LAB N°03

Arduino Communications

Interrupts-PWM-Sensors-Actuators

A. THEORY: (max 01 pages)

1. **Force Sensor:** Definition, principle, Category, and connection with Microcontrollers, see Fig.1.
2. **Interruption:**
   - 2.1. Definition
   - 2.2. Theoretical study of Arduino pins that allow interruptions
   - 2.3. Arduino Internal Pull-up (definition and programming)
   - 2.4. Structure of program-based interrupts, functions, library, etc...

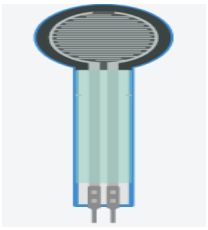

Fig.1: Force sensor

B. ACTIVITY: (max 03 pages)

1. Force Sensor

Connect a force sensor and an LED to the appropriate GPIOs. We want the LED to turn on if the force applied exceeds a certain threshold. Otherwise, it should turn off. Please display the force values on the console and test the functionality.

2. Pushbutton with Internal Pull-Up

We add a pushbutton and a second LED, but this time we will use an internal pull-up resistor instead of an external pull-up resistor. We want to turn on the LED each time we release the button after pressing it.

3. Force Sensor and Pushbutton

Test the system's functionality, and try to saturate the system by using different combinations of button presses and sensor readings and/or adding delay intervals.

4. Interruptions

Now connect the pushbutton to an **interrupt input** and perform the same tests as before for active interrupt on rising and falling edges.

5. Explanations :

Explain and provide an example for this interrupt mode..

6. Conclusion