IOTIANHUB INTERNSHIP COURSE

EMBEDDED C INTERNSHIP COURSE—

IOTIANHUB offers 6-Week Course in Embedded Systems. This course is designed to offer application oriented training & real time exposure to students, there by provides for bridging the gap between industry's requirements and students' academic skill set. By pursuing the Institute's Program in Embedded Systems the students gain ready acceptance in the market.

IOTIANHUB Course in Embedded systems serves the interests of practicing embedded software engineers as well as those engineers planning to enter the embedded field. The course content of this Program is approved by the industry and it,

- Presents practical lessons and techniques for use in Designing, Implementing, Integrating and Testing software for Modern Embedded Systems
- Describes what an embedded system is, what makes them different, and what embedded systems designers need to know to develop embedded systems
- Provides the student with a life cycle view for designing multi-objective, multi-discipline embedded systems
- Imparts a solid understanding of the role of embedded systems and embedded systems design and development in modern day's technology-enabled society

What the students gain through the course?

So, the students completing the Advanced Embedded Course will be equipped with the needful technical skills concerning

- Evaluating
- Developing
- Implementing
- Integrating

Embedded systems, and will understand the role of embedded systems in the context of complex engineering systems.

Our **Embedded course** aims at imparting technical skills to the students right from the basics to advanced level, such that, by the end of the Program the student is developed as the finished product, ready to join the industry.

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COURSE IN EMBEDDED C

Week-1

Practical C

- Why C in Embedded
- ANSI Standard
- Fundamentals of C
- Datatypes and Constants
- Simple & Formatted I/O
- Memory Usage
- Operators & Expressions
- Flow Control
- Loops

Functions

- Role of Functions
- Pass by value / reference
- Returning values from Functions
- Recursive Functions
- Call Back Functions
- Implications on Stack
- Library Vs User defined function
- Passing variable number of arguments

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Arrays

- Defining, initializing and using arrays
- Multi Dimensional Arrays
- Arrays of Characters and Strings
- Arrays and Pointers
- Passing arrays to functions
- String handling with and without library functions

Storage Classes

- Scope and Life
- Automatic, Static, External, Register
- Memory(CPU / RAM)

Week-3

Structures & Unions

- What structures are for
- Declaration, initialization
- Accessing like objects
- Nested Structures
- Array of Structures
- Passing structures through functions
- Allocation of memory and holes
- Structure Comparison
- Structure bit operation
- Typedef for portability
- Unions

- Overlapping members

Enumerated data types

- Enum, Indexing, enum Vs #define

Week-4

Bit Operations

- AND (&), OR (|), XOR (^)
- Compliment (~)
- Left-Shift (<<), Right Shift (>>)
- Masking, Setting, Clearing and Testing of Bit / Bits

Pointers

- The purpose of pointers
- Defining pointers
- The & and * operators
- Pointer Assignment
- Pointer Arithmetic
- Multiple indirections
- Advanced pointer types

- Generic and Null Pointer
- Function Pointers
- Pointers to Arrays and Strings
- Array of Pointers
- Pointers to Structure and Union
- Pointers to Dynamic memory
- Far, Near and Huge Pointers
- Pointer Type Casting

Week-5

Dynamic Memory Allocation

- Malloc(), Calloc(), Realloc(), Free()
- Farmalloc(), Farcalloc()

File Handling Concepts

- Concept of a FILE data type
- Inode, FILE structure
- File pointer
- Character handling routines
- Formatted Data Routines
- Raw data Routines
- Random Access to FILE