Working Mechanical Instrument for Hydrogel lens preparation using Arduino and Stepper motor.

**Details about the project**:

The aim of this project is to build a working mechanical instrument which helping in preparing hydrogel lens. The instrument should be manually controllable, vibration less, smooth working, easily detachable, easy to handle and maintain. There are 3 steps in this project:

1. 3d modelling: I had used solidworks to model the instrument parts (I had attached the files in this report folder with the folder name ‘3d\_model\_parts’), after that 3d print the files in the tinkering lab.
2. Assembling the parts with the Arduino and stepper motor (here our aim is not to get the maximum torque and power so directly attached stepper motor with the arduino).
3. Coding the Arduino, here I used Arduino IDE to code the Arduino to control stepper motor precisely (I also attached the code file named as ‘Arduino\_code’).

Pins 10, 11, 12, 13 are used by the motor. Pins 9, 5 are used for controlling the direction of rotation so connected push button from high voltage pins in the Arduino (+5V, +3.5V) pin-9 will rotate the motor in clockwise direction so the slide will go down. Pin-5 will rotate the motor in anticlockwise direction so the slide will go up.

**Note**:

1. During the downward motion of the motor there is no considerable lag, but in the upward motion there is some lag so operate the instrument wisely, and check the desirable range by testing before actual usage of the instrument.