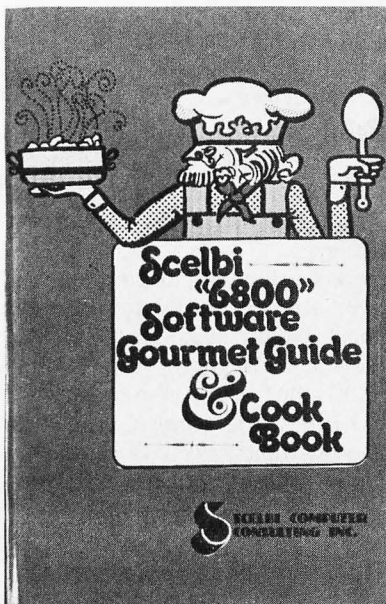


Book Reviews

Scelbi's "6800" Software Gourmet Guide & Cook Book, by Robert Findley, Scelbi Computer Consulting Inc, Milford CT, 1976, 5½ by 8½, 226 pages. Softbound, \$9.95 postpaid.

I suppose everyone who writes assembly language programs which eventually work becomes convinced he or she is the World's Greatest Programmer. At least I do. Luckily, there are books like Scelbi's "6800" Software Gourmet Guide & Cook Book to remind us how big the world really is. Author Robert Findley and associates at Scelbi have collected here a number of programming tricks which will interest almost any 6800 user.

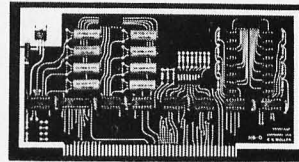
Following a description of the 6800 instruction set and some general techniques, the author discusses conversion, floating point and decimal arithmetic, input and output operations, search and sort routines. Want an edit program? Many of the pieces are there: memory clearing, transfer of a section of memory, ideas for search routines. Need to process interrupts? The IO chapter has a discussion of interrupt processing which will be useful to anyone using the Motorola MIBUG operating system read only memory. A chapter on conversion routines contains software for ASCII to



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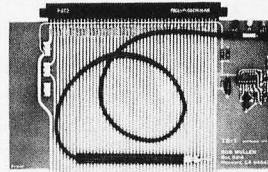
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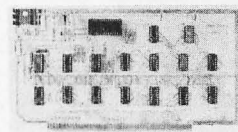
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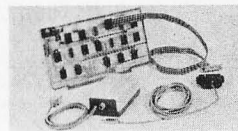
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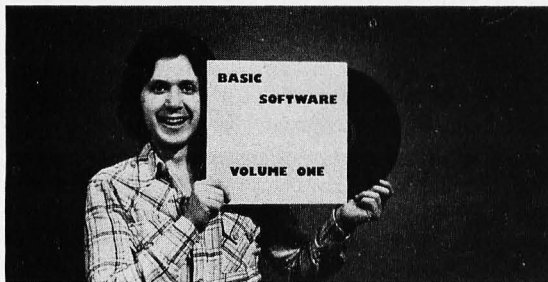
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Baudot, as well as the more usual BCD to and from binary.

For me, the best was chapter 5, "Floating Point Routines." Although (as the author notes) there are places where the code could be shortened, it is not that bad: a complete add, subtract, multiply and divide package (with conversions to ASCII, and from ASCII to floating point) in about 1.5 K bytes of relocatable code. The entire package is assembled (the only assembly in the book) with a hexadecimal listing in an appendix.

One reason the code is so short is the extensive use made of the index register. The stack, on the other hand, is not used at all (except for the automatic usage implied by each subroutine linkage). Since 6800 indexed addressing is relatively slow, do not expect the floating point package to be fast. Yet, it's not bad: Floating point multiplication, for example, takes a little more than 800 cycles, not quite 2 ms on a SWTPC 6800 system.

One curious feature of the 4 byte floating point word format used here is that the words are stored upside down, that is, if the least significant byte of the mantissa is stored at word N, then the rest is stored at N+1 and N+2 (with the sign being the most significant bit of byte N+2). The two's complement power of two exponent is stored at N+3. This is the wrong order for the 6800 for the following reason: One (tricky) way to increment a 2 byte word is to transfer it to the index register and increment that. The author knows this trick (as shown on pages 3 to 5), but apparently does not know that the index register load instruction LDX transfers the 16 bit contents at memory location M so that the most significant half of the index register contains the contents of M, and the least significant half contains what's in M+1. Thus, the least significant byte needs to have a greater address. The division program on page 5 to 19, for instance, might be shortened and speeded up by using this trick; to do so, however, would require storing the mantissa bytes in the opposite order, and rewriting the program.

The book will be of most use to programmers who employ an assembler program, since most of the ideas are presented in symbolic source language form. (The major exception is the floating point package.) The book is well written and, considering the diversity of topics, well organized. As a source of ideas, it is inexpensive at \$10.■

Jack Bryant
Mathematics Dept
Texas A & M University
College Station TX 77843

Note. . . . Scelbi also publishes an "8080"
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Volume 1, Number 7

A REFERENCE JOURNAL FOR USERS OF HOME COMPUTERS

<p><i>Personal Computing '76</i> - Looks like it's going to be a great show! Jim C. Warren, Jr. details of seminars, exhibits, door prizes, etc. planned for the Aug. 28-29 Atlantic City hobby exposition</p> <p>1977 NCC Includes Significant Personal Computing Events</p> <p>The Time for Floppy's is Just About Now! by the Editor details of a number of floppy disc subsystems, including one for \$995 (in 10-quantity)</p> <p>Design Contest Offers Head-Per-Track Hard Discs as Prizes E. Mike Engel</p> <p>Proposed Hobbyist Standard* Bus Structure D. Denny & J. Broom proposal for allocation of the 100 leads on the standard bus (*previously called the Altair/MSAI bus)</p> <p>First Runners of a West Coast Home Computing Faire</p> <p>The PCM-12: A PDP-8 Look-Alike Well Worth Looking At</p> <p>Z-80 - Coming on Strong</p> <p>Three Bits Under \$100 - One includes 2K bytes. Another runs at 4 megahertz</p> <p>Remember Those Secret Codes You Played With as a Kid? Well . . . Mal Stiefel details of the National Bureau of Standards encrypting/decrypting computer algorithms</p> <p>8080 TICS and a Floating Point Specification William E. Severance, Jr.</p> <p>6502 SOFTWARE FLOPPING POINT ROUTINES FOR THE 6502 R. Raskin & S. Worniak</p> <p>Monitor for the 6502 Jack Bradshaw</p> <p>Lunar Lander for the 6502 (Assembler-level Game) Mark Gartz</p> <p>6800 "APPLICATIONS SOFTWARE" - Games</p> <p>Games in Pittman's 6800 Tiny BASIC Carl Kelb</p> <p>Low-Cost 6800 Systems Software & Games Technical Systems Consultants</p> <p>Shooting Stars for Userway's 6800 Micro-BASIC Mark J. Borgerson</p> <p>BUGS & FIXES</p> <p>MINOL Tiny Trek - More Details & A Correction Erik Mueller</p> <p>MINOL Errata & Praise Erik T. Mueller, Phillip L. Handford</p> <p>COMPUTER MUSIC BIBLIOGRAPHY John Soell, PCC Research Engineer</p> <p>SMART Will Hurt Leroy Finkel</p> <p>Lou Field's Response to the Editor's Note to the SCCS Lou Fields</p> <p>AND -</p> <p>42 other hardware & software tidbits, consumer notes, suggestions, questions, etc.</p>	<p>3</p> <p>4</p> <p>5</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>12</p> <p>20</p> <p>21</p> <p>26</p> <p>28</p> <p>29</p> <p>31</p> <p>32</p> <p>33</p> <p>36</p> <p>38</p>
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Dr Dobb's Journal of Computer Calisthenics and Orthodontia. *Published by People's Computer Company, Box 310, Menlo Park CA 94025. Single issue, \$1.50; one year (10 issues), \$10.*

Published by the people who brought you the Computer Faire, this toothsome periodical serves up an amalgam of filling software listings and highly spiced commentary to its monthly readership. *Dr Dobb's Journal* (Dr Dobb is disguised as editor Jim Warren) serves as a clearinghouse for new software information and the publication of such royalty-free programs as BASIC interpreters for use by readers. Because it is a nonprofit journal, *DDJ* accepts no advertising but does print new product information as a service to readers. Editor Warren has attempted to bridge the gap between computer professionals and amateurs, and does not eschew the occasional biting remark in doing so. In Robert Benchley's immortal phrase, the tooth, the whole tooth and nothing but the tooth about *Dr Dobb's Journal of Computer Calisthenics and Orthodontia* is that it can help make your computer an indentured servant. That about caps off this review . . . CM

Fundamentals and Applications of Digital Logic Circuits by Sol Libes, Hayden Book Co, Rochelle Park NJ, 1975, 184 pages. Paperback, \$6.95.

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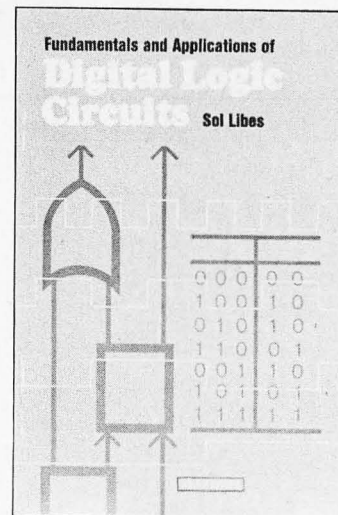
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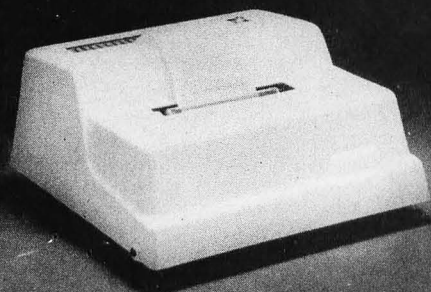
library and say, "This book gave me my money's worth," I would have to say that the book would be *Fundamentals and Applications of Digital Logic Circuits* by Sol Libes. Anyone who is just starting to learn about digital electronics or computers should make it a point to study this book. Mr Libes has taken a multitude of related subjects and blended them into a text that is easy to understand and just as easy to follow. In addition to the text, the book provides review questions at the end of each chapter and problems related to the text for the reader to solve.

Rather than jumping right into digital logic, the author starts out with the principles of semiconductors to show, in detail, how they function. Then, after this short course on semiconductors in the first chapter, the second chapter familiarizes the reader with binary numbers and coding systems. This particular chapter also shows how to convert numbers from one system to another and touches on the Gray code. These first two chapters establish the foundation for a great deal of the information the reader will receive from the remainder of the book.

During the next four chapters the reader learns the basic fundamentals of logic gates, flip flops, counters and registers, and arithmetic logic circuits. Throughout the book each fundamental is illustrated and discussed in great detail. Through these same well done illustrations the reader next learns about various pulse sources and clock systems used in computers. Further, the author goes on to explain such devices as read only memories, as well as input and output equipment for computers.

Continuing with this stage-by-stage progression, the author then enlightens readers about the circuitry and theory of digital to

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analog conversion. This tenth chapter also deals with multiplexing and digitally controlled analog devices. Finally, in the last two chapters of his book, Mr Libes shows the reader more of the applications aspect of digital logic circuits. These two chapters explain the different types of circuitry used in digital voltmeters, multimeters, calculators and computers (the latter being a Digital Equipment PDP-8/E).

Throughout the book the reader is taken in step-by-step fashion from the basics of transistor workings to circuit applications in working digital machines. As a result, this book is one from which the beginner will be able to learn the fundamentals and build on them afterwards. ■

Michael P Reardon
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Small computers, from program-mable handhelds through mini and micro networks, are the subject of technical papers sought for this year's ACM PACIFIC 77 conference of the Association for Computing's Pacific Region chapters. The San Francisco Bay Area meeting will be held at San Jose's LeBaron Hotel July 28 to 29 1977.

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Peter Szego, Ampex Corporation, is General Chairman of this year's regional conference, which is jointly co-sponsored by the Association's Pacific Region, Peninsula and Golden Gate Chapters. Informal symposia, workshops and invited papers are expected to be scheduled for the meeting in addition to the technical paper sessions. Special conference feature will be an evening "hobby computer" session, to be arranged by Jim Warren, editor of the home computer users magazine, *Dr Dobbs' Journal of Computer Calisthenics & Orthodontia*. ■

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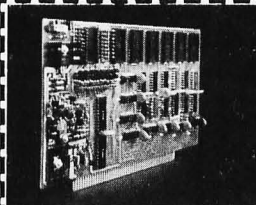
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