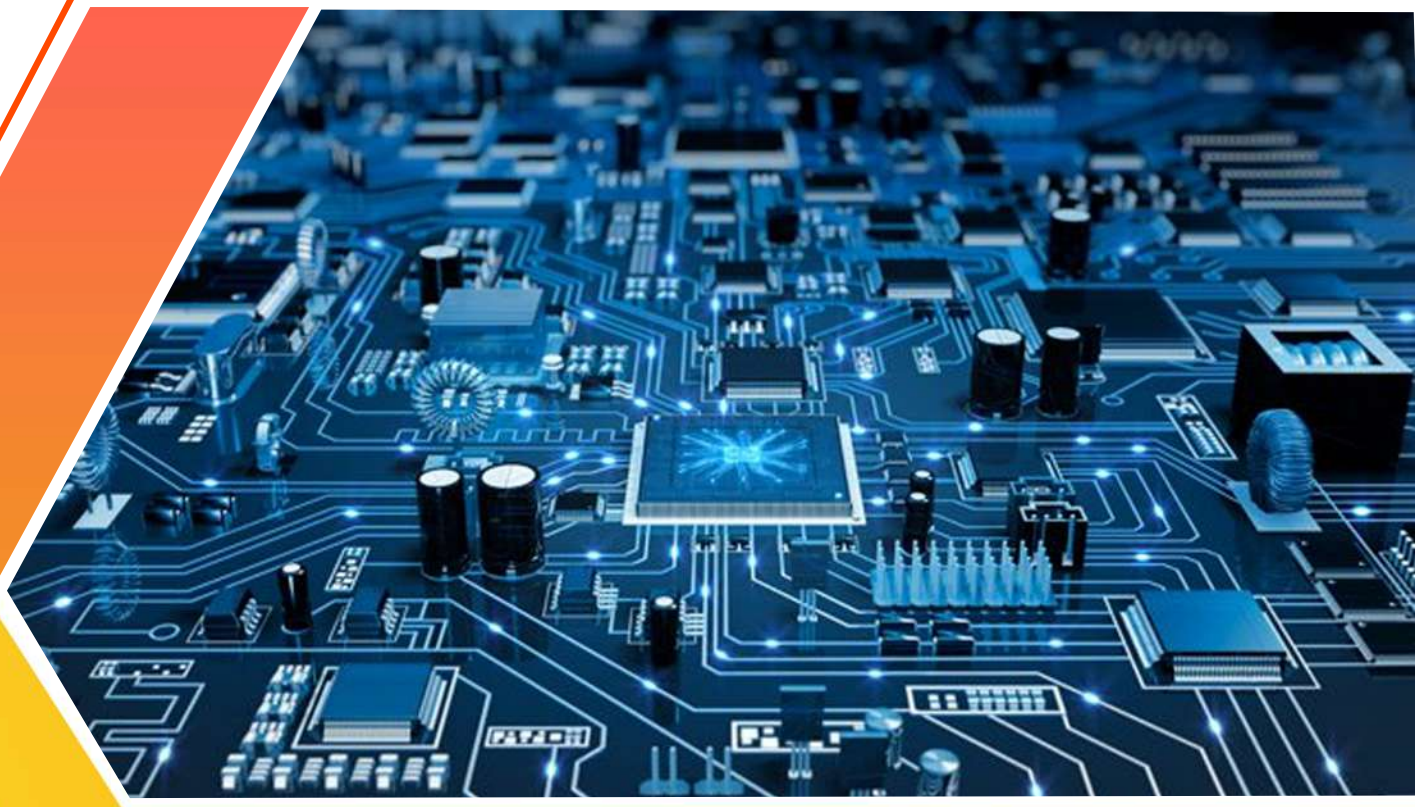
10+ YEARS OF EXCELLENCE

NANO SCIENTIFIC RESEARCH CENTRE PVT.LTD

AN ISO 9001:2008 CERTIFIED COMPANY



ADVANCED DIPLOMA IN EMBEDDED SYSTEMS

ADVANCED DIPLOMA IN EMBEDDED SYSTEMS

ADVANCED C

Introducion

- What is a program?, What is a programming language?, Evolution of C language, Features of C, Structure of a C program, Compilation and execution?

- Keywords in C, constants, variables, data types, Comments in C, Format strings, escape sequences, Basic I/O instructions

Operators

Classification of operators

- Arithmetic operators
- Relational operators
- Logical operators
- Assignment operators
- Increment/Decrement operators
- Bitwise operators
- Conditional operator
- Other operators

Flow control instructions

- Decision Control Instructions
  If, if-else, if-else-if, nested if-else
- Loop control instructions
  for loop, while loop, do while, use of break and continue
- Selection instructions
  switch

Functions
Arrays
Pointers
Strings
Structures and Unions
Storage classes and scoping
Files
Other Features
Preprocessor

OBJECT ORIENTED PROGRAMMING C++

1. Introduction to Object Oriented Programming
2. Procedure Oriented Vs Object Oriented
3. Difference between C and C++
4. C++ Output/ Input
5. Keywords in C++
6. New Style of header files Specification
7. Comments in C++
8. Variables in C++

Classes and Object

a. Structures in C
b. Structure in C++
c. Access Specifier
d. Classes
e. Objects in C++

- More on Classes and Objects
- Dynamic Memory Management
- Constructor and Destructor
- Inheritance
- Virtual Functions and Inheritance
- Operator Overloading
- Constructor- Destructor Invocation
- Templates
- Exception Handing
- Working with input and output and files
- Basic understanding of standard template library
- The string of C++
- Miscellaneous concept of C++

8051 MICRO CONTROLLER

Introduction to Embedded systems

- What is Embedded System?
- Types of Embedded System
- Classifications of Embedded Systems
- Characteristics of an Embedded System
- Applications of embedded system

8051 (8-bit) Microcontroller Architecture & Programming

- Block diagram and Pin description
- Ports
- Timers
- Serial communication
- Interrupts

Lab Sessions:

Session 1: Software Introduction (Keil Micro vision)
Session 2: Port programming
Session 3: Timer programming
Session 4: Serial Communication
Session 5: Interrupts
Session 6: Practice

89S52 interfacing with

Session 1: PCB Express Tool
Session 2: Seven segment display
Session 3: LED's
Session 4: LCD (16*2)
Session 5: Keypad (4*4)
Session 6: LCD &Keypad
Session 7: Keypad & Serial
Session 8: ADC (0809)
Session 9: DC Motor
Session 10: Stepper Motor
Session 11: Relay

89S52 Interfacing with Modules

Different Types of Modules, Features of Different Modules, and Uses of Different modules interface

Session 1.RFID
Session 2.GSM
Session 3.GPS
Session 4: Zigbee
Session 5: Finger print
Session 6: Voice Module

ARM7 MICRO CONTROLLER

ARM (32-bit) Processor Architecture & Programming

Introduction to ARM7

- Introduction to ARM family
- LPC2148 features
- Block diagram and pin description
- Register set
- Ports
- Timers
- Serial communication
- Interrupts

Lab Sessions

Session 1: Software Introduction (Keil Micro vision)
Session 2: Port programming
Session 3: Timer programming
Session 4: Serial Communication
Session 5: Interrupts
Session 6: Practice

LPC2148 interfacing with Modules

Session 1: Seven segment display
Session 2: LED's
Session 3: LCD (16*2)
Session 4: Keypad (4*4)
Session 5: LCD &Keypad
Session 6: Keypad& Serial
Session 7: ADC (0809)
Session 8: DC Motor
Session 9: Stepper Motor
Session10: Relay

LPC2148: Interfacing with Modules

Different Types of Modules, Features of Different Modules, and Uses of Different Modules interface

Session 1: RFID
Session 2: GSM
Session 3: GPS
Session 4: ZIGBEE
Session 5: Finger print
Session 6: Voice Module

Lab Sessions

Session 1: Software Introduction (Keil Micro vision)
Session 2: Port programming
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Session 4: Serial Communication
Session 5: Interrupts
Session 6: Practice

LINUX OPERATING SYSTEM

Operating Systems

Learning of operating system concepts will help you in understanding Desktop, Embedded & Real-time Operating Systems easily in less time.

- Introduction
- Processes
- Threads
- CPU Scheduling
- Process Synchronization
- Deadlocks

- Memory management
- Virtual Memory.
- File management & Disk management

Linux Basic Commands

Linux System programming

- Program, Process, Process IDs,
- Processes Priorities, Process States, CPU Scheduling
- Process Management API – fork, vfork, exec, wait and exit.
- Zombie and Orphan Process
- Pthread Programming and Thread Attributes
- Process Synchronization Techniques.
- Semaphores, Mutex, Spinlock, Memory Barriers
- Inter Process Communication Techniques
- Pipe, FIFO, Signals, Shared Memory
- Timer API – Jiffies, kernel Timers, wait queues, sleeps
- Interrupt and Exception API – Task lets, Work queues
- Kernel Debugging – kgdb, printk, jprobs, kprobs

Linux Device Drivers Programming

- Introduction to Device Drivers
- Device Number, Major and Minor Numbers
- Inbuilt and Modular Drivers
- User Space and Kernel Space Communication.
- dev directory and device files
- Character, Block and Network Driver.
- Advanced Driver API – fcntl,ioctl
- Unified Device Model (udev)
- Proc File System, sys file system.

- usbfs file system.
- Character Device Driver Programming
- Block Device Driver Programming
- Serial Port Driver Programming
- Parallel Port Driver Programming
- USB Device Driver Programming
- Network (Ethernet) Driver Programming
- Flash Drive Driver Programming

Linux Network Programming:

- Networking Architecture in Linux.
- TCP/IP defector model and layer in kernel.
- Client – Server Programming API.
- TCP, UDP, RAW, UNIX, FTP, TFTP
- VOIP Protocol Programming.
- Arithmetic Server, Concurrent Server.
- Broadcast Server Programming
- Wireless Architecture and Programming

Real -Time Operating System (RTLinux) Programming

- Real Time Concept, RTLinux Installation.
- Scheduling and Preemption Programming.
- GPOS and RTOS API Programming.
- FIFO and Round Robin Scheduling Programming
- Task Management, synchronization, Intertask Communication
- Timers, Interrupt API in RTOs.
- Signals, Events handling API in RTOs.
- Priority Inversion/Inheritance.

ARM 9/ARM11– Linux Programming

- ARM Architecture and ARM Processor family.
- ARM Microcontroller ICs in Market.
- ARM Development Boards and features.
- Friendly ARM Development Boards.
- Mini2440, Mini6410, Mini210 Development Boards.
- Raspberry Pi Development Board.
- Beagle Bone Development Board.
- Boot loader Configuration and Compilation for ARM
- Kernel Configuration and Compilation for ARM.
- File System Configuration and Compilation for ARM.
- Porting Linux / Android OS on Development Boards.
- DNW Tools, USB Push, Hyper Terminal Tool.

QT CREATOR-OPENCV-ARM9/ARM11

- Installing QT Framework.
- Installing Opencv and Pocket Sphinx.
- Application Development Using QT Creator.
- Sensors and modules Programming in QT Creator.
- Wireless Protocol Programming in QT Creator.
- Image and Video Processing Programming in Opencv.
- Audio Processing Programming in Pocket Sphinx.
- Interfacing Opencv with QT Creator.
- Interfacing Pocket Sphinx with QT Creator.
- Creating HTML and HTTP pages for ARM Board.
- Setting Cross Compiler in QT for ARM.
- Executing Cross Compiled project file on ARM Board.

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OUR RECRUTERS

Address:

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(AN ISO 9001:2008 CERTIFIED)

#601 & 604, Siri Estates,Opp to Karur Vysya Bank,
Opp Lane to R.S.Brothers,Ameerpet,Hyderabad.

www.nanocdac.com

+91 96406 48777- Aravind Reddy.K
+91 82975 78555- Mallikarjun.V