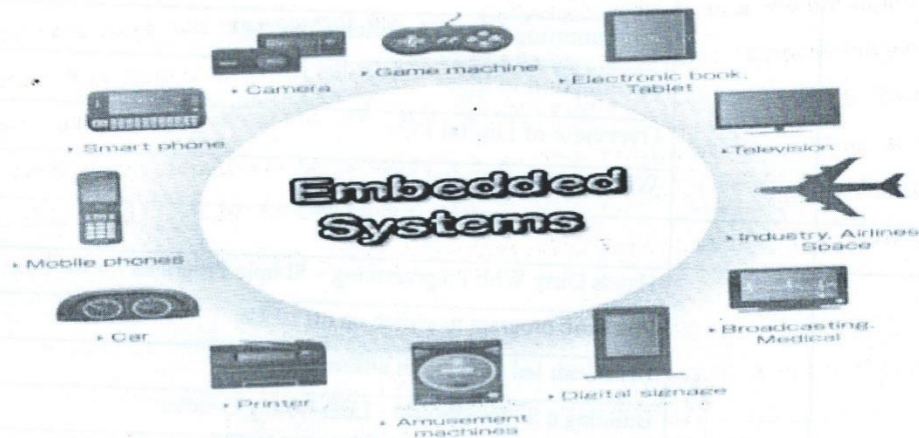


Report on Embedded Systems on Adruino & IOT

Date: 09/12/2019-14/12/2019

Embedded Systems:

Embedded Systems is simply the brain of most of the electronics based systems to access, process, and store and also control the data. Embedded systems is a multidisciplinary field, requiring skills from control and signal processing theory, electronics, computer engineering and science, telecommunication etc., as well as application domain knowledge. Demand for embedded systems engineers has motivated a growing interest in the question of educating specialists in this domain. As Embedded Systems designs grow more complex and the time to market diminishes, quality Embedded Systems education becomes more and more important.



Workshop on Embedded Systems:

This is a 2-day workshop that introduces students to the world of embedded technology using the Avr studio/Win AVR platform and Atmega8/16/32 microcontroller. The workshop is tailor-made to give participants hands-on experience in working with microcontrollers and building projects based on microcontrollers. The workshop will now focus on microcontroller programming in developing application using IDE (AVR Studio). All the programs written will be practically executed on custom made AVR development board.

Workshop Schedule:


Day 1	Duration	
Session 1	3 hrs	Introduction to Embedded System
		Difference Between μc and μp
		Arduino Series Micro-Controllers
		Introduction to ATMEGA 328 Micro-Controller
		Introduction to different programming tools
		Arduino IDE – A Quick Coverage
		Software Installation
		Kit distribution
		Overview on Arduino Development Board
		Programming in C – A Quick Coverage
		Introduction to I/Os
		Overview of Digital I/Os
		Working with Digital I/O
Session 2	3 hrs	Hands Dirty With Programming – Simple Programs
		Practical: program to switch on off LEDs
		Practical: led blinking in different patterns
		Building a Simple Project - LED Binary Counter
		Working with 7 Segment
		Practical: Displaying number 0-9 on 7segment
		Practical: Displaying alphabets on 7segment
		Project : 0-99 counter using 7segment display
		7segment counter using switch
		Introduction to LCD
		Sending Command and Data to the LCD
		Practical: Displaying characters on LCD
		Practical: Displaying String on LCD
Interfacing Buzzer with Arduino		

		Practical: Generating Beep through Buzzer
		Introduction to Motors
		Practical: Running Robots and the DC Motors

Day 2	Duration	
Session 3	3 hrs	Introduction to Sensors
		working with built-in ADC present in arduino controller
		Working with Analog Inputs & temperature sensor
		Practical: interfacing temperature sensor and display in LCD
		Practical: Digital Thermometer
		Practical: Gas detection
		Practical: Alcohol Detection
		Introduction to Relay
		Interfacing relays to arduino
		Practical: Home automation through sensors
		Introduction to Accelerometer sensor
		Practical: Moving Robot through Accelerometer
		Interfacing Bluetooth with Arduino
		Practical: Mobile controlling home appliances
Session 4	3 hrs	Introduction to IOT (Basics of IOT)
		History of IOT
		Types of IOT
		Ethernet shield
		Introduction to ESP8266
		Interfacing wifi module to arduino
		Writing the program to the module and in html
		Project: Home automation system using IOT
		Q& A Session

Workshop Highlights:

- Target and optimize 8 bit microcontrollers by using Embedded C
- Programming the microcontroller using Embedded C.
- Interfacing and controlling various devices like LED, Buzzer, Motors, Sensors, etc. with microcontrollers.
- Usage of internal peripherals of a microcontroller such as Timers, Interrupts and UART.
- Create and Manage Designs by using the Arduino Design Environment.
- Interface external peripherals such as Motor Driver, LCD, etc.
- Making serial communication with PC using HyperTerminal and UART communication Protocol.
- Exposes to the different software's require for building an Embedded System.


Head of the Department
Electronics & Communication Engineering
Nalla Narasimha Reddy Education Society
Group of Institutions - Integrated Campus
Chowdariguda(Vill), Ghatkesar (Med), R.R.Dist 500 084



Head of the Department
Electronics & Communication Engineering
Nalla Narasimha Reddy Education Society
Group of Institutions - Integrated Campus
Chowdarguda(Villi), Ghatkesar (Melli), R.R. Dist - 506 001