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Project Title: CheeseCake Flow

Academic Year: Fifth academic year

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Project's Abstract:

Our proposed project is an automated production line for cheesecake cups. The project concept is based on designing and implementing a smart system that relies on hardware components and electronic control to produce multi-layer cheesecake cups in an organized and automated manner.

This project stands out from previous projects in this field through several notable advancements. While some previous models used pre-ground biscuits or whole biscuits placed directly into the cup, this project adds a preliminary grinding stage in which the biscuits are automatically ground inside the system. This improves the texture quality of the biscuit layer and allows better control of the amount of powder added.

The project also includes a jelly preparation stage inside the system, where the jelly powder is mixed with hot water to form a homogeneous mixture before cooling and pouring. This differs from some previous projects that only added a final decorative layer, such as marshmallows or chocolate pieces.

The process begins with the cup being automatically lowered from the dispenser. The cup then moves along a conveyor belt that passes in front of each preparation stage, allowing the cups to move between stations in an organized and sequential way. A layer of crushed biscuits is then added to form the base, followed by an even pouring of cream to form the second layer.

The final layer is the jelly layer, which is prepared inside the system as mentioned above. The system allows the user to select the desired flavor. The appropriate jelly powder is then mixed with hot water until it is completely dissolved. After that, the mixture is cooled to a controlled temperature that is sufficient to reduce its heat and prevent the layers from mixing, without freezing it. The jelly is then poured over the cream to form perfect and uniform layers in both shape and texture.

The project relies on a microcontroller such as Arduino to control the motors and sensors that manage the processes of cup dispensing, weighing, mixing, heating, cooling, and conveyor belt movement.