

Embedded C Workshop

INTRODUCTION

The participants will be able to make decision on using C Language effectively for Embedded Application Development. Also, they will be able to learn the tool chain configuration aspects that would help them in their future projects.

COURSE CONTENTS

Introduction to Embedded System and language

Generic embedded features

- Language used under Application
- Example Applications
- The Development Environment
- Application development strategies
- Wrapper routines and portability
 - a.) Desktop Application
 - b.) Embedded Application different than Desktop?

A brief on C past, present, and future

Features Highlighted

- Advantages under C
- Problems under C
- Yet Why C?

C basic program structure and tools

- A simple C program dissection
- 155 Discuss the image lifecycle

Hands on GNU tool chain for C build process

- Tools to run on RH Linux 9.0
- Tracing the image

Making the most out of C [coding w.r.t processor and compiler]

Using Bit wise Expressions, Controls, loops effectively

- A close look at const and volatile
- Cast and weakly typed language.

Portability and problems Endean's

- BI- Indian, big Indian, small Indian
- Arrays and effective usage

Function, Structures and Union

- Packed vs. Unpacked
- Bit fields

Gotcha under C: Writing portable codes that are not compiler dependent

- Unspecified behavior
- Undefined behavior

Pointers and effective use w.r.t Architecture

- Memory corruption
- Memory leaks

Do's and don't under C's Memory Handling

Hands on to GNU - X tool-chain

Using tools to build image

- Using Makefile for multiple/separately translated programs
- Creating static library [Embedded Application's backbone]
- Debugging a traditional code with character pointer

Hands on building PowerPC toolchain image

- No board for downloading
- Image and placement using ldscrip

Hands on Configuring the DJGPP toolchain



- Installing the software
- Steps in building the Standalone C code
- Running C on X86 target without os
- Using the toolchain for target image with RTOS (uC-II OS)
- Creating an binary image file and running it stand alone

Understanding the X86 hardware support needed for running C

- Ten major steps involved in running a C port of DJGPP

OBJECTIVES

Participants will learn how to use C effectively on embedded applications

WHO SHOULD ATTEND

Traditional Programmers who, have been working for desktop applications, wants to contribute professionally themselves in “Embedded C” based Applications

DURATION

3 days