REPORT ON ARDUINO WORKSHOP

OBJECTIVE OF THE WORKSHOP:

The objective of this workshop is to provide an opportunity for students to get aware of ARDUINO thereby developing a stepping stone towards the development of an Embedded System.

Venue: Digital and Microprocessor Lab of Electrical & Electronics Department, MBCCET

Coordinated by: Asst.Prof. VINU SANKAR, Amal Jyothi college of engineering

Number of Participants: 09

Coverage of Workshop:

"Five days' workshop on Arduino" was organized by Mar Baselios Christian College of Engineering & Technology, Kuttikkanam, Peermade on 7th September 2023 to 13th September. Around 09 EEE students attended the workshop. The session was instructed by Asst.Prof. Vinu Sankar, Amal Jyothi college of engineering. The course content is as follows:

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board or microcontroller and a software, IDE (Integrated Development Environment) that runs on the computer. It is used to write and upload computer code to the physical board.
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Day :1

The workshop started at 9:00 am and was inaugurated by HOD Prof. Resmara S. Class Coordinators and Faculty members were present during the event.

On the first day, we were introduced to Arduino and its various components. We learned about the hardware and software requirements for using Arduino and how to set up the development environment. We also learned about the basic syntax and structure of Arduino programming.

Day :2

On the second day, we conducted an experiment to blink an LED using Arduino. We learned how to connect an LED to Arduino and how to write a program to control the blinking of the LED. We also learned about the different functions and variables used in Arduino programming.

Day :3

On the third day, we conducted an experiment to read analog input using Arduino. We learned about the analog-to-digital converter (ADC) used in Arduino and how to read analog signals from sensors. We also learned about the different types of sensors used in electrical and electronics engineering.

Day :4

On the fourth day, we conducted an experiment to establish serial communication between Arduino and a computer. We learned how to use the Serial Monitor in Arduino IDE to send and receive data from Arduino. We also learned about the different types of serial communication protocols used in electrical and electronics engineering.
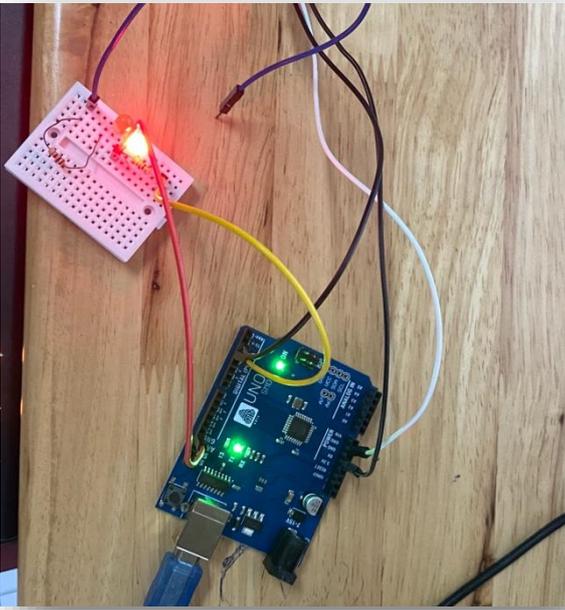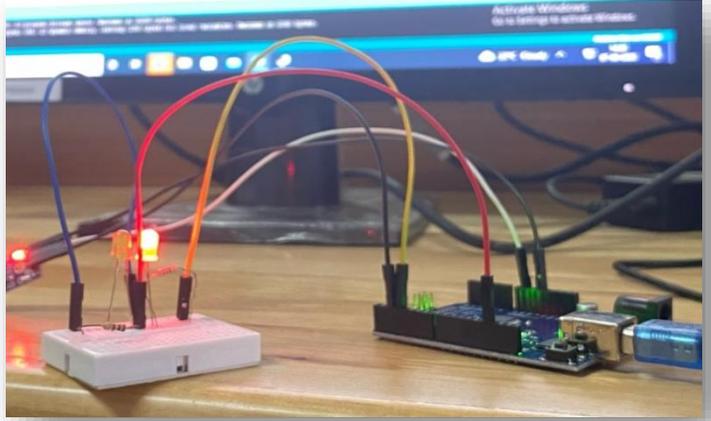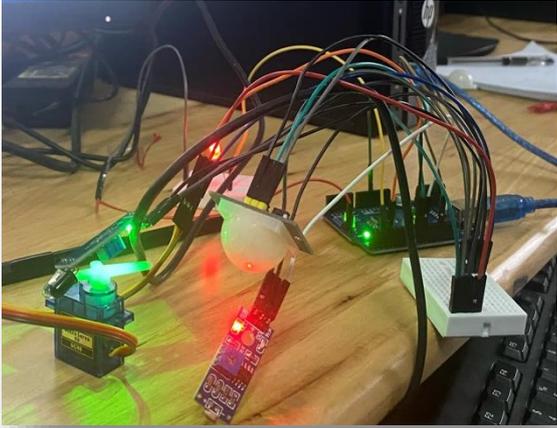
Day :5

On the final day, we worked on a final project using Arduino. We were given a problem statement related to electrical and electronics engineering and we had to come up with a solution using Arduino. We applied all the concepts and techniques learned in the previous days to complete the project.

Poster:

Workshop glimpses:

Conclusion:

The workshop was a great learning experience for us as we got hands-on experience with Arduino and its applications in electrical and electronics engineering. We learned about the basic syntax and structure of Arduino programming, how to connect sensors and other components to Arduino, and how to establish serial communication with a computer. The final project gave us an opportunity to apply all the concepts and techniques learned in the workshop to solve a real-world problem. Overall, it was an enriching experience that helped us enhance our skills and knowledge in the field of electrical and electronics engineering.

PO JUSTIFICATION

◈ PO1 – Engineering Knowledge

Students apply fundamental concepts of electrical and electronic engineering while working with Arduino-based systems (e.g., Ohm's law, circuit theory, microcontroller architecture).

◈ PO2 – Problem Analysis

During the workshop, students analyze real-world problems and implement Arduino-based solutions (e.g., automation, measurement systems).

◈ PO3 – Design/Development of Solutions

Students design small-scale systems using Arduino (e.g., control circuits, data acquisition systems) tailored to specific requirements.

◈ PO4 – Conduct Investigations of Complex Problems

They perform testing and debugging, collect data from sensors, and interpret it using Arduino setups—this is investigative in nature.

⬥ PO5 – Modern Tool Usage

Arduino and its associated IDE, simulation tools (like Tinkercad or Proteus), and sensors/actuators fall under modern engineering tools.

⬥ PO9 – Individual and Team Work

Workshops often involve group activities, encouraging both independent work and team collaboration in circuit design and implementation.

⬥ PO10 – Communication

Students learn to present their projects, discuss logic and flow, and document their code/design—improving technical communication skills.

⬥ PO12 – Life-long Learning

Learning Arduino introduces students to open-source tools and continuous self-driven learning beyond the curriculum.