Learning to use a stepper motor

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Introduction

1 Objective

1. **What is a stepper motor:** (half day)
   - ☐ Elaborate a small research of what is a stepper motor.
   - ☐ Description of the kinds of steppers (Unipolar - Bipolar).
2. **How to use a stepper motor:** (half day)
   - ☐ How to control each kind of motors?
   - ☐ Which are the sequences for each stepper.
   - ☐ Identify the HW needed to connect the Stepper motor to an Arduino. (hint: LM293/LM293D)
3. **Programming the sequence using Arduino:** (one day)
   - ☐ Using PINx of the Arduino's API
     - ☐ Stepper in clockwise way direction
     - ☐ Stepper in counter clockwise way direction
     - ☐ Stepper in both directions
   - ☐ Using the PORTx of the microcontroller
     - ☐ Stepper in clockwise way direction
     - ☐ Stepper in counter clockwise way direction
     - ☐ Stepper in both directions
4. **Optimise the program Part 1** (one day)
   - ☐ Understand the use of push buttons using Arduino
   - ☐ Identify the bouncing effect
   - ☐ solve the problem using "anti-bouncing" techniques
   - ☐ Add the use of push buttons to define the direction of the stepper motor (left and right).
   - ☐ Add the use of push buttons to set the velocity of the stepper motor.
5. **Optimise the program Part 2** (one day)
   - ☐ Introduce sensors to identify the position of the motor.
6. Write the report using the LaTeXtemplate provided.