YOGURT MACHINE

Integrated Project II

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Introduction

The Integrated Project ll subject aims to combine scientific knowledge with technical skills and technological resources to solve the difficulties of professional practice. At the same time, knowing how to overcome problems and learn from mistakes.

For this reason, groups of 4 or 5 members are created, each of whom has an outstanding skill. This team will be composed of members with lead, mechanical, electrical and programming skills.

In the subject, some toppings have been proposed for realisation, but due to an unforeseen factor, the whole team had to make a brainstorming for the realisation of a project. The project to be realised will be the Yoghurt Machine.

Team Organization

As mentioned in the introduction, the team will be composed of members who complement each other to carry out an entire project.

Enric Daoiz will be in charge as Manager due to his ability to lead and to be able to work under pressure. He is able to maintain order within the team and is clear about the project's objective. He transmits reliability and is approachable, which will facilitate the team's internal communication.

Ignasi Carbó, whose knowledge of mechanics is strong, will be the Mechanical Designer. He will be responsible for designing and setting up the entire structure of the project.

Jordi Guimerà, will be in charge of the electronic and mechanical part.

Finally, Denise Bermeo will be the Code Developer who will be in charge of connecting the orders of the costumers with the yoghurt machine.

Objectives

The main objectives of the project are to create an automatic machine that using an application could automatize the process of serving a yogurt with all the toppings.

Another objective is to be able to choose the size of the yogurt and be able to control the decision of the customer by an application with the phone.

Tasks

Mechanical Part

For the structure of the machine, it was decided to make it out of wood, which will be responsible for joining the different mechanical and electrical components of the machine.

Regarding the belt movement structure, it has the function of transporting the yogurt recipient through the different food dispensers and will be composed of a toothed belt, a surface for the pot, movement shafts and a stepper motor.

The yogurt cooler will allow to keep the yogurt in a cold state and will dispense the yogurt by means of an electric pump.

Electronic part

The dispensers will be automatic and will be responsible for distributing the food chosen by the user. This function will be carried out by means of an Arduino board.

The electrical panel will be made up of an Arduino, the necessary wiring for each dispenser and it will be the one that will direct each action chosen by the user.

Also is going to be used a stepper motor to control the number of toppings and to move the recipients to arrive to the position determined by the user.

Programming part

On the one hand, a search will be carried out on how to program the chosen stepper motor. This will allow us to control the movement of the container and to be able to distribute the toppings correctly.

On the other hand, it will be necessary to programme a mobile application. This will allow us to process customer orders digitally and more conveniently. Once all the information has been collected, it will be in charge of giving orders to the driver connected to the stepper motor.

List of materials

After having carried out a search for the best components to realise the project, we have decided to include the following materials:

Obviously in the second week we can't determine all the components 100% sure of them, since there might be some changes and we would have to adapt to the new circumstances.

Structure

- Wood for creating the base of the machine.
- 3D wire for creating some pieces needed.
- The supports for holding the recipients.
- Some metal for the conveyer belt track.
- Some toothed belts.
- Screws for holding the wood and other components.

Electronic

- Stepper motors for regulating the toppings and moving the recipient
- A refrigerator and pump for the yogurt
- Arduino
- Bluetooth adapters
- Wires

Project Management tools

In relation to management tools Github will be used primarily in this project. GitHub is a code hosting platform, but it will also be used to organise the tasks.