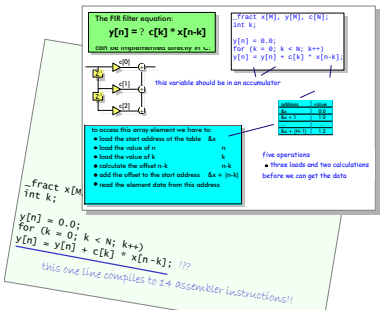
Programming the DSP563xx core

DSP563xx foundation

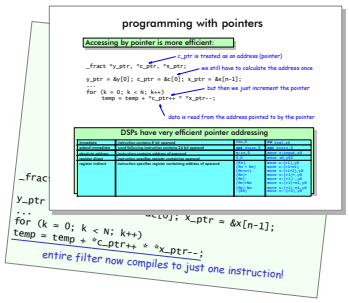
Benefits

Get started quicker using Motorola DSP563xx-based processors, and produce more efficient programs, thanks to the insights and practical tips offered by this seminar.

The DSP563xx core is an efficient and powerful DSP, which can be programmed directly in C language with the Tasking C tools. Both C tools and DSP core have special features which this seminar explains and clarifies so that the intended efficiency can be achieved in practice.



From unworkable...



...to optimal

Contents

This seminar describes the Motorola DSP563xx core and explains how to program it efficiently in both assembler and C languages. It includes clarification of the special features of the Tasking C compiler and how these can be used to write optimally efficient code in C language.

DSP requirements overview

We put things in context by explaining how the application requirements of DSP drive the architecture and special features of the DSP563xx core.

- DSP arithmetic requirements
- Interfacing to the real world

DSP563xx core and family

In this section we outline the major functional units and explain the differences between DSP563xx family members.

- The DSP5630x core
- The DSP5630x family

Data arithmetic

The Data Arithmetic Unit (DAU) is a key component of the DSP563xx and has several unique features. We explain why these features are provided and how to use them. We also consider the implications of the 24 bit fixed point data format. This section also includes a detailed consideration of the role and purpose of the Multiply ACcumulate (MAC) unit and how to program its use.

- The data ALU
- Fixed point fractional arithmetic
- Data ALU registers
- The MAC unit
- MAC programming
- ALU accumulators
- ADD and SUBtract instructions
- Arithmetic shifts
- Other arithmetic operations
- Data ALU shifters

Address generation

We clarify the modes and programming of address generation and show how to program so that address generation is optimal.

- The address generation unit
- Address calculation
- Addressing modes
- Address updates
- Modulo addressing

Memory

In this section we explain the memory architecture and show how to place data so that memory accesses are as efficient as possible.

- Memory architecture
- Triple memories
- Placing data in memory

Program control

We explain and illustrate the program control and special 'zero overhead' loop instructions.

- Program control unit
- Program control registers
- The System Stack
- Program control instructions
- Loop instructions

Logic and data control

- Logical instructions
- Bit field instructions
- Data move instructions

Filter example

A practical example shows how to develop an optimal filter program in both assembler and C languages.

- Programming with pointers
- Memory placement
- Hardware do loop
- Parallel MAC
- Single instruction filter

Time and arrangements

This 1-day seminar is presented 'on-site' by arrangement - the material can be adapted if you have specific needs (at extra cost). We also offer DSP seminars (such as our 'Introduction to DSP' seminar listed below), and seminars on other processors.

- on-site by arrangement
- contact: Chris Bore
- email: chris@bores.com

DSP563xx core seminar

- 1-day seminar presentation
- £330 (€550, $660) per person
- arrangements as above

Introduction to DSP seminar

- 1-day seminar presentation
- £330 (€550, $660) per person
- arrangements as above

To book or find out more

Call us by 'phone or send email to book or to ask questions.

- contact: Chris Bore
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DSP foundation seminars

The 'DSP foundation' is a 3-day series of seminars designed to give a thorough understanding of DSP including FIR and IIR filtering. The series can be followed as a 3-day session or as separate 1-day sessions, by arrangement.

- Introduction to DSP
- FIR digital filters
- IIR digital filters

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