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## **End Matter**

JMASM Editors

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## **Pro Fortran 2013**

### Faster Code - Easier to Use - More Complete - Better Support

Free World Class Technical Assistance Includes LIVE Tech Support via Phone!

#### Absoft Pro Fortran - A Complete Fortran Solution

Fortran Compiler Suite

Fortran/C **Tools** 

IDE/GUI SMP Vector Graphical

Analyzer

HPC Numerical Libraries

Graphics 2D/3D **HDF** 

**GPU** nVidia **CUDA** 

Libraries

**C/C++** Windows Mac Linux

F2008 extensions, AVX, OpenMP, auto parallel and vectorization features generate industry leading performance on both AMD and Intel based systems. The Absoft GUI/IDE for Fortran/C includes Fx3 graphical debugger, SMP/ Vector tools, AWE, HPC numerical libraries plus graphics which simplify application development and data display.

Absoft Pro Fortran includes cpu specific optimizers for both AMD & Intel processors The Polyhedron Fortran Benchmark Suite results below demonstrate Absoft Pro Fortran's auto-parallel code runs 18% FASTER than Intel's auto-parallel code on AMD.

#### Polyhedron Fortran Benchmark Suite\* - Shorter is Faster

Absoft Pro Fortran Auto-Parallel runs 18% FASTER than Intel on AMD

With Auto-Parallelization Absoft 2013

34.64 sec

**Intel 2013** 

With Auto-Parallelization

42.22 sec

Tests run by Absoft on AMD/Piledriver/Linux using Polyhedron recommended options - See Reverse for details.

#### Absoft IDE/GUI - Build Your Fortran/C Applications Faster



Intuitive, graphical environment means faster build, optimize, analyze, and debug cycles for threaded applications. OpenMP and MPI control features included. Same look, feel and functionality on Windows, Mac OS and Linux.

### Graphical SMP & Vector Analyzer - Visual Tuning in Real Time



Performance tuning using visual feedback and context specific advice on loop parallelization and vector optimizations. Visual feedback at compile time, not runtime, speeds development.

#### Absoft HPC Scientific Enginering Numerical Library



Speed application development using pre-built, highly optimized, well tested industry standard core routines, threaded and vectorized math functions and FFTs designed for workstation and cluster environments. Royalty free.

#### Absoft Visualization Libraries - 2D/3D and HDF4 & HDF5



Easily display your scientific data using a wide variety of 2D/3D full-color display formats and extended character sets. HDF, developed by NCSA for very large data sets includes Fortran and C calling interfaces and is a standard used world-wide.

# Pro Fortran 2013 Software Development Tools

Free 3rd Party Plug-Ins

#### What do Absoft customers say about Pro Fortran?

I used Pro Fortran to write, debug, test and apply about 45,000 lines of code from the MS environment and it is, in a word: terrific. It is fast, has good diagnostics, builds great executable code and the IDE has a load of extra features that are invaluable. Beyond that, your support has been timely, helpful and detailed.

#### D.J. Chadwick, President, SAFE, Inc.

I prefer the Absoft interface because it is simple and easy to use. MS Visual Studio is HUGE and contains so many things that I don't need.

**Troy Feese** EDI

### Classical FORTRAN

# Programming for Engineering and Scientific Applications SECOND EDITION

#### by Michael Kupferschmid

CRC Press, 2009, ISBN 978-1-4200-5907-6, 562+xvi pages, hard covers, acid-free paper www.amazon.com/Classical-Fortran-Programming-Engineering-Applications/dp/1420059076

This book is a college text, self-study guide, and reference about computer programming in Classical Fortran, a simple subset language carefully chosen for its utility in numerical computing. In Chapters 1–6 (87 pages) the reader gets a working introduction; Chapters 7–10 (82 pages) cover the remaining topics that most **statisticians** need for casual programming. Succeeding chapters provide in-depth treatment of traditional Fortran memory management techniques; program design, documentation, and coding style; archaic, unusual, and dangerous usages (including the parts of Fortran-77 left out of the subset); program development in the Unix environment; performance measurement and optimization; vector processing; parallel computation with the Message Passing Interface library; and selected features of Fortran-90 and High Performance Fortran. The book concludes with a collection of handy utility routines, an extensive bibliography, and a 36-page concept-driven index. The emphasis throughout is on writing real programs for actual applications, with special attention to logical correctness, numerical accuracy, and run-time performance.

#### OTHER FEATURES □ a conversational, classroom-proven style that is easy to read and understand $\square$ numerous case studies and examples □ unusually detailed coverage of floating-point arithmetic ☐ illustration of several debugging techniques □ description of how to build and use Unix code libraries □ illustration of how to write custom Unix man pages □ software and techniques for the precise measurement of CPU time $\square$ expert advice on dealing with troublesome legacy codes □ 577 widely-varied end-of-chapter Exercises □ Solutions Manual with extra Exercises available to instructors TARGET AUDIENCE □ statisticians, mathematicians, and economists who also write programs ☐ graduate students whose research involves scientific programming □ undergraduates studying or using numerical methods □ advanced high-school students who know some science and mathematics practicing engineers and scientists who need to do numerical calculations programmers who need to maintain or translate legacy FORTRAN codes



# The Rhyme of An Ancient Programmer

by

Mike Kupferschmid

Data, data everywhere, but not a thought to think; truth is in the numbers, hidden neat.

Some model might enlighten us if we could make the link; statistics to the rescue would be sweet.

A simple calculation, that is all we need to do, arithmetic enough to lay us low.

Too much by far for this poor head, but if not me then who? Computing is the only way I know.

Fancy programs, slow and slick, priced on every rung; we might just even make our problem fit.

Or code ourselves from scratch in some arcane but stylish tongue. Computer science needed? Quite a bit!

But some of us are simple souls and only want to see how we can write a useful program quick.

Then we can complete our work and find that secret key. Classic FORTRAN might just do the trick.

#### **Instructions For Authors**

Follow these guidelines when submitting a manuscript:

- 1. *JMASM* uses a modified American Psychological Association style guideline.
- 2. Submissions are accepted via e-mail only. Send them to the Editorial Assistant at ea@jmasm.com. Provide name, affiliation, address, e-mail address, and 30 word biographical statements for all authors in the body of the email message.
- 3. There should be no material identifying authorship except on the title page. A statement should be included in the body of the e-mail that, where applicable, indicating proper human subjects protocols were followed, including informed consent. A statement should be included in the body of the e-mail indicating the manuscript is not under consideration at another journal.
- 4. Provide the manuscript as an external e-mail attachment in MS Word for the PC format only. (Wordperfect and .rtf formats may be acceptable please inquire.) Please note that Tex (in its various versions), Exp, and Adobe .pdf formats are designed to produce the final presentation of text. They are not amenable to the editing process, and are **NOT** acceptable for manuscript submission.
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- 11. Suggestions for style: Instead of "I drew a sample of 40" write "A sample of 40 was selected". Use "although" instead of "while", unless the meaning is "at the same time". Use "because" instead of "since", unless the meaning is "after". Instead of "Smith (1990) notes" write "Smith (1990) noted". Do not strike spacebar twice after a period.

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