

Making the Computer Personal: Reconstructing Domesticity for the Information Age

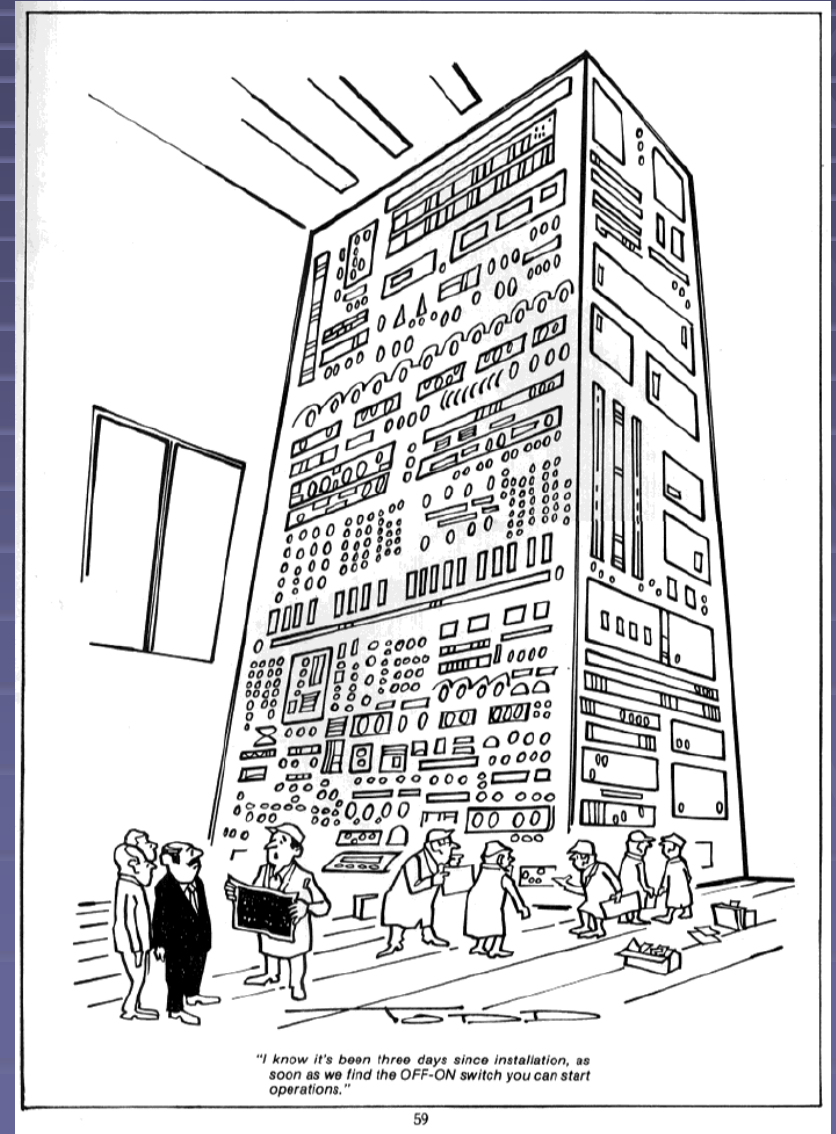


Thomas Haigh

University of Wisconsin-Milwaukee
SHOT, Amsterdam, October 2004

Theme of Paper

- How did people decide they needed a computer in their home?
 - Cultural work of reconstruction
- Looked at another way
 - What kind of a home would need a computer?



1: Getting Personal

Home Computer Concept

- Predates microprocessor
 - Originates as “home terminal” concept
 - Solution looking for a problem
- “If she can only cook as well as Honeywell can compute...”
 - 1969 minicomputer in drag
 - sold in Neiman Marcus catalog
 - around \$10,000



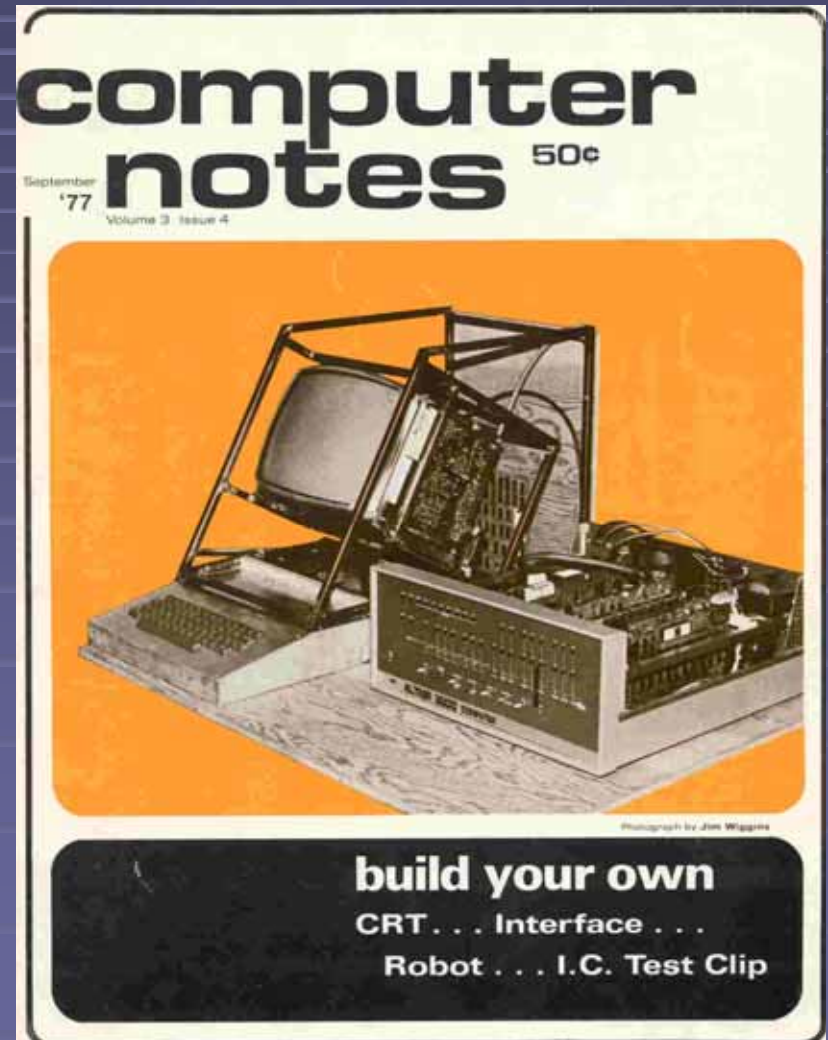
If she can only cook as well as Honeywell can compute.

Her routines are supreme. Her meal planning a challenge? She's what the Honeywell people had in mind when they devised our Kitchen Computer. She'll learn to program it with a cross-reference to her favorite recipes by N-M's star Helen Corbitt. Then by simply pushing a few buttons obtain a complete menu organized around the entrée. And if she pales at reckoning her lunch tab, she can program it to balance the family checkbook. **\$4A**. 10,800.00 complete with two-week programming course. **\$4B** Fed with Corbitt data: the original Helen Corbitt cookbook with over 1,000 recipes 5.00 (1.75) **\$4C** Her Potluck, 375 of our famed Zodiac restaurant's best kept secret recipes 3.95 (.75) **\$4D** Her Island apron, one-size, ours alone by Garden House in multi-paste provincial cotton 28.00 (.90) Trophy Reson



The First Microcomputers

- MITS Altair
 - Launched 1975
 - Supplied in kit form
- Limited use
 - But expandable...

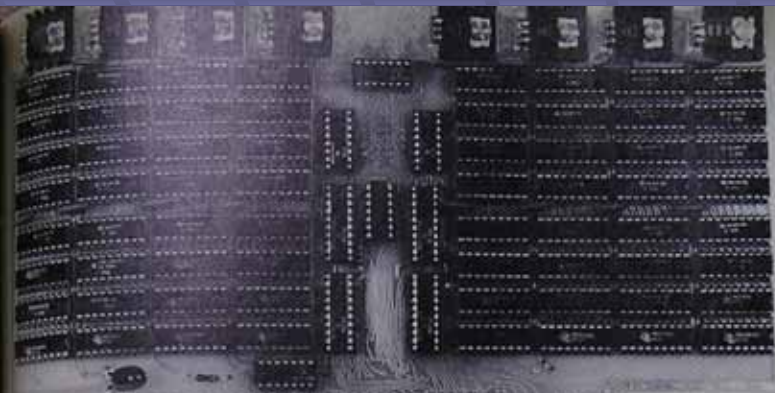


Initial Constituency

- People who
 - Knew how to solder
 - Understood electronics
 - Wanted to play with a computer
- Served by Byte magazine
 - 88,000 circulation by spring 1977



Selling to Enthusiasts



Trace Electronics 32K/16K STATIC RAM

What could you do with this board in your system?

Trace Electronics brings you a highly flexible, lower powered, fully STATIC 32k or 16k memory board for your S-100 Bus computer (Altair, Imsat, Sol, Poly, Xitan, ect.) The model 3200 has a capacity of 32768 Bytes with fully buffered address and data lines. All buffered inputs are schmitt triggered for excellent noise immunity and require only minimal bus loading (one low power load). The buffered outputs are rated for driving more than 130 low power loads. Since the board is fully static, there is no refresh or clocking required and is therefore compatible with DMA and other devices.

Low power and high reliability are key features of the design. The TI 4044's (or equivalent) provide storage capacity at up to 65% less power than low power 21L02 chips. The power required is 1.7A at 8V, for model 1600 and 3.3A at 8V, for model 3200. A special thermal design which places a separate regulator on each 4k x 8 section of memory affords a very efficient system of heat dissipation.

The most outstanding feature of the board is its versatile addressing. Each 4k x 8 section is separately assignable to any 4k slot in the computer's address space. This feature allows the user to make use of the growing amount of software that requires this and avoids the problems associated with only being able to assign the board to a continuous 32k block. In addition, the Megastend™ feature allows up to one megabyte to be addressed providing there is a 4 bit output port in the system. This allows up to 32 model 3200 boards per system, as long as the power requirements are met.

The model 1600 is the same as the 3200 except that it only contains 16k of memory chips. The 1600 may be converted to a 32k board by merely installing the extra 16k of memory chips. The sockets for the additional 16k are installed as a standard feature of the model 1600.

Both models are silk-screened and solder masked on FR4 epoxy board with a gold plated bus connector. They are fully socketed, assembled, tested and burned in.

To order, simply phone Trace Electronics at 215-779-3677 or mail the attached coupon. So as to provide quick delivery all orders will be shipped by the fastest practical means (e.g. Express Mail, Air Mail, UPS Blue Label, ect.). Model 3200 is priced at \$999, and Model 1600 is \$599. Express shipping is pre-paid. Call or write today.

Trace Electronics, Inc.
215-779-3677
P.O. Box 3247 Hampden Station
Reading, Pennsylvania 19604

I would like to order the following:

Model 3200 32k Static Memory, Assembled and tested \$999.

Model 1600 16k of memory on the above 32k board. Assembled with sockets for 32k and tested with 16k. \$599.

Model 1607 16k expansion kit for above. \$499

My address is _____
Name _____
Address _____
City _____ State _____ Zip _____
Phone _____

Enclosed is a check or money order for \$_____. Please charge the item(s) if marked please use my credit card.

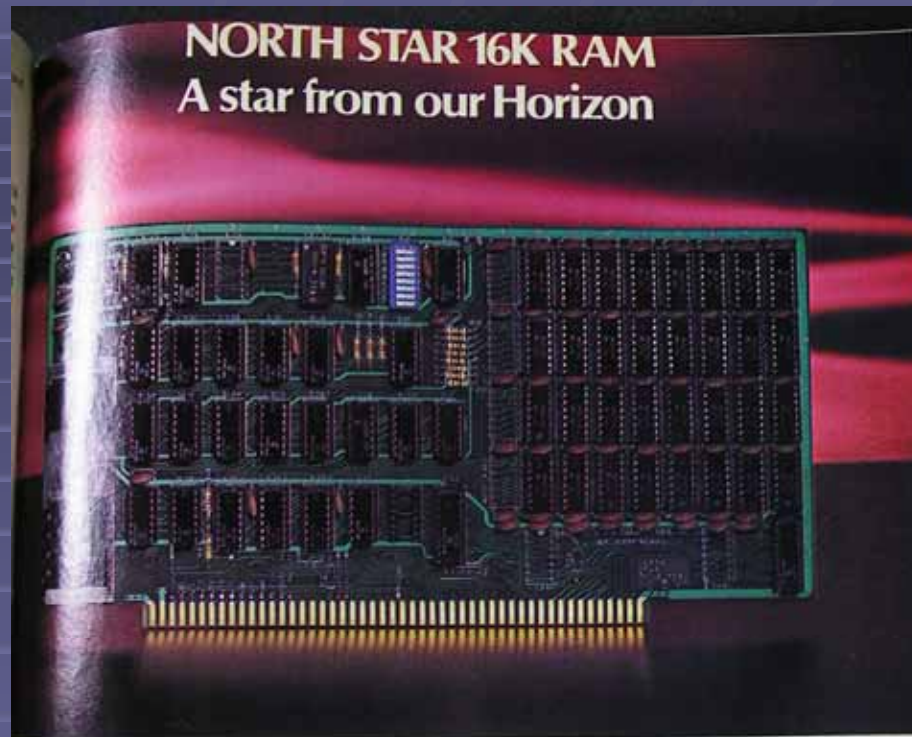
Visa Card No. _____ Exp. date _____
 MasterCard I'll bill you name _____
Signature _____

Note: Address for credit card orders must be the same as that on file with the credit card company.

Mail this coupon to: Trace Electronics
P.O. Box 3247 Hampden Station
Reading, Pennsylvania 19604



BYTE April 1978 69



NORTH STAR 16K RAM A star from our Horizon

The North Star 16K RAM board is a star performer in our HORIZON computer. Just as important, it is the ideal memory for most other S-100 bus systems. No other RAM board can surpass the speed, reliability, and quality features of the North Star 16K RAM at any price.

SPEED — The North Star 16K RAM is the fastest S-100 bus memory board available. No wait states are required, even with a Z80 at 4MHz. And, of course, this outstanding 16K RAM will operate with both 8080 and Z80 processors at 2MHz. Industry standard 200ns dynamic RAM chips are used. Invisible on-board refresh circuitry allows the processor to run at full speed.

RELIABILITY — The North Star 16K RAM is designed to match the same high standards as our MICRO DISK SYSTEM and HORIZON computer. For example, all address and data signals are fully buffered. A parity check option is available with the 16K RAM for applications requiring immediate hardware error detection. If a memory

error occurs, a status flip/flop is set and an interrupt can inform the processor. Or, if preferred, an error status light will go on.

FEATURES — The North Star 16K RAM offers many desirable features. Addressability is switch-selectable to start at any 8K boundary. The board can perform bank switching for special software applications, such as time-sharing. Also, bank switching can be used to expand the amount of RAM beyond 64K bytes. Power consumption is minimal — the maximum power requirements are: .6A @ 8V; .4A @ +16V, and .1A @ -16V.

PRICES — \$399 kit, \$459 assembled, tested and burned-in. Parity option: \$39 Kit, \$59 assembled, tested and burned-in.

Write for free color catalog or visit your local computer store.

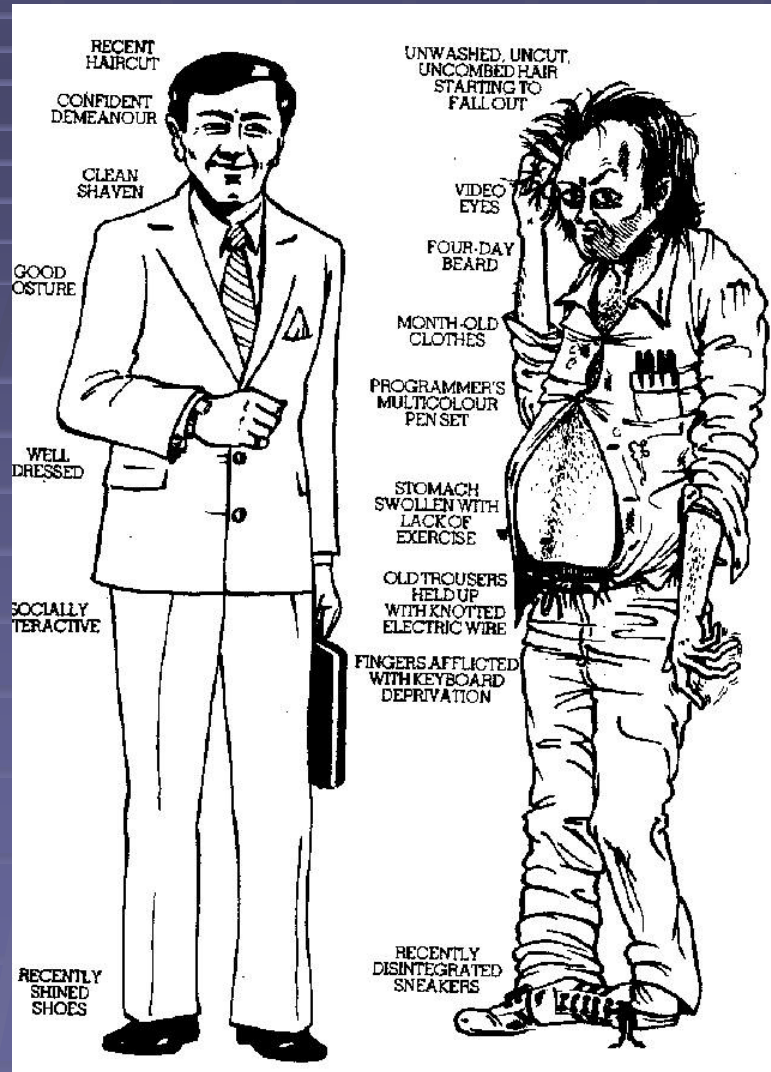
NORTH STAR ★ COMPUTERS

2547 Ninth Street • Berkeley, California 94710 • (415) 549-0858

BYTE on inquiry card.

BYTE April 1978 27

Before & After



Attempted Domestication



acter generator memory, and 1 K bytes of scratch pad memory.

Dynamic memories with invisible refresh are used for all programmable memory. No memory wait states are generated, and full refresh is maintained when the system is halted. An optional second memory board expands the system to 32 K, and PROM expansion to 16 K is optional.

The standard software PROM occupies 1 K bytes, with sockets for an additional 1 K bytes of user supplied PROM. The system uses a direct video monitor for a clear, crisp display. The wide bandwidth attained using the direct drive approach is especially important in the high resolution graphics mode.

The drawer-mounted keyboard has all the standard ASCII keys, plus special control keys for video games, such as up and down arrows. The keyboard is scanned and entered using software, so that key codes may

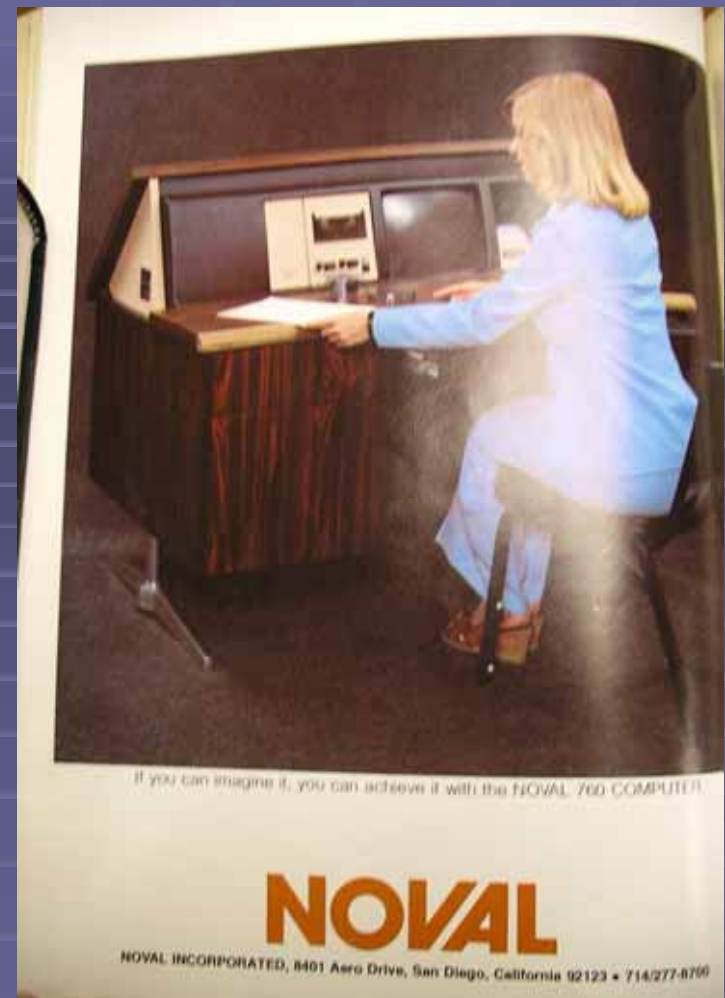
be arbitrarily assigned, if desired.

The printer is a dot matrix impact printer, manufactured by LRC Products Inc. Rather than employing a standard ROM for character generation, the software creates the images to be printed. This allows user defined symbols to be created along with standard ASCII characters, a graphics mode which enhances the usefulness of the printer as a plotting device.

The tape mass storage unit is a PhiDeck, with Noval designed electronics, capable of reading and writing at 2500 bits per second. This allows a 4 K byte program to be loaded or saved in about 20 seconds.

The IO system is implemented using a distributed logic technique. One corner of the main printed circuit board is devoted to eight parallel connected Molex connectors of 20 pins each. All signals from the processor which are necessary to implement the first eight ports (ports 0 to 7) are busied to these

Photo 1: The Noval 760 is shown in this picture as it appears in its natural setting for use: unfolded in a living room, office or den. The console with display and cassette drive folds into the desk and the drawer with its keyboard closes, so that when not in use the Noval 760 blends into the décor as a desk-like woodtone piece of furniture.



“The Noval 760... appears in its natural setting: unfolded in a living room, office, or den. The console... folds into the desk... so that the Noval 760 blends into the décor as a desk-like woodtone piece of furniture.”

Pot Plants are Common Motif

Introducing Our Disk System.

System 8813

It's like adding a room to your brain!

The System 8813 from PolyMorphic Systems is a complete, powerful problem solver in a single walnut cabinet. This machine allows you to perform complex financial, engineering, and scientific models in the comfort of your office or den.

The high speed video display presents your results in text, tables and graphics. The detachable typewriter-like keyboard permits relaxed program entry and operation. Convenient mini-disk store programs and data for compact filing, secure storage, and fast access. Our disc BASIC programming language is simple enough for the computer new comer, yet powerful enough to entice the most advanced users.

The whole family can immediately use and enjoy pre-programmed applications and educational packages. Let the System 8813 become your trusted business, profession, and personal tool. The PolyMorphic Disc System is a completely assembled and tested unit with brushed aluminum front panel, walnut cover, detachable keyboard, video monitor, 16K RAM. Includes system software and fully extended BASIC on disc.

| | |
|---------------------------|----------|
| System with 1 disc drive | — \$3250 |
| System with 2 disc drives | — 3840 |
| System with 3 disc drives | — 4430 |

Delivery 60 days ARO. Upgrade packages for POLY 88 owners will also be available. Prices and specifications subject to change without notice.

PolyMorphic Systems (805) 967-2351
460 Ward Drive, Santa Barbara, CA 93111

The POLY 88 Microcomputer System

PolyMorphic Systems now offers the complete, assembled, personal computer system—the POLY 88 System 16. A full disk system with high speed video display, alphanumeric keyboard, and cassette program storage. A BASIC software package providing the most advanced features available in the personal computing market. Features like PLOT and TIME, which utilize our video graphics and real-time clock. Others like VERIFY, so that you know your tape is good before you load another. Or input type-ahead so you can tell your program to run while the tape is still loading (it returns up to 64 characters of commands or question responses to be executed). All these plus a complete package of scientific functions, formatting optional, and string capabilities. With the POLY 88 System 16 you can amaze your mesmerizing friends the very first night!

PolyMorphic Systems 11K BASIC — Size: 11K bytes.

Scientific Functions: Sine, cosine, log, exponential, square root, percent number, x to the power.

Formatted Output • Multi-line Function Definition • String Manipulation and String Functions • Real-Time Clock • Point-Plotting on Video Display • Array dimensions limited by memory • Cassette Save and Load of Named Programs • Multiple Statements per Line • Renumber • Memory Load and Store • End Input and Output • If Then Else • Input type-ahead.

Commands: RUN, LIST, SCR, CLEAR, REN, CONTINUE
Statements: LET, IF, THEN, ELSE, FOR, NEXT, GOTO, ON, EXIT, STOP, END, REM, READ, DATA, RESTORE, INPUT, GOSUB, RETURN, PRINT, POKE, OUT

Built in Functions: FREE, ABS, SIGN, INT, LEN, CHR\$, VAL, STR\$, ASC, SIN, COS, RND, LOG, TIME, WAIT, EXP, SQR, CALL, PEEK, INPUT, PLOT

Systems Available. The POLY 88 is available in either kit or assembled form. It is suggested that kits be attempted only by persons familiar with digital circuitry.

System 2: is a kit consisting of the POLY 88 chassis, CPU video circuit card, and cassette interface. Requires keyboard, TV monitor, and cassette recorder for operation. \$735

System 16: consists of an assembled and tested System 2 with 16K of memory, keyboard, TV monitor, cassette recorder, 11K BASIC and Assembler on cassette tapes. \$2250

System 0: The circuit cards an S-100 mainframe owner needs to be compatible with the POLY 88 software library. System 0 consists of the central processor card with monitor ROM, the video circuit card, and cassette interface, all in kit form. \$535.

Prices and specifications are subject to change without notice. California residents add 6% sales tax.

460 Ward Drive
Santa Barbara, Ca. 93111
(805) 967-2351

PolyMorphic Systems

Tokenism I: The Rainbow Alliance

**Rich Man, Poor Man, Merchant, Physician,
Teacher, Lawyer, Student, Musician....**



There's an iCOM Floppy Disk System for Everyone!

More Uses
People from every walk of life are adding iCOM® Floppy Disks to their microcomputers for such diverse tasks as payroll, inventory control, mailing lists, game playing, record keeping, parts ordering.
We've uncovered some innovative applications, too: The sailboat architect who puts equations and algorithms on an iCOM disk to test his nautical theories; the student who has automated a bowling alley; the iCOM dealer who designed an environmental control system for a university.

More Speed
These users have found iCOM floppies to be much faster and more versatile than cassette or paper tape. With iCOM, programs can be loaded in seconds; files updated in minutes; hundreds of programs can be stored on single disk.

More Models
iCOM has Frugal Floppies™, Dual Floppies, Microfloppies™ (using the new 5 1/4" diskette), and other new approaches to floppy disk systems. Each hardware and software compatible with Altair™, IMSA1, Poly 88, Sok-20 and other microcomputers using the Altair S-100 bus format.

More Backup
We've been building floppies for microcomputers for more than 1 year. Long before the rest. Thousands of systems are operating perfectly in the field. And we're part of Perot Computer Corporation, one of the largest manufacturers of peripheral microsystems; data entry products and data processing systems. We're around whenever you need us.

More Dealers
Maybe not in quantity, but in quality. We've chosen our dealer network carefully to assure you of assistance every step of the way. Our prices are right. Our delivery is fast. Our dealers are experienced and knowledgeable.

More Software
Then there's iCOM's famous software: Powerful field-proven FDOS-II with macro-assembler, string-oriented text editor, and file manager. Plus easy-to-use compatible 8K Disk BASIC. Each with super features such as: named variable length files, auto-file create, open and close, multiple merge and delete... and more.

Must Reading
Our free booklet, "What a Floppy Disk Can Do for You" is must reading. Send for yours today or visit your dealer.



com MICRO

©1977 Perot Computer

“People from every walk of life are adding iCOM Floppy Disks to their microcomputers...”

Tokenism II: The Babe

“combines the 8080A CPU with a front panel featuring ultra-convenient octal keyboard and digital LED readout”




Pre-assembled Machines

- Follow by around 1977
 - Apple II
 - Radio Shack TRS 80
 - Commodore Pet

**Radio Shack's personal computer system?
This ad just might make you a believer.**


You can't beat the 4K system at \$599



TRS-80 "Breakthru"

- TRS-80 microcomputer
- 12" video display
- Professional keyboard
- Power supply
- Cassette tape recorder
- 4K RAM, Level-I BASIC
- 232-page manual
- 2 game cassettes


... or the step-up 16K system at \$899



TRS-80 "Sweet 16"

- Above, except includes 16K RAM


... or the fast 4K/printer system at \$1198



TRS-80 "Educator"

- Above, except includes 4K RAM and screen printer

... or the Level-II 16K/printer/disk system at \$2385




TRS-80 "Professional"

- Above, except includes 16K RAM, disk drive, expansion interface, and Level-II BASIC

So how are you gonna beat the system that does this much for this little? No way!

... The amazing new 32K/Level-II/2-disk/line printer system at \$3874



TRS-80 "Business"

- Above, except includes 32K RAM, line printer, and two disk drives

Get details and order now at Radio Shack stores and dealers in the USA, Canada, UK, Australia, Belgium, Holland, France, Japan, West Germany, and Mexico. Dept. C-001, 1400 One Tandy Center, Fort Worth, Texas 76102. Ask for Catalog TRS-80.

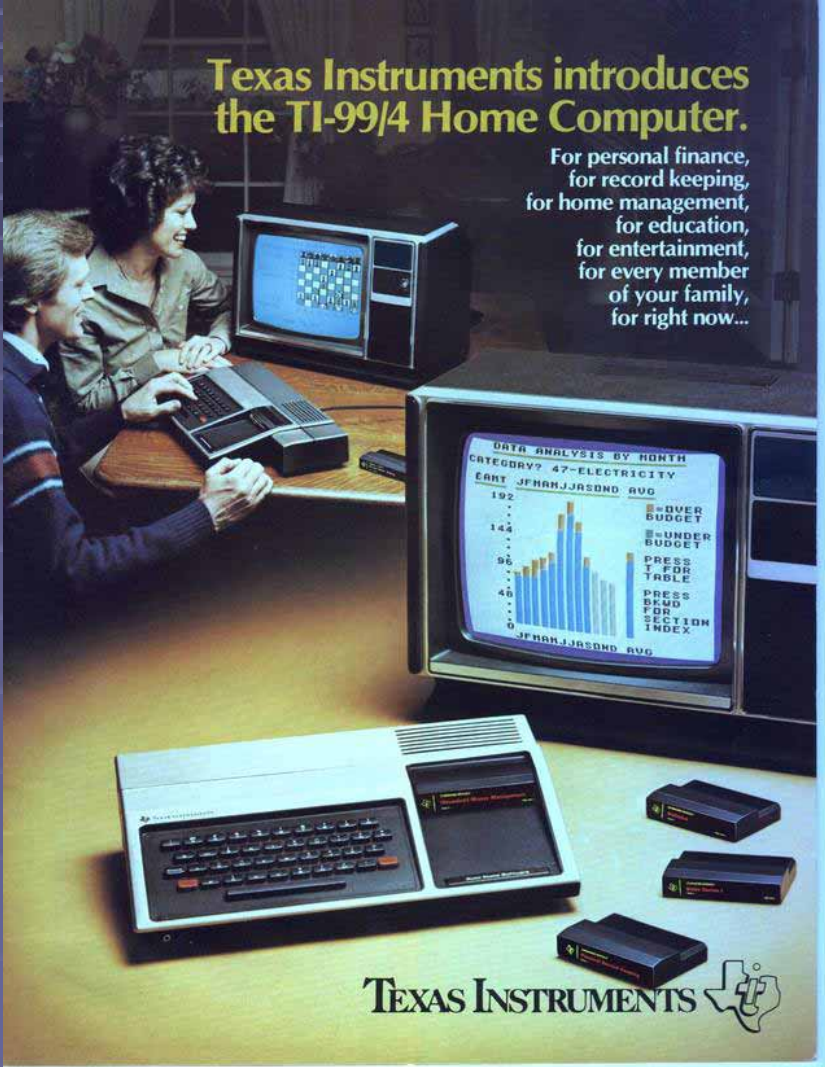
Radio Shack
The biggest name in little computers

© 1978 Radio Shack

2: Buying and Selling the Home Computer

Home Computer Hardware

- Separate species, existed
 - from about 1978 to 1990
- Much cheaper than “business” PCs
 - Sold in large numbers
 - Better sound and graphics
 - Fewer peripheral options
- Connect to domestic TV
 - Often used with standard cassette player rather than disks



Texas Instruments introduces the TI-99/4 Home Computer.

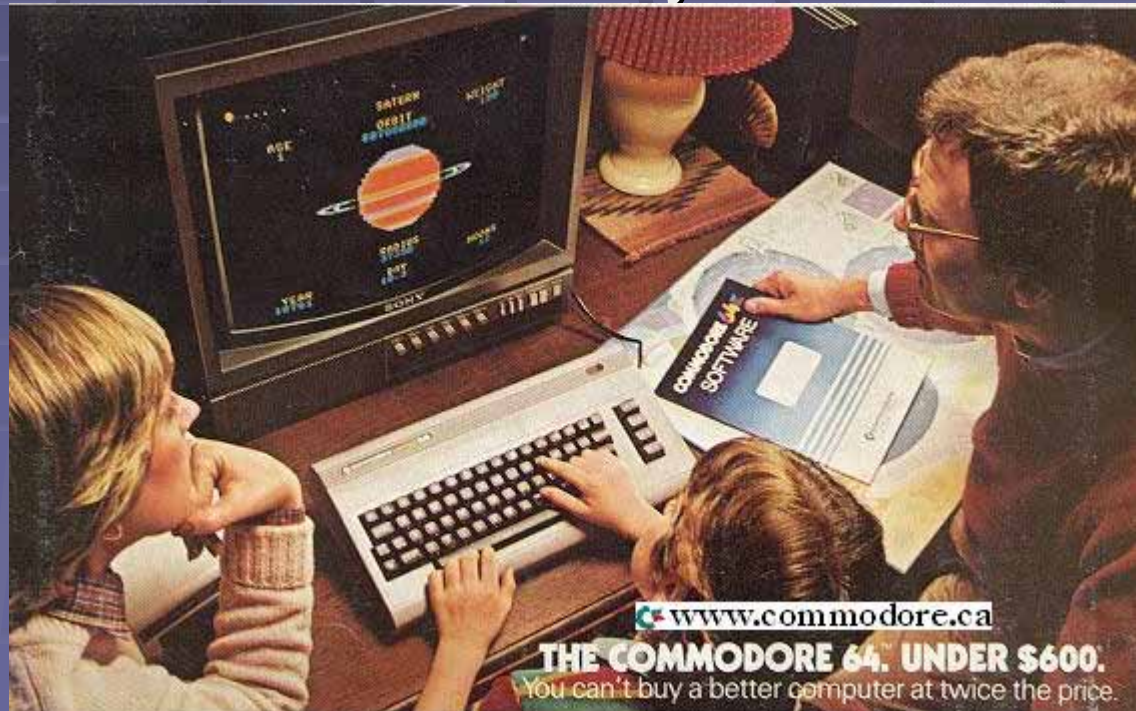
For personal finance, for record keeping, for home management, for education, for entertainment, for every member of your family, for right now...

The advertisement features a photograph of a man and a woman sitting at a desk with the TI-99/4 computer system. The man is typing on the keyboard while the woman looks on. The computer's monitor is connected to a television set, which displays a bar chart titled "DATA ANALYSIS BY MONTH CATEGORY? 47-ELECTRICITY EARLY JANUARY-JANUARY AUG". The bar chart shows data for various months, with a legend indicating "OVER BUDGET" (blue bars) and "UNDER BUDGET" (red bars). The y-axis ranges from 0 to 192. Below the chart, there are instructions: "PRESS T FOR TABLE", "PRESS BEGO FOR SECTION INDEX", and "JANUARY-JANUARY AUG". In the foreground, the TI-99/4 computer unit is shown with its keyboard and a cassette tape deck. Three cassette tapes are also visible on the desk. The Texas Instruments logo is in the bottom right corner.

Home Computer Sales

- Sold in department and discount stores
- By 1983
 - Several models under \$100
 - Around 5 million units sold annually in US

Commodore 64
sells 30 million
worldwide,
1982-early 1990s



Celebrity Endorsements

Fantastic News from Isaac Asimov:

“Radio Shack’s New \$399⁹⁵ TRS-80 Color Computer Saves You \$98!”

— Isaac Asimov
Renowned Science and
Science Fiction Author



Now Get 16K Memory for \$98 Less Than Last Year’s Equivalent!

“It’s like having the cosmos at your fingertips.”
That’s what Isaac Asimov says about the amazing TRS-80 Color Computer. “And now it’s even more fun—and more practical than ever before.” Why? “Because you get more memory for your programs, with better animation in many of the games—all for one astoundingly low price.”

“For out-of-this-world fun, you can’t top it,” Isaac says. “I just plug in an instant-loading Program Pak” for a rousing game of Space Assault. Then it’s up to me to repel invading aliens.

“And Radio Shack has a galaxy of other exciting color games to choose from.” Quasar Commander, Project Nebula, and Planets are among those now available—with lots more on the way!

“It’s also a very serious, hard-working computer.”
Radio Shack offers Program Paks for everything from personal finance to word processing. “And the electronic filing program lets me keep an insurance inventory of my personal possessions—in the event of invading earthlings!” Or program it yourself in Color BASIC. “Color makes it fun to learn programming. And the excellent 308-page manual makes it easy.”

The Color Computer attaches easily to any TV set. See it at your nearest Radio Shack store, participating dealer or Computer Center today.

I want to know more. Send me a free TRS-80 Computer Catalog.

Mail To: Radio Shack, Dept. 83-A-421
1300 One Tandy Center, Fort Worth, Texas 76102

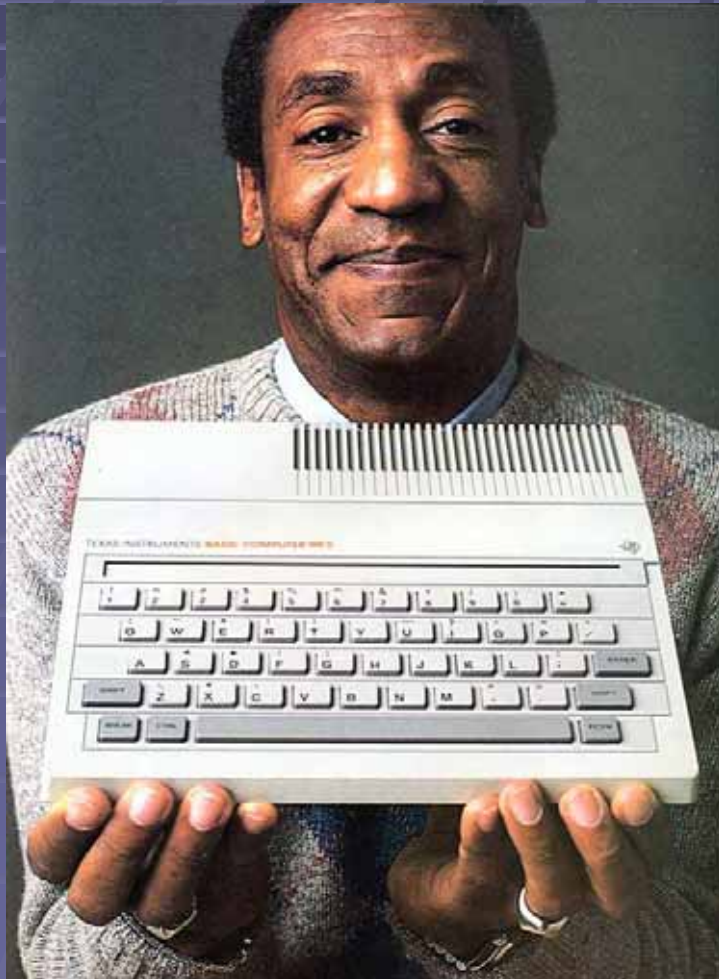
NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

Radio Shack
The biggest name in little computers™
A DIVISION OF TANDY CORPORATION

©1982 16
Send prices may vary on individual stores and displays.

- Isaac Asimov for Radio Shack
 - Science Fiction writer
 - Familiar yet Futuristic
- “It’s like having the cosmos at your fingertips.”

Bill Cosby for Texas Instruments



TI's new Basic Computer. The one to start with and get smart with.

Under \$100. Meet the lowest priced, 16-bit computer available. A major breakthrough in computer technology.

Get ready. Get set. Begin. Only the TI-99/2 Basic Computer with built-in TI BASIC has a plug-in solid state cartridge that teaches you, step by step, the basics of programming. And our operator's manual is clear and to the point. You learn quickly, because it doesn't assume you're an engineer.

A real computer. Powerful 4K memory. Full-size, 48-key keyboard. Quality, flicker-free black and white display. With a choice of popular software applications.

Easily expandable. When you're ready for more, plug in more memory (an additional 32K). Add a Wafertape™ Drive or Cassette Program Recorder. Modem* for telecommunications. Printer*. And a plug-in cartridge that teaches you how to program in TI BASIC.

Money well-spent. If you're wondering if this

is the right computer for you, touch the keyboard, look at the display, watch this powerful computer at work. Even compare it to the Timex Sinclair 1000[™], the other computer under \$100. Convince yourself.

Start with a visit or call. Ask your local TI retailer to show you the best basic computer buy for your dollar. Or call us at (800) 858-4565.

Creating useful products and services for you.

TEXAS INSTRUMENTS
Circle 11 on Reader Service

Timex Sinclair 1000 is a trademark of the Timex Computer Corporation.
*Subject to FCC approval.



Order Direct! Commodore VIC-20...The Friendly Computer.

"The first honest-to-goodness full color computer you can buy for only \$299.95" — William Shatner

Complete Line of Hardware and Software Available to Expand your VIC-20

VIC-20 — Commodore's revolutionary personal computer features color, sound, graphics, programmable function keys, built-in BASIC, expandable memory, low priced peripherals and more! Connects to any TV or monitor, includes RF Modulator, switchbox, cables and self-teaching instruction book. / \$299.95 (See coupon below)

Commodore Datasette — Provides handy economical storage of user-written or pre-recorded programs. / \$75.00

VIC Graphic Printer — Economical dot matrix printer makes paper copies of BASIC programs, letters, business data. / \$395.00

VIC-3K Memory Expander Cartridge / \$39.95

VIC-8K Memory Expander Cartridge / \$59.95

VIC-20 Super Expander — 3K RAM memory expansion, high resolution graphics plotting, color, and sound commands. / \$69.95

Programmers Aid Cartridge — More than 20 new BASIC commands help new and experienced programmers. / \$95.00

RECREATIONAL GAME CARTRIDGES:

VIC AVENGERS • SUPERSLOT • VIC SUPER ALIEN • SUPER LANDER / \$29.95 each

COMPUTER PROGRAM TAPES:

(Requires Commodore Datasette)

Recreation Program Pack A — Car Chase; VIC 21; Blue Meanies from Outer Space; BioRhythm/Compatibility; Spacemath; Silther/Super Silther. / \$59.95

Home Calculation Program Pack A — Personal Finance I; Home Budget; Personal Finance II; Home Budget; VIC Typewriter - Word processor for home use; Expense Calendar - income, expenses, appointments; Loan & Mortgage Calculator - Decision making aid; Home Inventory - Home belongings list / \$59.95

Programmable Character Set/GameGraphics Editor — Lets the VIC user create up to 64 programmable characters and use them in BASIC programs. / \$14.95

Introduction to BASIC Programming — A gentle but thorough introduction to BASIC programming. Excellent first book for any new computerist. / \$24.95

VIC-20 Programmers Reference Guide — Master VIC 20 reference manual includes information on VIC BASIC, programming and much more. / \$16.95

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.

To order accessories simply list on separate sheet and clip to coupon.



| Product Features | Commodore VIC-20 | Atari 400 | TI 99/4A | TRS-80 Color Computer |
|-----------------------------------|----------------------------|-----------------------|----------------------------|-----------------------|
| Price* | \$299.95 | \$399.95 | \$525.00 | \$399.50 |
| Total Memory Standard (RAM & ROM) | 25K | 26K | 42K | 12K |
| Memory (RAM) Expansion to | 32K | Not Available | Not Available | 32K |
| Keyboard Style | Full-Size Typewriter Style | Full Plastic Membrane | Half-Size Typewriter Style | Calculator Style |
| Programmable Function Keys | 4 | 0 | 0 | 0 |
| Basic Language | Microsoft Basic | Extra | TI Basic | Radio Shack Basic |
| Copier/Printer Code Characters | Yes | Yes | No | No |
| RS232 Interface | \$49.95 | \$219.95 | \$275.00 | \$19.95 |
| Number of Keys | 66 | 57 | 40 | 53 |
| Graphic Symbols on Keyboard | 62 | 0 | 0 | 0 |
| Discspace Characters | 512 | 256 | 64 | 256 |

*Manufacturers suggested retail price September 1, 1981

A computer like this would have been science fiction a few years ago. Now it's a reality. It's the new VIC-20 by Commodore, a full fledged expandable color computer that costs little more than video games. And it's so easy to use you can be writing your first program in 15 minutes!

Everybody loves video games and the Commodore VIC-20 has some of the best. But the VIC-20 can also help children with their homework. Mom can use it for home budgeting. Dad can even take the lightweight, portable VIC-20 to the office for financial and business application.

The Friendly Computer at a Friendly Price: At \$299.95 the Commodore VIC-20 is the friendliest way we know to learn computing. It has a full computer keyboard even a small child can operate.

The VIC-20 also plays music, has exciting graphics, lets you create pictures. It even tells you when you've made a mistake and how to correct it. (That's very friendly!)

The VIC-20 can take your children from preschool through post-graduate studies.



Why get just another game that could end up in the closet? Get an honest-to-goodness computer for just \$299.95.

Free with every VIC-20 computer This 164 page guide tells you everything you need to know about your VIC-20 and how to operate it. Written for the beginner, you'll be programming on your VIC-20 in minutes!

Order now. We'll ship your new VIC-20 computer directly to you. 15 day free trial.

Contemporary Marketing, Inc.
790 Maple Lane, Bensenville, IL 60106
Faster Service for Credit Card Customers
Call Toll Free 800-648-5600 (In Nevada call: 800-992-5710)
24 hours a day



Yes, I want to start using the new VIC-20 personal computer right away.

Please send me: _____ Commodore VIC-20 computer(s) at \$299.95 each. (Item No. 2000. Add \$4.95 per computer for shipping and insurance.

Illinois residents include 5 1/2% sales tax.
 Check/M.O. Enclosed Charge my credit card:
MasterCard Visa American Express Diners Club

Card No. _____ Exp. Date _____
Name _____
Address _____
City _____ State _____ Zip _____
Signature _____

William Shatner for Commodore

Like a Kid

- Show the Alan Alda video

3: Using a Home Computer

But What Is It For?

'It's an interesting machine, but what do you actually use it for?' That's one of the most frustrating questions asked of personal computer owners. It's also often the most difficult to answer.

The Commodore 64, Getting the Most From it. (1983)

“It comes with its own BASIC language that's built in and uses plain simple English...”

Alan Alda, *Like a Kid*, 1982.

Programming

- BASIC language built into almost all home computers
 - turn them on, there it is
 - Instruction manuals teach programming
 - presented as way to get value out of purchase
- The **ONLY** thing you can do out of the box

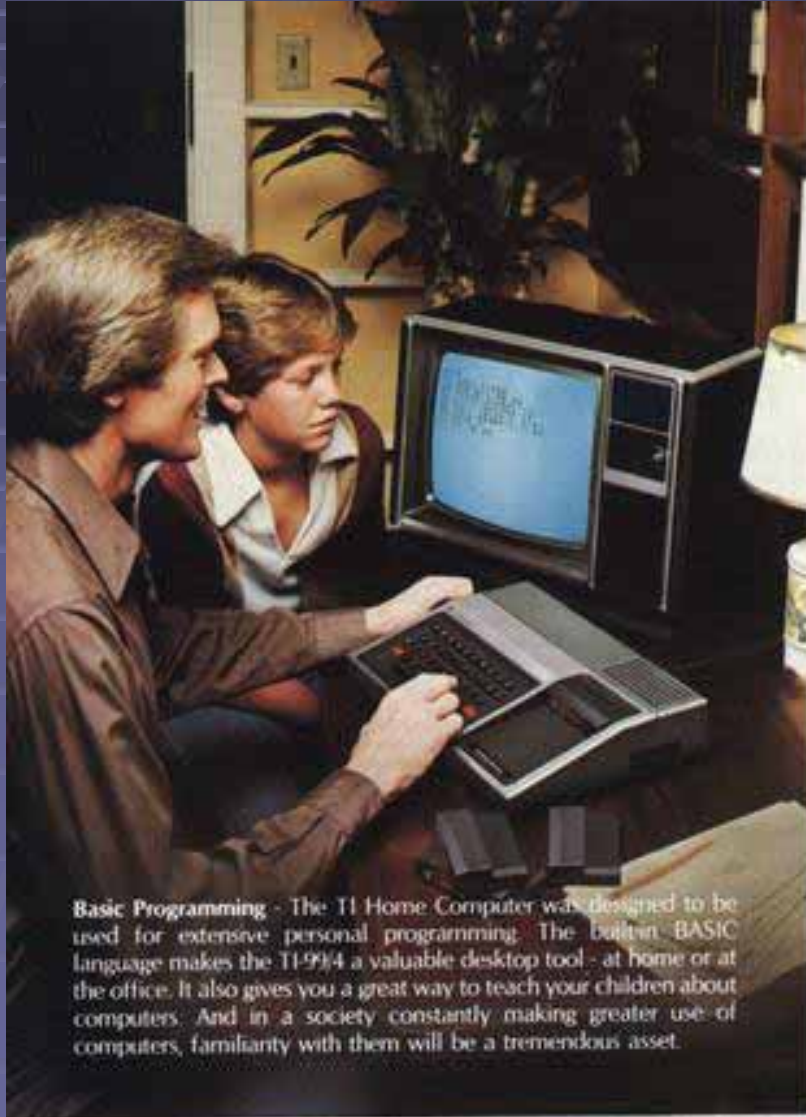
```
**** CBM BASIC V2 ****
95000 BYTES FREE
LOAD "VIC-20"
*VIC-20*
*VIC-20*
*VIC-20*
VIC-20
READY.
```

```
READY
LIST

10 REM *** MEMORY DUMP ***
20 REM *** XL/XE BASIC ***
30 OPEN #1,8,0,"D2:BASIC.ROM"
40 FOR MEM=40960 TO 49151 STEP 1
50 PUT #1,PEEK(MEM):PRINT MEM
60 NEXT MEM
70 CLOSE #1
80 PRINT "MEMORY DUMP FINISHED!"

READY
█
```

Programming for Everyone



The TI Home Computer was designed to be used for extensive personal programming. The built-in BASIC language makes the TI99/4 a valuable desktop tool... a great way to teach your children about computers.

Basic Programming - The TI Home Computer was designed to be used for extensive personal programming. The built-in BASIC language makes the TI99/4 a valuable desktop tool - at home or at the office. It also gives you a great way to teach your children about computers. And in a society constantly making greater use of computers, familiarity with them will be a tremendous asset.

Computer Advice Books

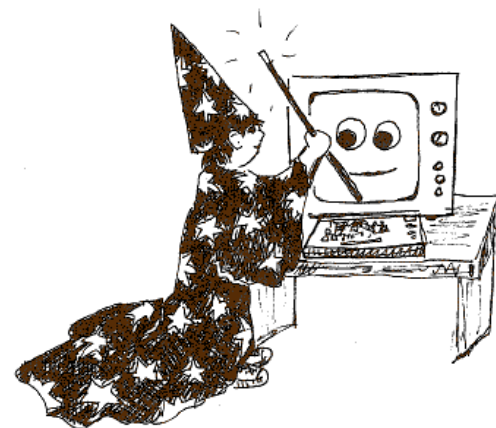
- Mostly follow format of manual
 - Introduction
 - Physical set up
 - How to program
 - 60% or so of total
 - Reference tables



In this chapter, you will learn to read, understand, and use simple ATARI BASIC programs. These programs will include statements you already know how to use (PRINT, SETCOLOR, SOUND) and new statements (GOTO, REMARK, FOR, NEXT).

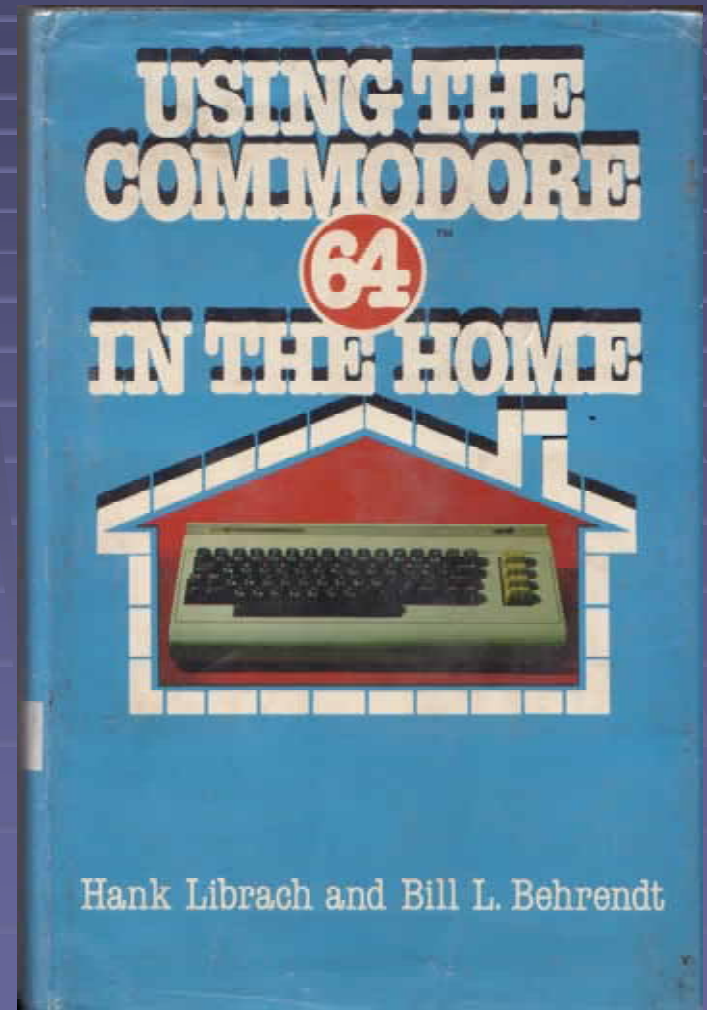
When you finish this chapter, you will be able to:

- Read and understand short programs that include PRINT, SETCOLOR, SOUND, GOTO, REMARK, FOR, and NEXT statements
- Use NEW to erase any old, unwanted programs from the computer's memory (RAM)
- Enter a new program into the computer's memory (RAM)



Program Listings

- Many books consist ONLY of programs to type in....
- This one includes
 - Nutrition Pack
 - Family Budget Comptroller
 - Studying State Capitals
 - Your Math Teacher



The Ultimate Turn-on



On/off control everywhere— by computer over the AC wiring

Now it's simple and economical to control AC devices remotely from an S-100 or Apple II computer. Mountain Hardware's new Intron™ system delivers on/off commands over the existing AC lines — so you don't have to string a foot of wire!

Control at any AC outlet. The Intron system impresses a code-modulated 50 KHz control signal on the house wiring. Then decodes the signal at any outlet to switch AC devices on and off. You can control lights, refrigerators, TVs, solenoid valves, sprinklers, burglar alarms — and many other things we leave to your fertile imagination. With the addition of input sensors to your computer system, you can automatically control variables such as temperature and soil moisture.

Here's how it works. You plug in a single AC Controller board at the computer bus and connect the AC Interface Adapter to any convenient 115 VAC outlet. The AC Controller is now connected to address as many as 64 channels remotely. But it's completely isolated

from the 115v power, so there's no chance of short or shock.

At any outlet where you seek control, plug in a Dual Channel AC Remote. Then plug one or two devices to be controlled into the box. Every AC remote has two independent 500 watt channels. When commanded by the computer, the Dual Channel AC Remote turns the devices on and off independently. When polled by the computer, the Dual Channel AC Remote sends a signal back, telling the computer the status of each device. Bidirectional communication provides error free operation.

Simple programming. You write your control program in BASIC or Assembler language. Software sub-routines for the control programs come with the equipment — along with complete documentation. With your computer, you can program on/off commands at any day and time using our optional Clock boards for S-100 or Apple II computers. A self contained power source assures fail safe operation.

Modest prices. The Intron Remote Control System consists of one AC Controller, either S-100 or Apple II, and one Dual Channel AC Remote. It costs \$329 completely assembled and tested. Additional Dual Channel AC Remotes are \$99.

The 100,000 Day Clock for S-100's costs \$219 assembled and tested. The Apple Clock costs \$179 assembled and tested.

All prices are f.o.b. Scotts Valley, CA. Prices are USA Domestic. California residents add 6% sales tax.

Where to find it. The Intron System can now be found at computer shops throughout the U.S. and Canada. Drop by and ask for a demonstration. Mountain Hardware, Inc., 5523 Scotts Valley Dr., Scotts Valley, CA 95066 (408)438-4734.



Dual Channel AC Remote

AC Controller S-100



Mountain Hardware

800-541-5555

Domestic Automation

Simple Programming:
You write your control programs
in BASIC or Assembler language.

- Literal translation of industrial applications.

Limited Range of Applications

- Same topics appear repeatedly in early (1977-1982) programs
 - Type-in from magazines
 - Printed in books
 - Sold on cassette
 - Used in computer advertisements
- Few seem particularly compelling
 - Reflect shared assumptions about home and computer's place in it

Gender Roles

Introducing Apple II.



The home computer that's ready to work, play and grow with you.

Give the ladies a little helping in the color TV. Plug in your new Apple II, and watch any standard console monitor play. Here you're ready for an evening of discovery in the new world of personal computers.

Only Apple II makes it that easy. It's a computer, ready to use, computer-wise as well as PC-wise. It includes everything you won't find on other personal computers waiting below its work.



It gives you work and video graphics in all colors. And it built-in memory capacity of 16K bytes ROM and 8K bytes RAM - with more for its own use. But you don't have to leave a BASIC from a ROM to set and store Apple II. It's the first personal computer with a full version of BASIC - the English like programming language - permanently built in. That means you can begin using your Apple II the first evening, writing your own instructions and watching them work, even if you're not a previous computer experience.

The logical companion video keyboard makes communication easy. And your programs and data can be stored on card, as stored on floppy disks, using the built-in cassette interface, so you can swap with other Apple II users. This and other possibilities - optional equipment on most personal computers, at hundreds of dollars extra that you had on Apple II. And it's designed to keep up with changing technology to expand easily whenever you need it.

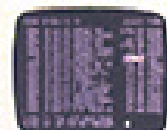
As an educational tool, Apple II is a world in itself. The new program it is taking your children's mind into exciting, rich, and useful.

Library or staff that the biggest benefit is that you can use your Apple II in that you and your family to make your familiarity with the computer work. The more you experiment with it, the more you discover about its potential.

Start by playing PONG. Then invent your own games using the input functions, game panels and built-in expansion. As you experiment, you'll discover new programming skills which will improve your way to use your Apple II. You'll learn to "paint" drawing color displays using the computer's graphics card module: Apple BASIC, and other programs to create interactive, interactive programs.

As you master Apple BASIC, you'll be able to expand, store and edit data on formatted 8-track, cassette tape, magnetic, and recordable forms. You can format almost every text function, but you can't think of them, even control your home environment. Apple II will give you a new dimension to take it.

First of all, Apple II is designed to grow with you. As you add capabilities and connecting devices, you can learn to use new Apple peripherals. For example, a model, more sophisticated BASIC language is being developed for advanced scientific and financial applications.



And it adds you to the built-in audio, video, and game interfaces, there's a new language program system such as a prototyping tool for programming with interfaces to other equipment, a serial board for connecting teleprinter, printer and other terminals, a parallel interface for connecting with a printer or another computer, an expansion board for using programs permanently, and a reader board communications interface, or a floppy disk interface with software and complex operating system. And there are more than 1000 software programs available for your system to use, because Apple II was designed from the beginning to maximize performance, power and capability in your environment change.

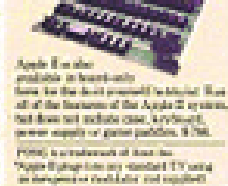
If you'd like to see the potential how easy it is to use and enjoy Apple II, visit your local dealer for a demonstration and a copy of our detailed literature with the Apple II.

Apple II is a computer with standard computer system with BASIC, or BASIC, video graphics, ASCII keyboard, light weight, efficient switching power supply and cabinet case. It is supplied with BASIC in ROM, 8K bytes RAM, 8K bytes of RAM, and with cassette tape, video and game I/O interfaces built in. Also included are two game paddles with a demonstration cassette.

SPECIFICATIONS

- Microprocessor: 6502 (1 MHz)
- Video Display: Memory mapped, 8 modes - all built-in video table.
- Text - 80 characters line, 24 lines upper case.
- Color graphics with a 4-bit, 16-color 100% black, white, red, green, cyan, blue, magenta, orange.
- Built-in graphics interface selected to include a built-in font of the output of the display area.
- Compatibility transparent interface systems. All color graphics built-in Apple II.
- Memory - up to 48K bytes on-board BASIC ROM, supplied.
- Two other ROMs on-board (ROM expansion memory chips).
- Up to 128 Kbytes RAM, supplied.

- Software
 - Full featured language BASIC in ROM will color graphics commands
 - Interactive monitor in ROM
 - 100
 - 1000 top quality interface & 4-bit monitor board
 - Apple game II peripherals
 - ASCII keyboard port
 - Expansion
 - Composite video output



Apple II is also available in French, German, Italian, Spanish, and Japanese. For all of the features of the Apple II system, but does not include case, keyboard, power supply or game paddles, \$199.

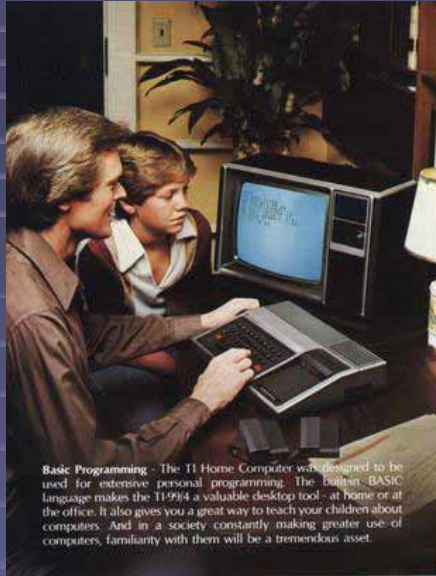
PONG is available at most in Apple II game box may include TV set in design or available and supplied.

Computer, Inc., 3400 Stevens Creek Rd., Cupertino, California 95014.

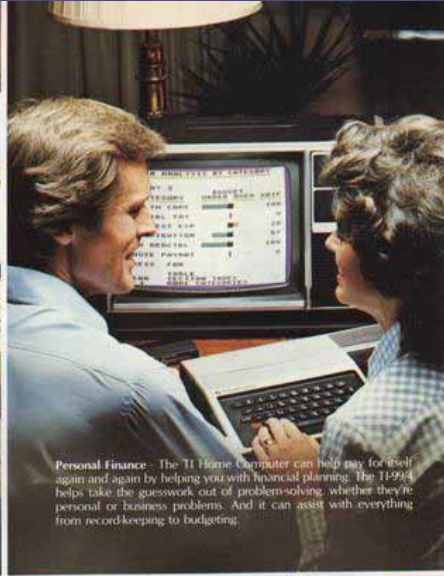
SEE OUR FULL PRICE LISTING AD-ON PAGE 118.

 **apple computer inc.**
© 1977 Apple Computer, Inc.

Centerpiece of the nuclear family



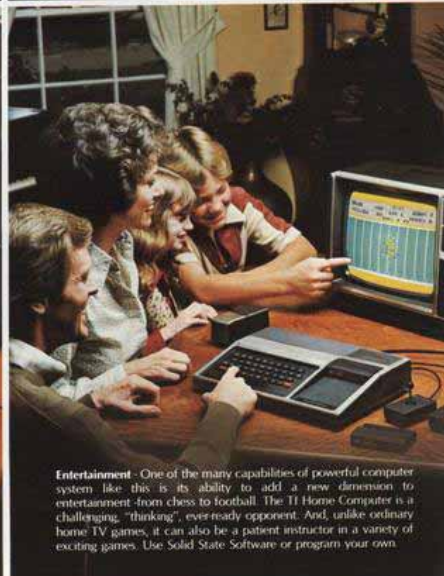
Basic Programming - The TI Home Computer was designed to be used for extensive personal programming. The built-in BASIC language makes the TI-99/4 a valuable desktop tool - at home or at the office. It also gives you a great way to teach your children about computers. And in a society constantly making greater use of computers, familiarity with them will be a tremendous asset.



Personal Finance - The TI Home Computer can help pay for itself again and again by helping you with financial planning. The TI-99/4 helps take the guesswork out of problem-solving, whether they're personal or business problems. And it can assist with everything from record-keeping to budgeting.



Education - Computer-assisted education is now available in the home. For instance, your TI Home Computer can help students sharpen their grammar, maths, spelling and reading skills. The computer guides the student through activities at his or her own pace. Colourful, entertaining pictures - plus sound effects and rewards - make learning fun and encourage achievement.



Entertainment - One of the many capabilities of powerful computer system like this is its ability to add a new dimension to entertainment - from chess to football. The TI Home Computer is a challenging, "thinking", ever-ready opponent. And, unlike ordinary home TV games, it can also be a patient instructor in a variety of exciting games. Use Solid State Software or program your own.

The Magic Machine

“Mum laughed, and said the magic machine can start by cooking dinner....”

Byte Press, 1979

A Colorful Introduction to Computers

Here's a fun and educational coloring book to introduce your home computer to the youngest members of your family. *The Magic Machine* explores the excitement and wonder of computers from a young child's point of view. Theodore Cohen's story, written for beginning readers, answers many of the basic questions children ask about the magic machines that are coming into our homes in ever-growing numbers, and Jacqueline Bray's line drawings capture the vivid and often funny images that arise from the inquisitive minds of children as they seek to understand the world around them. Packaged complete with its own set of crayons, *The Magic Machine* will help children appreciate computers even before they are old enough to begin using them.

Order Now Directly from BYTE The Magic Machine \$2.00
Prepayment Required

BYTE/McGraw Hill
70 Main St
Peterborough, N.H. 03458

Melissa and John and
THE MAGIC MACHINE
\$2.00

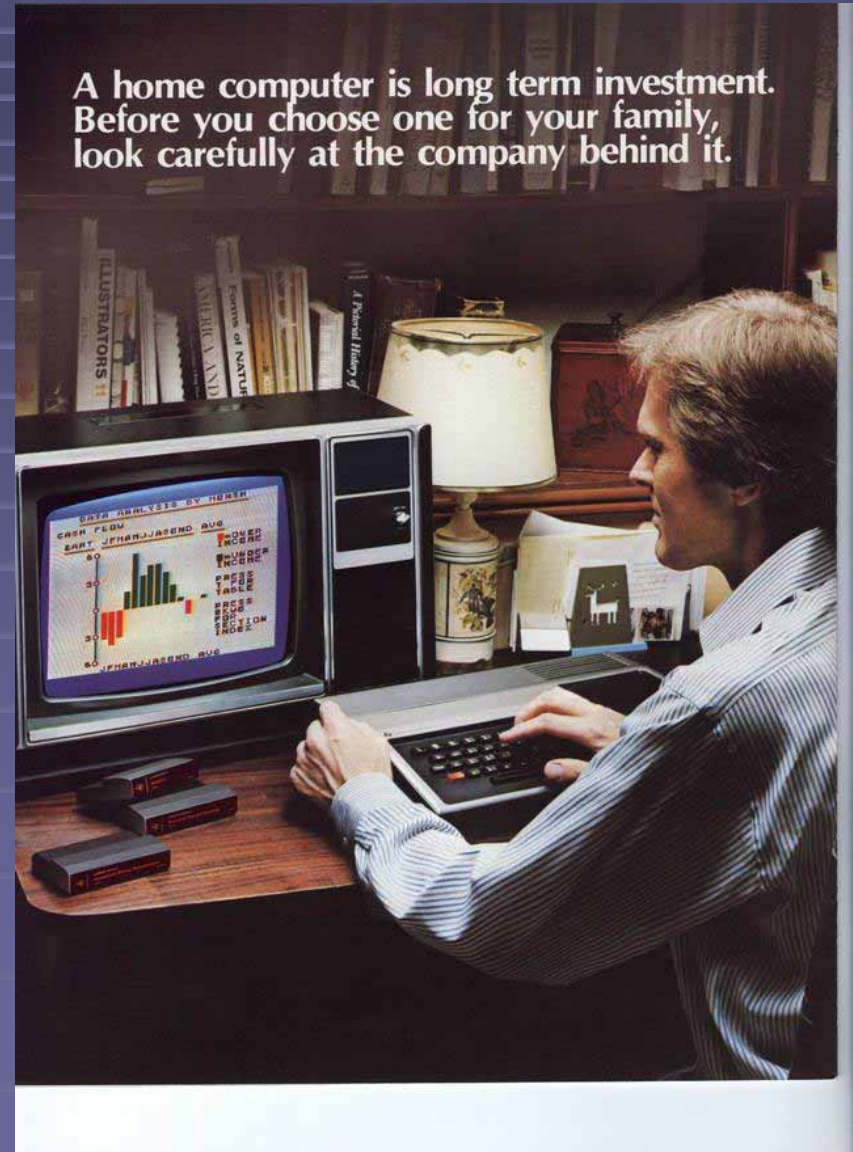
A COLORING BOOK

By Theodore J. Cohen and Jacqueline H. Bray

444 BYTE January 1983

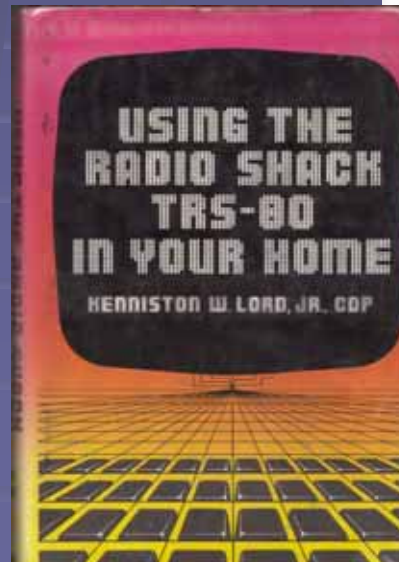
Husband

- Masculine
 - Tax preparation
 - Financial calculations
 - Checkbook balancing



Wife

- Feminine
 - Recipe databases
 - Calorie counting
 - Knitting
 - Biorhythms
- This book included programs for
 - “Shopping”
 - “Pantry Inventory”
 - “Recipe”
 - “Chore reminder”



| ITEM | DESCRIPTION | UNIT | PRICE | LOCATION |
|------|---------------|------|-------|----------|
| 5 | COCA | 3 | 3.57 | 9 |
| 10 | PUBBING/JELLO | 10 | 1.7 | 31 |
| 20 | PICKLES | 10 | 5.7 | 14 |
| 25 | SALT | 1 | .52 | 26 |
| 31 | TOPPINGS | 3 | .87 | 17 |
| 50 | LETTUCE | 2 | 1.30 | 3 |
| 60 | TOMATOES | 1 | .67 | 3 |
| 70 | ORANGES | 4 | 3.92 | 2 |
| 80 | BACON | 1 | 1.69 | 11 |
| 90 | PORK CHOPS | 2 | 4.64 | 40 |

PRESS ENTER TO CONTINUE? _

Figure 24. Automated shopping list.

```

1580 CLS
1590 PRINT "DON'T GO AWAY":GOSUB 3620
1600 CLS:GOSUB 1760
1610 FOR N = 1 TO 130
1620   IF A(N) = 0 THEN 1650
1630   RESTORE
1640   GOSUB 1880
1650 NEXT N
1660 PRINT:INPUT "ARE YOU READY FOR THE BILL (Y/N)";AS
1670 IF AS = "Y" THEN 1700
1680 PRINT "SORRY - IT'S YOURS ANYWAY"
1690 GOSUB 3620
1700 CLS
1710 FOR N = 1 TO 7:PRINT:NEXT N
1720 PRINT "ESTIMATED BILL","$";B
1730 GOSUB 3620
  
```



COMPACT

The most attractive package includes the features of the famous Model B BBC Micro computer, which is used by children as almost every school in the United Kingdom as well as in colleges, hospitals, laboratories, libraries, offices, banks and shops. Moreover it shares the basic design of the BBC Master Series. It's a computer which since their launch have been going from strength to strength, sophisticated and flexible.

Accessing to a Master Compact will bring you a real family funhouse because a lot of fun and enjoyment, and skills and abilities which are invaluable during education and personal and business and professional life.

The Master Compact packs a lot of power and a very nice package. Like its Master 128 version it provides 128K of RAM. The full size keyboard has a top cover, pointer and ball and includes a numeric keypad which is particularly convenient if you are entering financial or mathematical data.



Children

- Educational applications
 - Maths drill
 - Geography quiz, etc.
- Programming

Math Dice

The program presents pictorial drill on addition facts using printed dice with no reading involved. It is good for beginning addition, since the answer can be derived from counting spots on the dice as well as by memorizing math facts or awareness of number concepts. It is especially effective run on a CRT terminal.

It was originally written by Jim Gerrish, a teacher at the Bernice A. Ray School in Hanover, New Hampshire.

MATH DICE
CREATIVE COMPUTING MORRISTOWN, NEW JERSEY

THIS PROGRAM GENERATES SUCCESSIVE PICTURES OF TWO DICE.
WHEN TWO DICE AND AN EQUAL SIGN FOLLOWED BY A QUESTION
MARK HAVE BEEN PRINTED, TYPE YOUR ANSWER AND THE RETURN KEY.
TO CONCLUDE THE LESSON, TYPE CONTROL-C AS YOUR ANSWER.

```
-----  
I * I  
I * I  
I * I  
-----
```

+

```
I * I  
I * I  
I * I  
-----
```

=? 7

RIGHT!

THE DICE ROLL AGAIN...

```
-----  
I * I  
I * I  
I * I  
-----
```

+

```
-----  
I * I  
I * I  
I * I  
-----
```

=? 6

NO, COUNT THE SPOTS AND GIVE ANOTHER ANSWER.

=? 5

NO, THE ANSWER IS 7

THE DICE ROLL AGAIN...

```
-----  
I * I  
I * I  
I * I  
-----
```

+

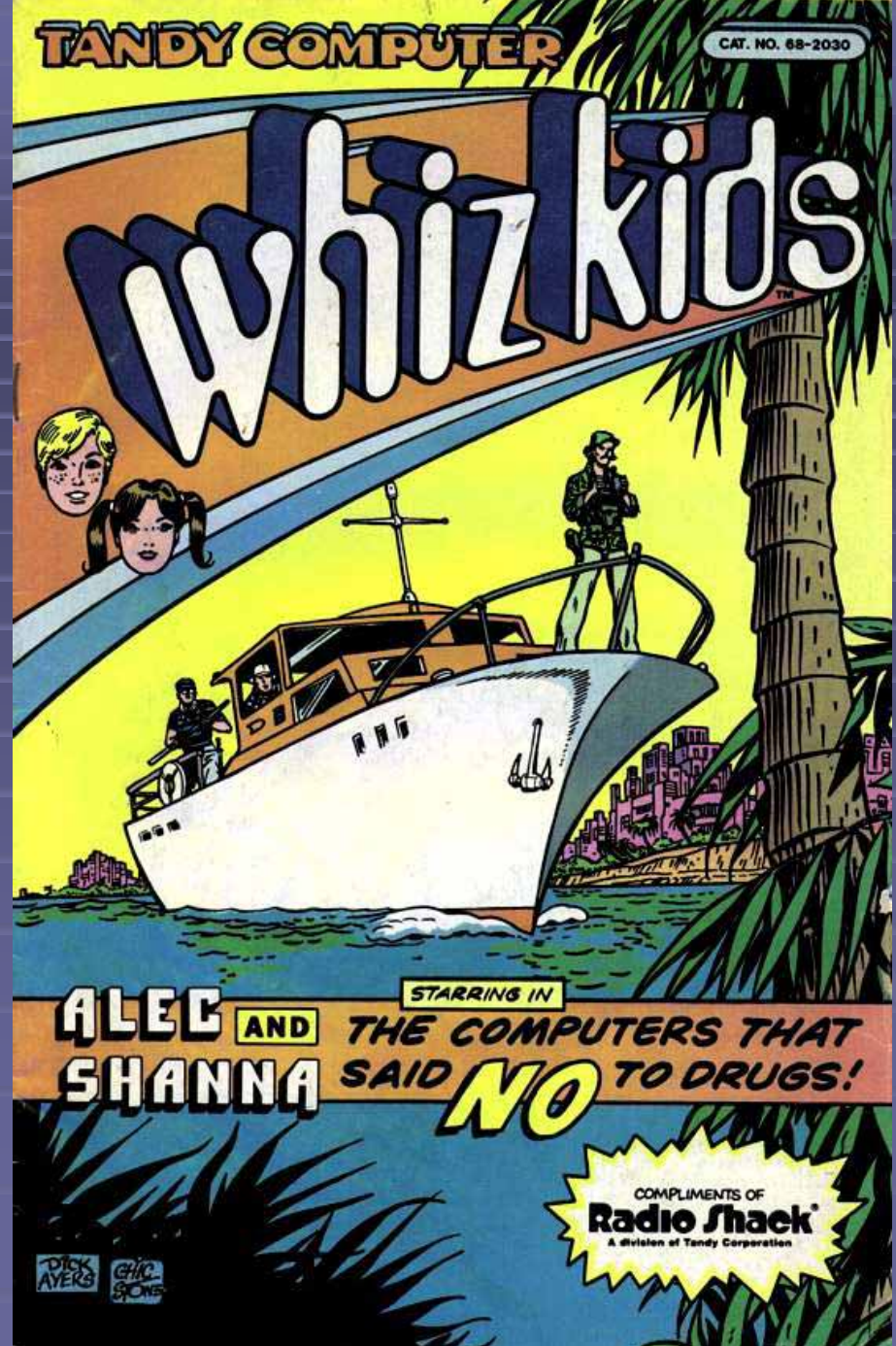
```
-----  
I * I  
I * I  
I * I  
-----
```

=? 8

RIGHT!

```
10 PRINT TAB(31);"MATH DICE"  
20 PRINT TAB(15);"CREATIVE COMPUTING MORRISTOWN, NEW JERSEY"  
30 PRINT:PRINT:PRINT  
40 PRINT "THIS PROGRAM GENERATES SUCCESSIVE PICTURES OF TWO DICE."  
50 PRINT "WHEN TWO DICE AND AN EQUAL SIGN FOLLOWED BY A QUESTION  
60 PRINT "MARK HAVE BEEN PRINTED, TYPE YOUR ANSWER AND THE RETURN KEY."  
70 PRINT "TO CONCLUDE THE LESSON, TYPE CONTROL-C AS YOUR ANSWER."  
80 PRINT  
90 PRINT  
100 N=N+1  
110 D=INT(6*RD(1)+1)  
120 PRINT "-----"  
130 IF D=1 THEN 200  
140 IF D=2 THEN 180  
150 IF D=3 THEN 180  
160 PRINT "I * I"  
170 GOTO 210  
180 PRINT "I * I"  
190 GOTO 210  
200 PRINT "I * I"  
210 IF D=2 THEN 260  
220 IF D=4 THEN 260  
230 IF D=6 THEN 270  
240 PRINT "I * I"  
250 GOTO 280  
260 PRINT "I * I"  
265 GOTO 280  
270 PRINT "I * * I"  
280 IF D=1 THEN 350  
290 IF D=2 THEN 330  
300 IF D=3 THEN 330  
310 PRINT "I * * I"  
320 GOTO 360  
330 PRINT "I * * I"  
340 GOTO 360  
350 PRINT "I * I"  
360 PRINT "-----"  
370 PRINT  
375 IF N=2 THEN 500  
380 PRINT " *"  
381 PRINT  
400 A=D  
410 GOTO 100  
500 T=D*A  
510 PRINT " =";  
520 INPUT T1  
530 IF T1=T THEN 590  
540 PRINT "NO, COUNT THE SPOTS AND GIVE ANOTHER ANSWER."  
541 PRINT " =";  
550 INPUT T2  
560 IF T2=T THEN 590  
570 PRINT "NO, THE ANSWER IS";T  
580 GOTO 600  
590 PRINT "RIGHT!"  
600 PRINT  
601 PRINT "THE DICE ROLL AGAIN..."  
610 PRINT  
615 N=0  
620 GOTO 100  
999 END
```

- Radio Shack, 1983
- “The Computer That Said NO To Drugs”



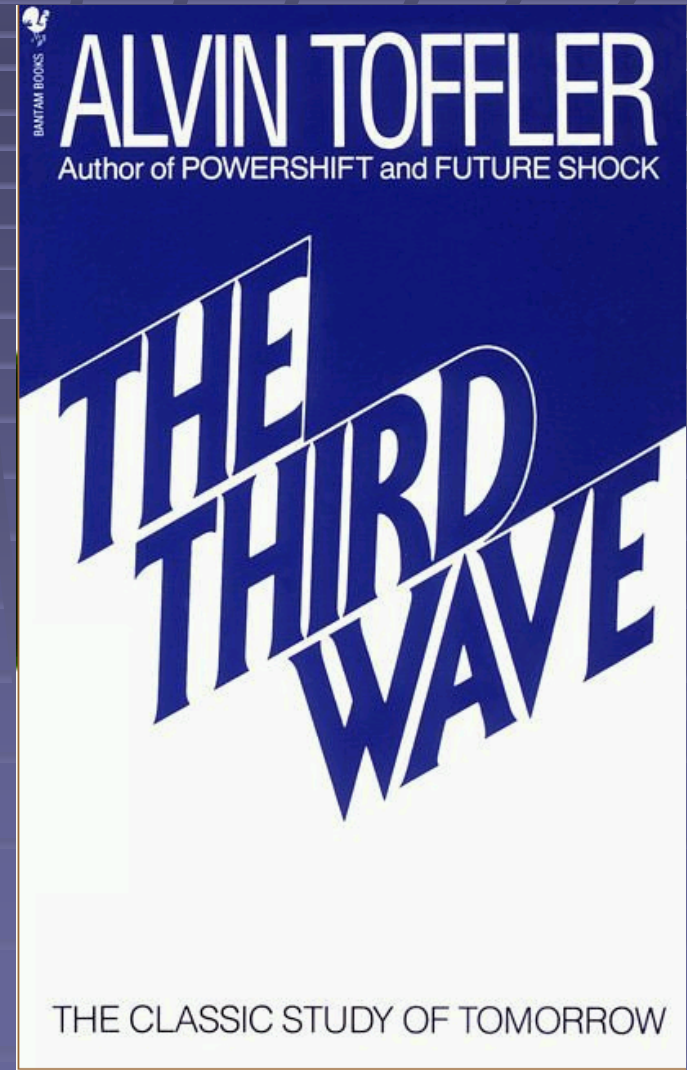
4: Conclusions

The Broader Context

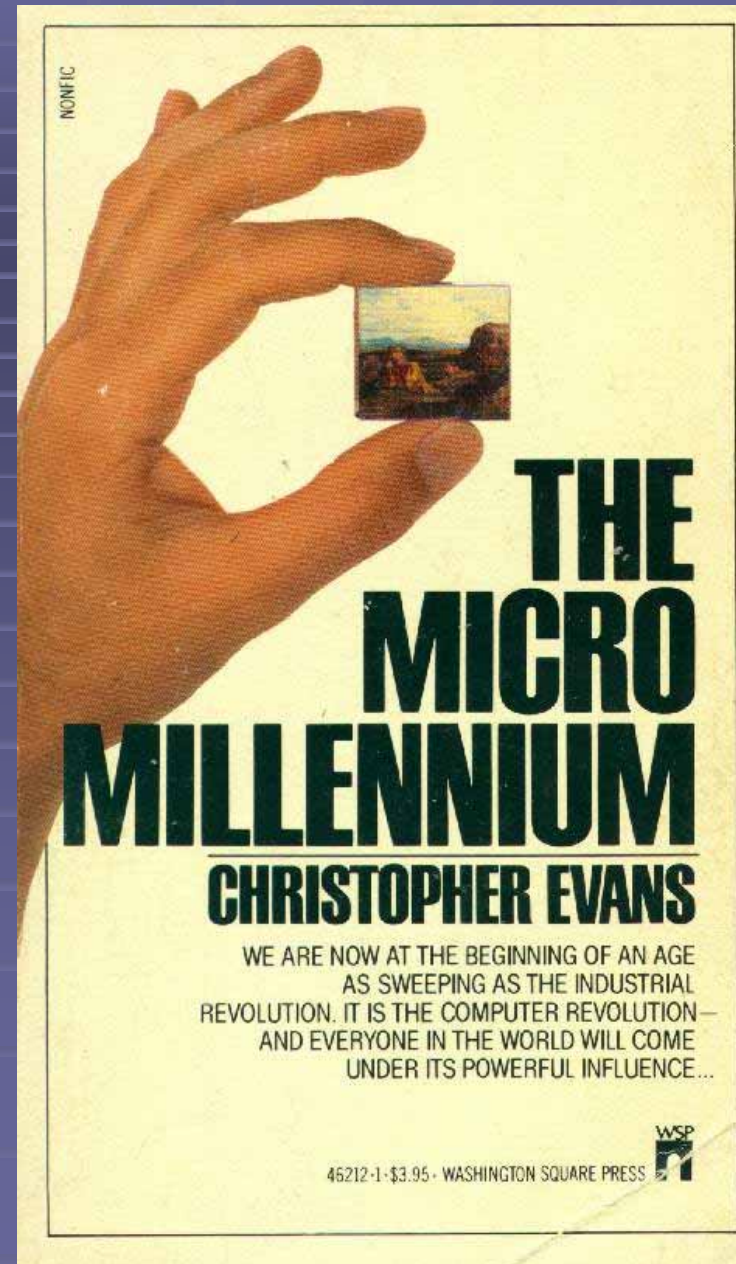
- Late 1970s also saw popularization of ideas of
 - Information technology
 - Information society/Post Industrial Society
 - Computer literacy
 - Microcomputer revolution

The Third Wave

- Futurist Alvin Toffler
 - 1980, influential example of “information age” thinking



- Utopian best seller
 - Intelligent machines by early 1990s



Computer Literacy

- A loaded term
- Assumed to require programming skills

Creative Computing, 1977

WHAT IS COMPUTER LITERACY?

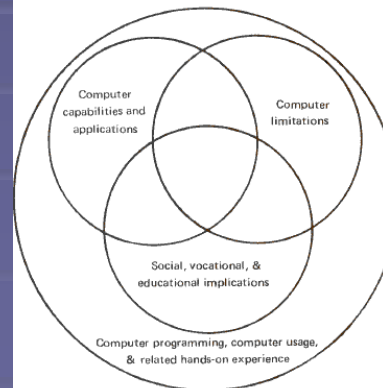
by David Moursund
University of Oregon

The concept of "computer literacy" is receiving much mention today. Over a period of time, we have developed a definition.

Computer literacy refers to a knowledge of the non-technical and low-technical aspects of the capabilities and limitations of computers, and of the social, vocational, and educational implications of computers. While such a definition can provide a focus for thought and discussion, it still does not pinpoint what is meant by computer literacy. Among other things it does not provide a measure of computer literacy nor a method for improving a person's level of computer literacy.

Most of you are familiar with the question "What is IQ?" and the answer "IQ is what is measured by an IQ test." It seems to me that we are at a similar stage of development for CL (computer literacy). Lately, many course outlines for computer concepts or computer literacy courses at the college level have been developed at Oregon and elsewhere. These courses are designed to raise a person's level of CL, and a knowledge of the content of such courses constitutes a certain level of computer literacy.

The University of Oregon's computer concepts course is a no-prerequisite, low level, introductory computer science course. Its major goal is to raise a student's level of computer literacy. Over a period of six years the course has evolved to the current point, where its content is approximately 1/3 computer programming and 2/3 non-programming materials. A Venn diagram of the course content is given below.



In the diagram the computer programming, computer usage, and hands-on experience provides a foundation upon which the non-programming aspects of the course are built. Each of these four areas strongly overlaps the other three, and each supports the other three. A well balanced course needs aspects of each of these four areas.

It seems difficult to develop a course that is coherent and well integrated, and still preserves a reasonable balance among the four major areas. Probably the computer programming and related computer usage and hands-on experience is the major source of trouble. Most computer programming texts are designed to teach computer programming. That is, their major goal is to move a student rapidly along the computer programmer path. Most such books contain little information on the capabilities, limitations, or implications of computers. The material is not organized in a manner to make it fit in well with non-programming, computer literacy materials.

To overcome this difficulty in the UO's course, I have written a 150 page book, *BASIC Programming for Computer Literacy*. This book is currently being used in the course, and seems to be a satisfactory text. It is available for \$4.00 (which includes postage and handling) from the Computer Science Department, University of Oregon, Eugene, Oregon 97403.

The non-programming content of a CL course can range over a wide variety of topics, and will depend to a certain extent upon the interests and knowledge of the instructor. One cannot tell if a person is computer literate on the basis of a single true-false or multiple choice question. That is, CL refers to a broad, integrated knowledge of low level computer science. Such knowledge must include many facts and how these facts interrelate. But it is difficult to isolate a single fact that is indispensable, or fundamental.

On the non-programming content of the course, I use an objective-type final exam. In fall 1974 this exam consisted of 150 questions. An item analysis was run on these questions to determine which were the more difficult and which best differentiated the students who scored high on the test from those who scored lower on the test. Thirty of the better questions (harder, and good differentiators) have been selected and appear at the end of this article. A student making an A or high B on the exam probably answered at least 3/4 of these questions correctly.

The answers in most cases are not obvious. The 30 question test was administered to students on the first day of the winter term 1975 course. The class average was 14.75. Random guessing by all students would have produced a class average of about 12.

Taken individually, the merits of any single question are certainly subject to debate. One can easily argue that the question is not relevant to his concept of what constitutes computer literacy. Taken as a whole, however, such a group of questions provides a reasonably broad measure of many parts of the non-programming content of a computer literacy course. Try the test yourself. Try it on your students. Individual questions can provide a good basis for class discussion or individual student reading/study projects.

It's Educational!

- Computers play games but are good for you too



WHY BUY JUST A VIDEO GAME?

"FOR UNDER \$300 GET THE COMMODORE VIC-20,[™] THE WONDER COMPUTER OF THE 1980s."

—William Shatner

"An investment that grows with your family needs."



For about the cost of a video game, you can own the Commodore VIC-20,[™] a full-fledged color computer that's so easy to use even a child can be computing in minutes.

Sure it plays the great games kids love. But the VIC-20 can also improve learning skills. In fact, it uses the same computer language taught in school on the Commodore PET[™]. So students learning on the PET in class, can practice computing at home on the VIC.

Unlike video game machines, the VIC-20 has many practical applications, such as financial planning and word processing. And the VIC-20 is never out of date. Because, unlike video machines, it's completely expandable. With low priced accessories, including a tape reader and disk drive, to store and retrieve information, printer and our exciting new VICMOHEM[™] — which lets you communicate with outside information sources.

The wonder computer of the 1980s — VIC-20 from Commodore. Under \$300. At your Commodore dealer and selected stores.



VIC-20 VS. THE VIDEO GAMES

| Product Features | VIC-20 | Atari VCS [™] | Mattel Intellivision [®] |
|-------------------------------------|--------|------------------------|-----------------------------------|
| Under \$300 | YES | YES | YES |
| Plays Cartridge Games | YES | YES | YES |
| A Real Computer | YES | NO | NO |
| Full-Size Computer Keyboard | YES | NO | NO |
| Basic Computing Language Built-In | YES | NO | NO |
| Expandable Memory Capability | YES | NO | NO |
| Self-Teaching Programming Manual | YES | NO | NO |
| Works With Printer | YES | NO | NO |
| Also Works With Disks and Cassettes | YES | NO | NO |



VIC-0M

Commodore Computer Systems
601 Moore Rd., King of Prussia, PA 19088
Canadian Residents: Commodore Computer Systems
1370 Pinnacle Avenue, Agincourt, Ontario, Canada, M1W 2K6
Please send me more information on the VIC-20:

Name _____
Address _____
City _____ State _____ Zip _____
Phone _____

The Actual Use: Games?



An Irony

- The success of the home computer hinged on idea of a “microcomputer society” changed beyond all recognition. Never happened.
- BUT, those involved in domesticating the computer were trapped in a 1950s sitcom vision of the perfect suburban family already fatally undermined by REAL social change.

