DEVICE TO BE BUILT:

This year we have some conditions that we have to respect. First of all, our teachers demanded us a project in which three sensors are included. We have to use at least two analog sensor. We decided to carry out our project with a temperature sensor and a weight sensor, both are analog. Besides, we chose a device in which different colors can be distinguished.

Considering everything we said above, we want to create a machine which it will be able to separate M&m´s depending on the colour. Honestly, we think that if we use colourful sweets, people will pay more attention than if we use, for instance, painkillers.

The objective of the project is to automate and facilitate the separation of medications or candy.

CHARACTERISTICS & TECHNICAL SPECIFICATIONS:

This device uses a supply voltage of +12V and -12V. It´s not necessary to connect the project with a programmer board. It´s completely independent of an external power supply. We are able to design all the structure on 3D. As we have a 3D printer, we can print whatever design as we want.

In addition, the stepper motor consumes too much current and we have to use an ULN2003 exactly because of that. We are going to control the motor with the microcontroller. We need four inputs that have been designated before.

To connect the PC to the microcontroller, we are going to use a HC-11 and a bridge-TTL. With all of this we could transmit information wirelessly. Two little boards (Tx and Rx) will help us out.

We are going to do an ADC because the NTC (the temperature sensor previously mentioned) and the load cell (the weight sensor) operate in a range of 0V to 5V. Depending on the voltage, changes the output showed on the LCD display.

This year, the teachers taught us a new form to fabricate PCB´s. Last year we only designed one-sided PCB´s. Nowadays, we must fabricate double-sided boards and use SMD components. The main benefit of these components is the size. They´re much smaller than THT.

In order to do an interactive project, we are going to use a keyboard designed and made by us. You could set how many M&m´s you want (like an order) or you could see, in real-time, how many grams there are of sweets.

PROCEDURE:

1°) Simulate all of our design in a program and be sure of doing it well.

2°) Do the schematics of all the boards that we want to do.

3°) Route all the PCB´s.

4°) Carry out the boards previously designed.

5°) Check the correct functioning of the PCB.

6°) Create the code that it will be used.

7°) Verify the code created.

8°) Measure the sensors that have been chosen.

9°) Mix the code with the measures.

10°) make the first test of the project.

11°) Fix all the possible faults.

12°) Create the mock-up of the project.