



Five-days Practical Intensive Workshop on ARM based Professional Firmware Development Techniques

July 27-31, 2015 Venue : IISc., Bangalore

Writing target specific firmware, with optimal use of memory and resources is need of the hour with emerging trend of smaller devices, wearables and Internet of Everything. ARM architecture based microcontrollers are ubiquitous and are used in mobile devices, portables, handhelds, gaming devices, wearables etc. New age ARM based firmware development not only needs knowledge of basic embedded programming and architecture but also real world interfacing with peripherals, power management techniques, optimal use of constrained memory resources etc. Aim is to give practical intensive exposure on customised ARM based platform, real world peripherals and professional Embedded C Programming. Each topic covered will have associated real world problems to solve on given hardware platform. Each day 90 minutes theory and 6.5 hours practicals. All programmes will be in 'c'.

Topics Covered:

- ❖ Introduction to Embedded C Programming and Keil IDE
- ❖ Datatypes usage and arithmetic, logical and bitwise operators significance and usage in professional firmware development
- ❖ Writing modular, manageable, readable and scalable code
- ❖ Memory usage and pointers, code optimisation techniques for speed and memory, functions and scope ARM architecture overview, register identification and usage
- ❖ Non destructive write access
- ❖ GPIO interface with real world peripherals

- ❖ Vectored and non-vectored IRQ Interrupt handling and ISRs
- ❖ Timers – capture, match and PWM function implementation
- ❖ Real world peripherals such as LEDs, UART, shift segment based LED display, switch input, matrix keypad, ADC, DAC, IR remote sensor, Joystick interface and Graphics LCD
- ❖ State machine based design and implementation
- ❖ Game design and development.

Pre-requisites: C-Programming basics and any microcontroller architecture

Who can attend:

- 1) Minimum qualification - B.E. (Electronics and allied branches),
- 2) Private and Government Employees
- 3) R&D Labs
- 4) Engineering faculty and students (VI sem and above)

Total candidates: 30

Fee: Rs.10000 per candidate

- (1) 10% discount for ISOI life members
- (2) 10% discount for group booking (more than 5 candidates from same organisation)

Fee includes course material, lunch, two times coffee/tea during lectures.

Payment should be made in favour of "Instrument Society of India", Bangalore.

Date : 27th to 31st July 2015

Venue : Dept. of Instrumentation

Indian Institute of Science, Bangalore - 560 012

Organised by
INSTRUMENT SOCIETY OF INDIA
Indian Institute of Science
Bangalore - 560 012
Ph : 22932273
E-mail : isoi.iisc@gmail.com

Course Coordinator :
Prof. S. RAMGOPAL
Department of Instrumentation
Indian Institute of Science
Bangalore-560 012
Ph: 22932274
E-mail: sharma.ramgopal@gmail.com
Mobile : 9341985310

All correspondence to be sent to:
Hon. General Secretary
Instrument Society of India
Indian Institute of Science
Bangalore - 560 012
E-mail : isoi.iisc@gmail.com