**PRACTICAL –6**

**Aim: - Arduino programming with actuator.**

**Conclusion**

This practical session on Arduino programming with actuators provided participants with the skills to control physical devices and create interactive systems. Through a series of experiments, participants learned to interface with and control two common actuator types: Liquid Crystal Displays (LCDs) and servo motors.

The initial experiment explored the use of LCDs for visual output. Participants interfaced a 16x2 LCD display with the Arduino board and wrote code to display the current room temperature data (likely acquired from a sensor in a previous practical). This exercise provided hands-on experience with controlling an LCD to present information and solidified understanding of character and string manipulation functions within the Arduino environment.

The subsequent experiment introduced servo motors, actuators capable of precise angular control. Participants interfaced a servo motor with the Arduino and wrote code to control its position based on the analog input from a potentiometer. As participants adjusted the potentiometer, the servo motor would rotate to corresponding angles. This exercise provided practical experience with servo motor control mechanisms and their potential for creating dynamic functionalities.

The final experiment integrated sensor data with actuator control. Participants modified the previous code to utilize the current room temperature reading as the control signal for the servo motor. This potentially caused the servo motor to rotate to specific positions based on temperature ranges, demonstrating how sensor data can be used to create interactive systems that respond to the environment.

By successfully completing these experiments, participants significantly enhanced their skillset in Arduino programming with actuators. They gained practical experience in controlling LCD displays for visual output and servo motors for dynamic movements based on sensor data. This combined knowledge equips participants to design and build more intricate Internet of Things (IoT) applications that not only collect environmental data but also react to it through physical actions using actuators.