



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

REPORT ON One week workshop on Embedded Systems

Event Type	:	Workshop
Date / Duration	:	05.12.2022 to 24.12.2022 (Three Weeks)
Resource Person	:	1.Mr.S. Pradeep Kumar, ADAQ Technologies Pvt. Ltd. 2.Mr. M.Jyothi Swaroop Reddy, ADAQ Technologies Pvt. Ltd 3.Mr.Y.Siva Rama Krishna Sai , ADAQ Technologies Pvt. Ltd
Name of Coordinator(s)	:	Dr.G.L.N.Murthy & Mr.Ch.Mallikharjuna Rao
Target Audience	:	III Semester B.Tech Students
Total no of Participants:	:	III semester Students-211 Nos.
Objective of the event:	:	To expose the students to the design environment of Embedded systems
Outcome of event	:	By attending the workshop, the students can be able to learn the advances in Embedded technology in addressing the real time issues and enhance their skills in doing Mini as well as Major projects, as part of the curriculum. Further, the students will gain knowledge on hardware design related issues that enables them to face. Knowledge about interfacing sensors with Arduino, for solving real time problems is gained.

Description / Report on Event:

The workshop on Embedded systems is conducted for three weeks to III semester B.Tech ECE students (All three sections) with each section one week. The workshop began with inaugural address by Dr.Y.Amar Babu, Head , Department of ECE ,who highlighted the significance of the training. It was mentioned that with the technology evolving faster the students should always update themselves with the current trends. Irrespective of running behind non-core jobs, students need to strength their core concepts and opt for a better carrier that is consistent. Dr.G.L.N.Murthy, Coordinator , RC club, have informed the students about initiatives taken by the department to enhance the learning and presentation skills of the students. It was

mentioned that the current trend is towards IoT enabled applications, all should effectively engage in the workshop and gain knowledge. Mr.Ch.Mallikharjuna Rao has coordinated the workshop.

Day one has begun with explanation about the basics of microprocessors by the resource person Mr.S.Pradeep Kumar from ADAQ technologies Pvt. Ltd. The objective of the workshop is to educate the students about the embedded environment and provide solutions to real time problems. As these are the days of coding in majority of the applications, knowledge about programming using microcontroller will enable in providing solutions to real time problems. Once the basic concepts were introduced, code is written for blinking of LED and the same is dumped onto Arduino board and executed. Along with this Motion sensor was also implemented using Arduino, that detects the presence of moving objects and preferred in shopping malls etc. for security applications.

Day 2 extended the concepts discussed on day 1, on which illumination control by making use of potentiometer. For better power saving, it is necessary to know the light intensity in a given room and then either switch ON or OFF a light. Light dependent resistor is incorporated for darkness detection there by controlling the light. Temperature and humidity sensors were interfaced with Arduino and verified for functionality.

Gas sensor was used to identify the presence of gas there by giving an indication using a buzzer on Day 3. The key application of this to prevent fire accidents due to gas leakage in household applications. Magnetic sensor definition is a sensor which is used to notice disturbances as well as changes within a magnetic field such as strength, direction, and flux. There are different types of detection sensors which can work on some of the characteristics like light, pressure, temperature. These sensors are separated into two groups. The first one is used to calculate the total magnetic field, whereas the second one is used to calculate vector components of the field. IR communication makes use of IR (Infrared) waves from the electromagnetic spectrum. An IR LED is used to transmit data wirelessly in digital form (0 – LED OFF or 1 – LED ON).An IR photodiode or IR phototransistor receives this data. The IR receiver (IR photodiode or IR phototransistor) gives different current values according to the intensity of light. It is possible to modulate the data transmitted and there are special decoder IR receivers like TSOP1738 available that can receive the modulated data.

IR communication was continued on Day 4 where a relay module

is used to open or close a door. A relay is an electrically operated switch that can be turned on or off, letting the current go through or not, and can be controlled with low voltages, like the 5V provided by the Arduino pins. This relay module has two channels (those blue cubes). There are other models with one, four and eight channels. Day 5 and day 6 continued with programming practice along with revision of transistor concepts.

The transistor acts a switch and this principle is used to detect the water flow. Tinkercad environment was introduced to simulate the IoT environment.

Feedback / Suggestions:

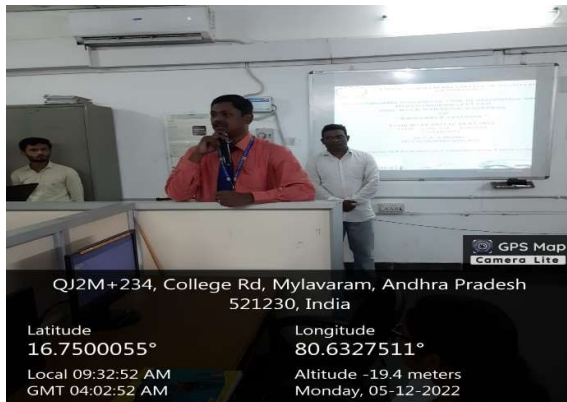
1. More number of sensors are to be incorporated
2. Duration needs to be increased
3. Provision of Individual kits
4. More real time applications need to be addressed
5. More attention towards individual students for clarifying doubts.
6. Availability of more resource persons for explanation.
7. Python concepts are to be more elaborated.
8. Introduction of the concepts as a course

Comments on feedback:

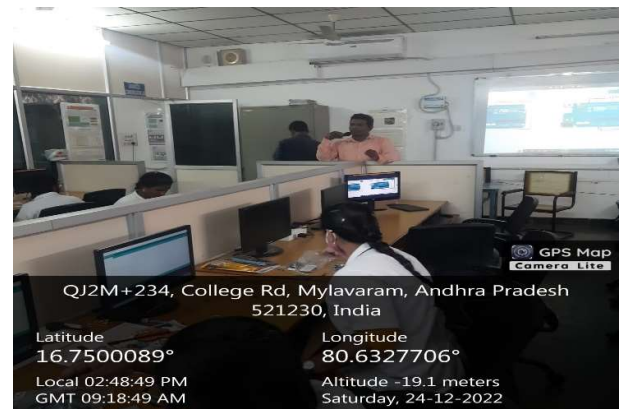
1. It is not necessary to all sensors in the workshop as the usage decides which sensor to use. As the process to interface few sensors has been introduced, the same can be extended for any sensors.
2. Extension of duration is not opting as already the workshop has been executed for 6 days.
3. Provision of more kits will be considered when the workshop is organized in future.
4. Irrespective of the application, as usage of Arduino environment has been introduced any application can be addressed and not needed to cover all applications.
5. Generally, it is intended to encourage team work discussions among the group is the best way to clarify the doubts. However, measures will be taken in future for incorporating more persons for individual attention.
6. Introduction of python in depth will deviate the objective of the workshop and the student is having a course in IV semester as a course.

7. The contents are not that much broad to include as a course. In microprocessors course the fundamental concepts will be elaborated.

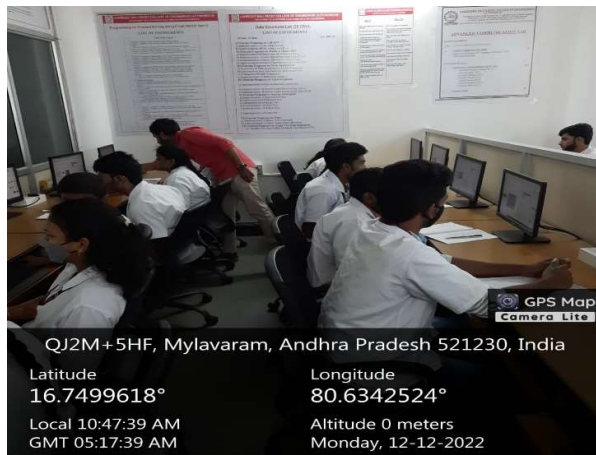
Photos:



Addressing by Dr.Y.Amar Babu,
Head of the Department



Introductory session by Mr.S.Pradeep Kumar ,
ADAQ Technologies Pvt. Ltd



Practice session by students



Students implementing the code developed in software
using hardware

