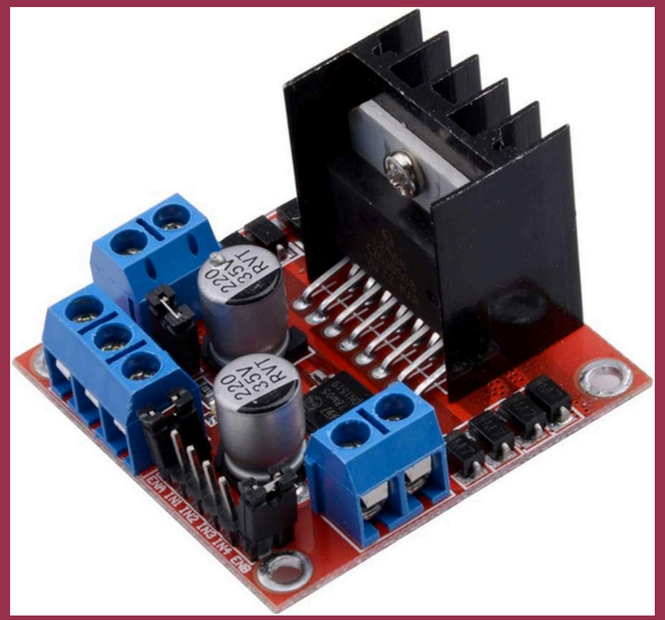

Biscuits
Cream
Jelly

COMPONENTS



1 Arduino MEGA 2560

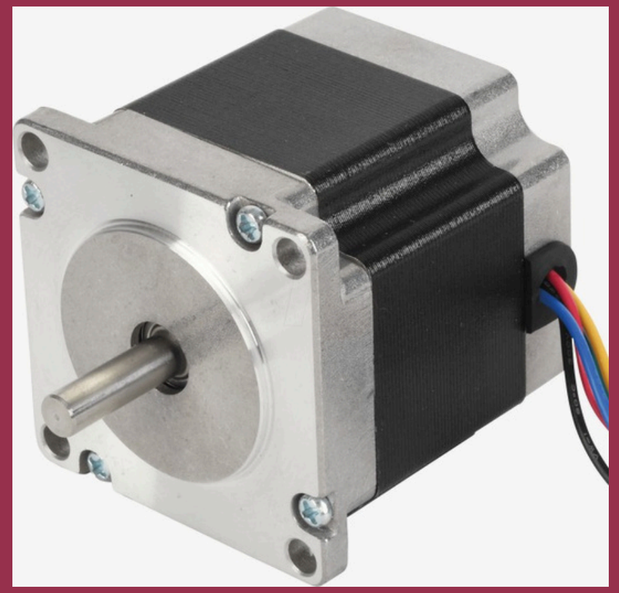
2 Power Supply



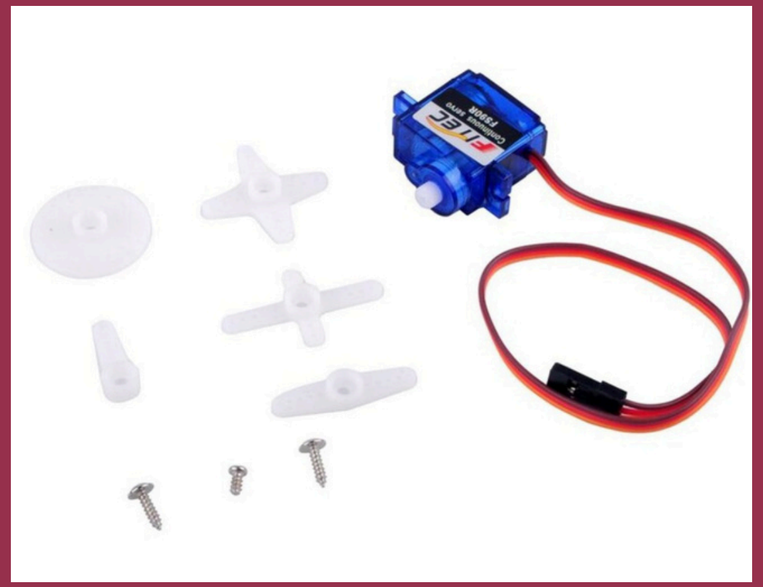
3 H-Bridge (L298N Motor Driver)

4 DC Motors

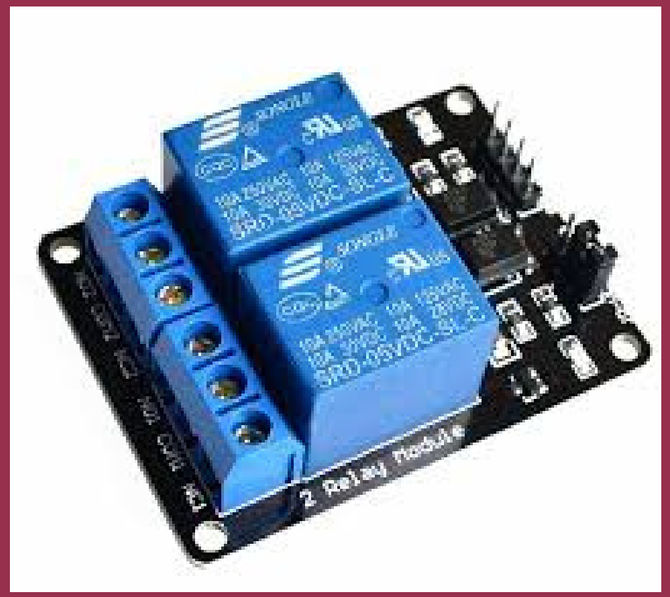
5 Stepper Motor Driver (TB6600)



6 Stepper Motors



7 Servo Motor 360°

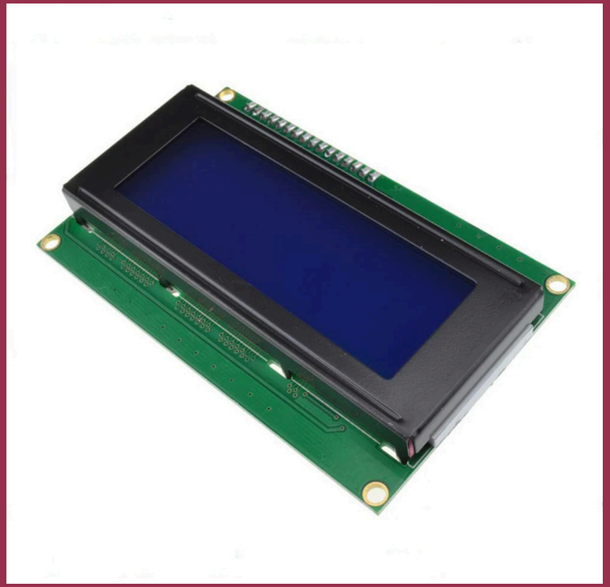


8 Relay Modules

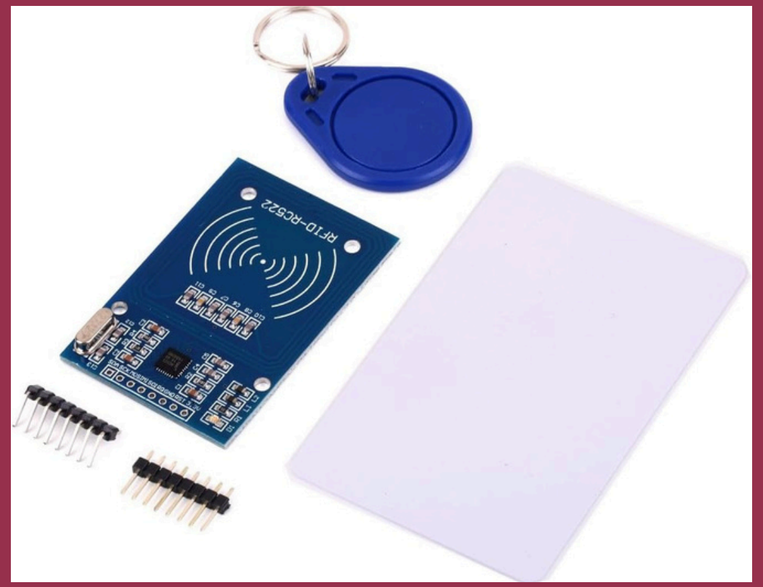
9 Water Heater

10 Water Pump

11 Keypad

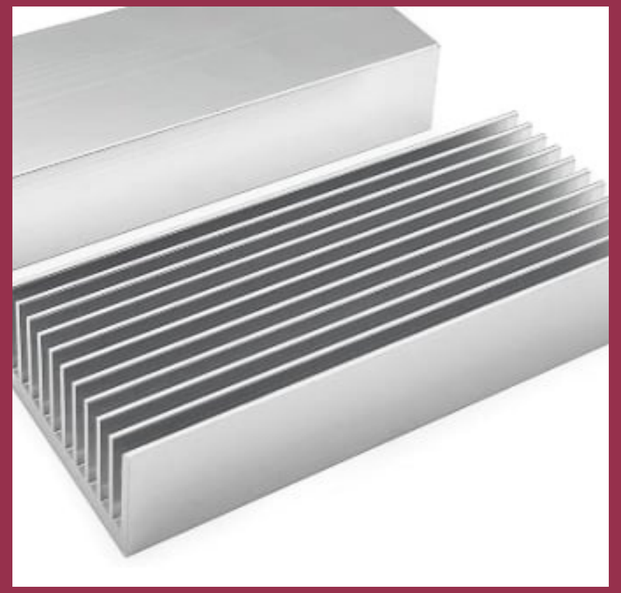


12 LCD Display

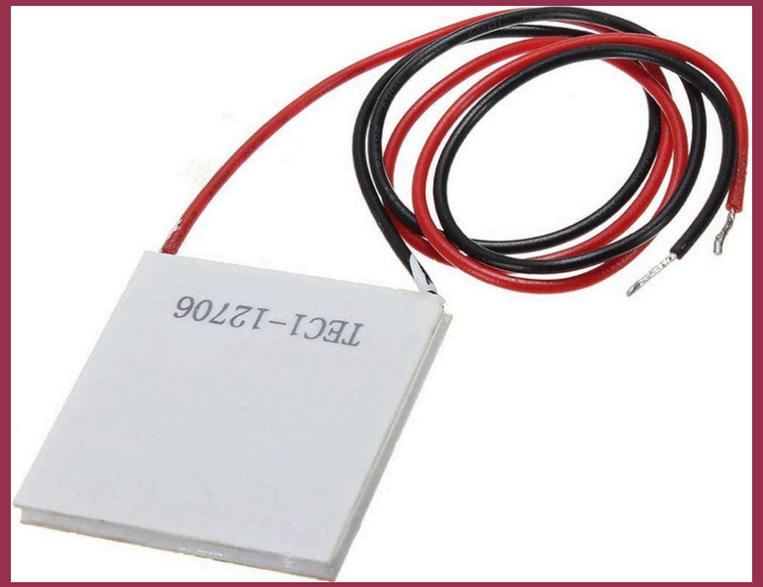


13 RFID Module

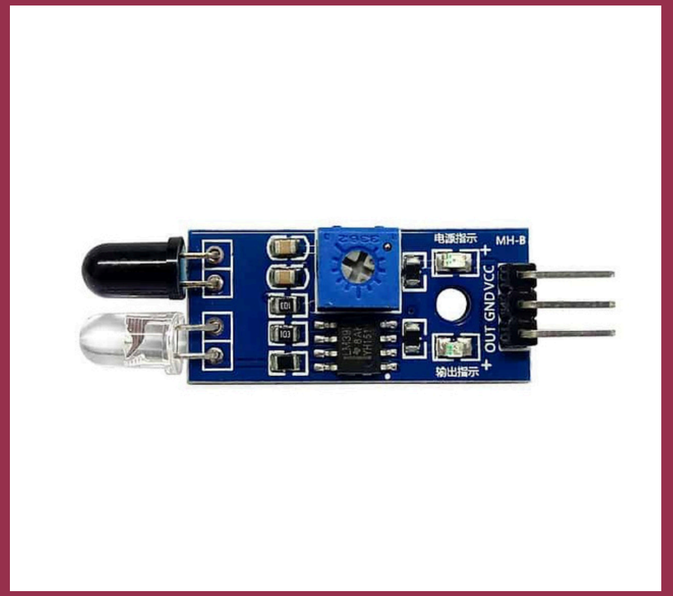
14 Cooling Fan



15 Heat Sink

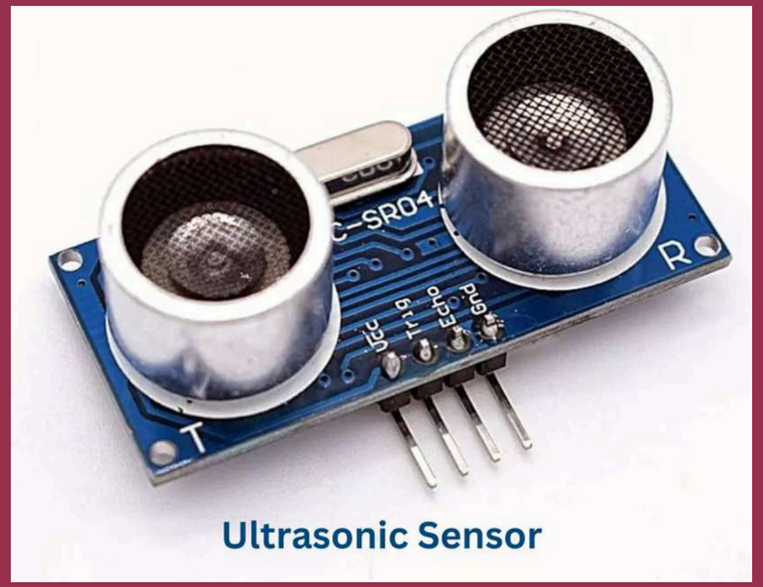


16 Thermoelectric Cooling Element (TEC1)



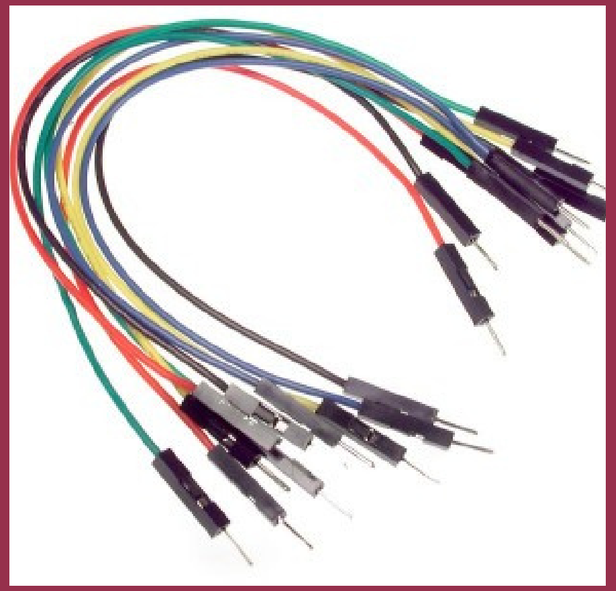
17 IR Sensors

18 Temperature Sensor (DS18B20)



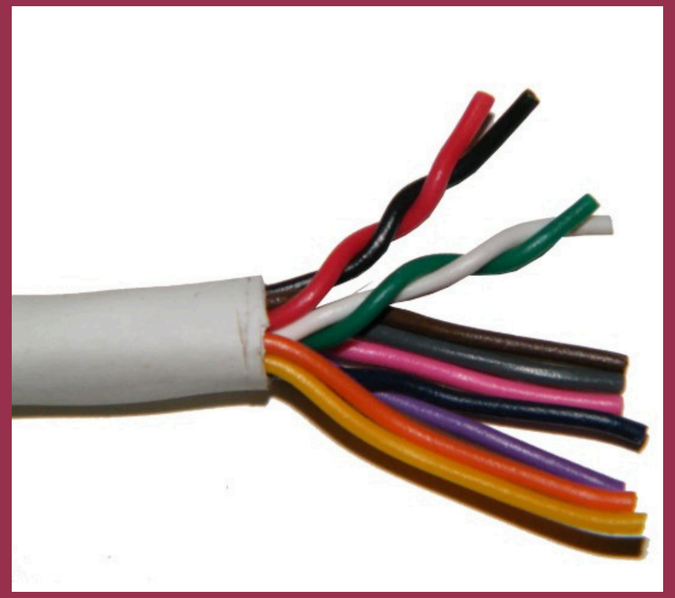
19 Ultrasonic Sensor

20 ESP32 Module



21 Arduino Wires

22 Speaker Wires



23 Intercom Wires

SWOT

SWOT

Strengths

The Cheesecake Flow system provides a fully automated production line that significantly reduces manual labor and minimizes human error. The system ensures consistent product quality and uniform portion sizes for every order. In addition, the user-friendly interface allows customers to customize their orders easily, such as selecting the biscuit layer height and jelly type. The integration of mechanical, electronic, and software components demonstrates a well-designed and reliable engineering solution capable of continuous operation with minimal human intervention.

SWOT

Weaknesses

Despite its advantages, the Cheesecake Flow system has some limitations. The initial cost of building the system may be relatively high due to the use of multiple mechanical and electronic components. Moreover, the complexity of the system can make maintenance and troubleshooting more challenging. The system is also limited in terms of product variety, as it is mainly designed to produce cheesecake cups, and its performance depends heavily on accurate calibration and alignment of components.

SWOT

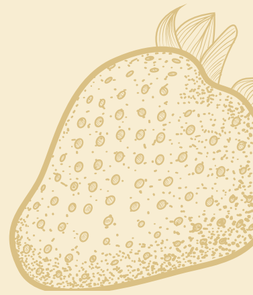
Opportunities

The Cheesecake Flow project has strong potential for future expansion and development. The system can be upgraded to support additional dessert types or a wider range of flavors. It is suitable for small dessert shops, self-service kiosks, or automated vending solutions. Furthermore, the system can be integrated with mobile applications or online ordering platforms, which aligns with the increasing demand for automated and smart food production systems.

SWOT

Threats

Several external factors may pose challenges to the Cheesecake Flow system. Mechanical or hardware failures could interrupt the entire production line. In addition, competition from traditional manual dessert preparation methods, especially in low-cost labor environments, may affect system adoption. Compliance with food safety and hygiene regulations may require additional modifications, and power outages or system failures could temporarily disrupt operation.

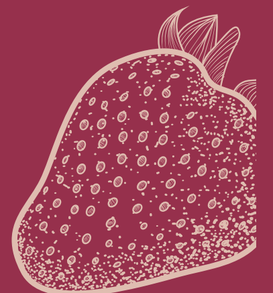


FUTURE WORK

Converting the system into a complete production pipeline.

Adding support for additional flavors and ingredients.

Further development of the cleaning stage



THANK YOU

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