



Jagadish Chandra Bose Research Centre

G.B. Nagar, U.P.

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2 Days Workshop on Embedded Systems using 8051/AVR

A workshop on "Embedded System Design using 8051/AVR Microcontroller" Presented by Jagadish Chandra Bose Research Centre. This workshop will provide college students a base to Embedded System Designing. They will be developing their own models by their own hands. These projects focus on developing Embedded System designing using 8051/AVR Microcontroller. The workshop focuses on application and use of technology rather than their internal working so that a person can grasp the concepts well.

Workshop Duration: 2 days (16 hrs.)

The duration of this workshop will be two consecutive days, with eight hour session each day in a total of sixteen hours properly divided into theory and hands on sessions. At the end of this workshop, a small competition will be organized among the participating students and winners will be awarded with a Merit Certificate.

About Workshop:

This is a Workshop which is best suited to beginners who are taking their first step towards Embedded System Designing. This workshop basically deals with designing various kinds of electronic sensors and circuits and their use in making Embedded System to perform a specific task. After the workshop students come up with their projects like 7 Segment Led Display, 2×16 LCD Display, Computer Controller Home Appliances etc.

Two Day workshop Schedule:

DAY 1- 1st Session:

- Embedded System Hardware & Software exposure
- Introduction to embedded System
- Basic electronics
- μ processor & μ controllers
- Architecture RISC & CISC
- Memory RAM, ROM, EPROM, EEPROM, FLASH etc.



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DAY 1- 2nd Session:

- AVR Microcontroller ATmega 8/16/32 & its programming using Embedded C
- Overview of 8051/AVR Microcontroller
- Architecture RISC & CISC
- Features Of 8051/AVR Microcontroller
- Pin Configuration of 8051/AVR Microcontroller
- Special Purpose Register
- Introduction To Embedded C Programming
- PORT Programming
- Interfacing of LED

DAY 2- 1st Session:

- Interfacing of SEVEN SEGMENT
- Interfacing of SENSORS, Relays
- Switch Interfacing
- Programming of Real World Interfacings and H/W Simulation
- Interfacing of LCD (Liquid Cristal Display)

DAY 2- 2nd Session:

- Motor Control
- DC Motor Interfacing
- Timers/Counters Of 8051/AVR & its Programming
- Interrupts & Programming of interrupts



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- Serial Comm. Facilities (UART)

Note: These are just the major aspects that we will be discussing, each point will be elaborated in detail with demonstrations of the tools and techniques.

Kit Content

- 8051/AVR development Board
- USB Programmer
- Chassis Board
- 2 D.C. Geared Motors
- 2 Wheels
- Screw packet
- LCD
- Screw Drivers
- Battery Socket
- 7-Segment Display
- Relays
- 2 IR Sensors
- 1 Software CD

Prerequisite for Workshop

- Passion to learn new creative things.
- Knowledge of basic chips and micro controllers.
- Having basic knowledge of Computers.



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- Basics of programming.
 - PC/laptop must have at least 2GB RAM.
 - Windows is preferable
 - In case of MacBook or Linux, You need virtual window or .exe installers.
 - Laptop/PC must have Bluetooth and its drivers.

Who Could Attend?

- College students seeking future in Embedded System.
- Education Faculty & Staff in Embedded System.
- Electronics, Instrumentation & Communications Students.
- Students from any branch can attend the workshop.

Benefits of Workshop

- Detailed knowledge about 8051/AVR microcontrollers.
- Students can design any Application based on Embedded Systems.
- How to do debugging in hardware projects.
- Programming/ Analytical skills.

Course Material & CD

- Software tool kit CD having (Study E-Book, Videos, Softwares)
- 1 Take Away Robotic Kit will be provided to all the groups (each having 4students)