**PRACTICAL –3**

**Aim: - Arduino architecture and basic programming.**

**Conclusion:**

This practical session provided a foundational understanding of the Arduino platform and basic programming principles. Participants gained experience in setting up the Arduino development environment, connecting to hardware, and writing code to control LEDs and read sensor data.

The practical began with an introduction to Arduino, highlighting its open-source nature and user-friendly approach to physical computing. Participants learned about the Arduino Integrated Development Environment (IDE), the software used to write and upload code to Arduino boards. The session covered the installation process, connecting the Arduino board to the computer, and selecting the appropriate communication port.

Following the setup, participants embarked on hands-on experiments. The first experiment involved controlling an LED. Participants wrote code to turn the LED on, then created a blinking effect. This exercise solidified basic programming concepts like digital output, pin manipulation, and loop structures.

The next experiment explored sensor interaction. Participants connected a temperature and humidity sensor to the Arduino board. They then wrote code to read sensor data and display it on the serial monitor, a built-in tool within the Arduino IDE. This exercise introduced analog input, sensor libraries, and data formatting.

An extension of the sensor experiment involved displaying the data on a mobile application using Bluetooth communication (BlueTerm2). This exposed participants to the possibilities of wireless data transmission and interaction with mobile devices.

By successfully completing these experiments, participants have established a strong foundation for further exploration of Arduino programming and interfacing with various sensors and actuators. The skills acquired in this session will be instrumental in developing more complex IoT applications in the future.