# A Short History of the Apple II

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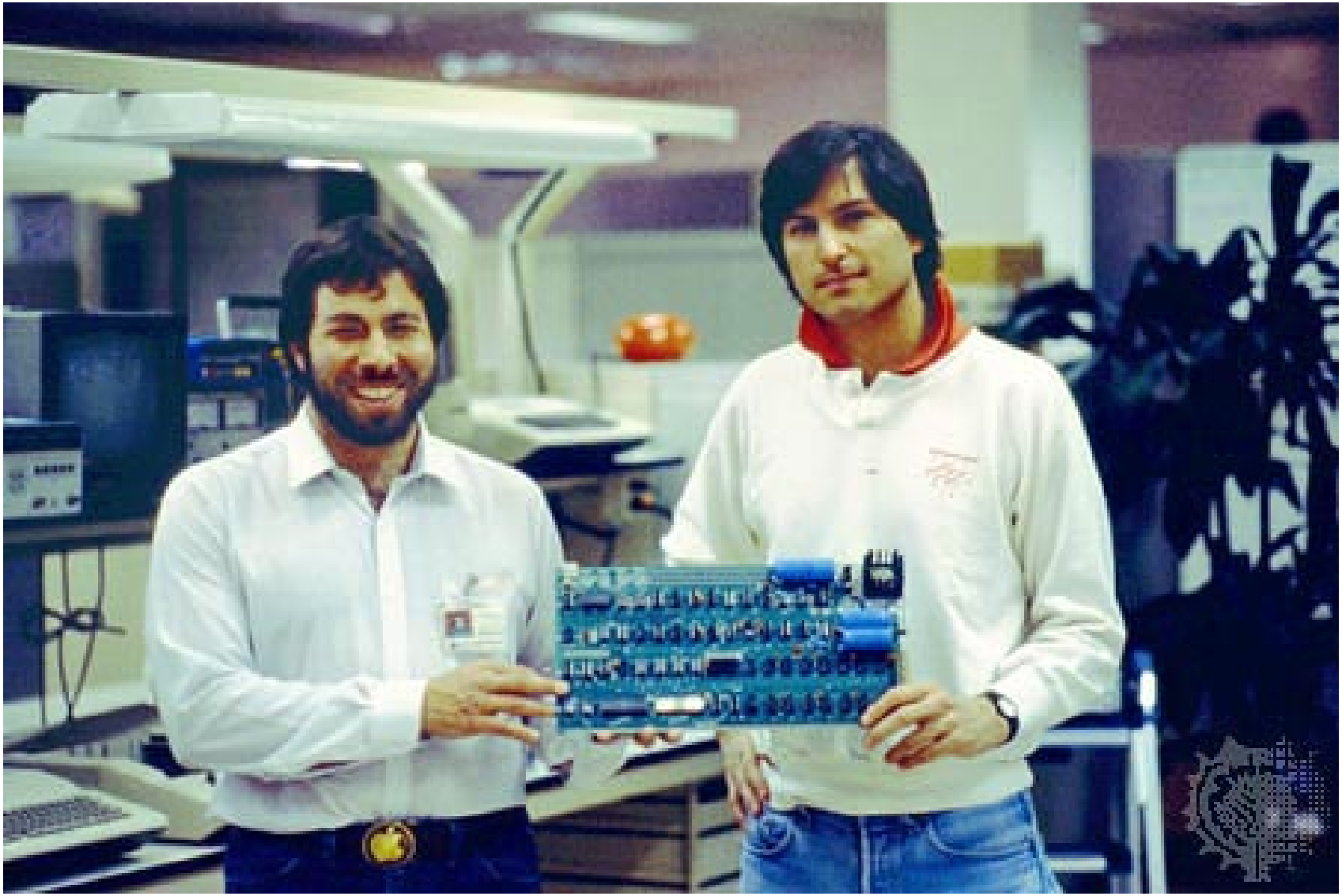
# The Garage


2066 Crist Drive, Los Altos, CA

# The Steves



c. 1976

# History the Apple II

1976: Steves Jobs and Wozniak start with $1300

1977: Annual sales reach $1M

1978: Disk II released

1979: VisiCalc released. 35K Apple IIs this year

1980: $100M IPO sells in minutes. 78K this year

1982: Annual sales of $1B. 650K cumulative

1984: Macintosh released. 2M cumulative

1993: Apple II discontinued in October. Over 5M

# July 1976: The Apple I

## Apple Introduces the First Low Cost Microcomputer System with a Video Terminal and 8K Bytes of RAM on a Single PC Card.

The Apple Computer. A truly complete microcomputer system on a single PC board. Based on the MOS Technology 6502 microprocessor, the Apple also has a built-in video terminal and sockets for 8K bytes of on-board RAM memory. With the addition of a keyboard and video monitor, you'll have an extremely powerful computer system that can be used for anything from developing programs to playing games or running BASIC.

Combining the computer, video terminal and dynamic memory on a single board has resulted in a large reduction in chip count, which means more reliability and lowered cost. Since the Apple comes fully assembled, tested & burned-in and has a complete power supply on-board, initial set-up is essentially "hassle free" and you can be running within minutes. At $666.66 (including 4K bytes RAM!) it opens many new possibilities for users and systems manufacturers.

**You Don't Need an Expensive Teletype.**

Using the built-in video terminal and keyboard interface, you avoid all the expense, noise and maintenance associated with a teletype. And the Apple video terminal is six times faster than a teletype, which means more throughput and less waiting. The Apple connects directly to a video monitor (or home TV with an inexpensive RF modulator) and displays 960 easy to read characters in 24 rows of 40 characters per line with automatic scrolling. The video display section contains its own 1K bytes of memory, so all the RAM memory is available for user programs. And the Keyboard Interface lets you use almost any ASCII-encoded keyboard.

The Apple Computer makes it possible for many people with limited budgets to step up to a video terminal as an I/O device for their computer.

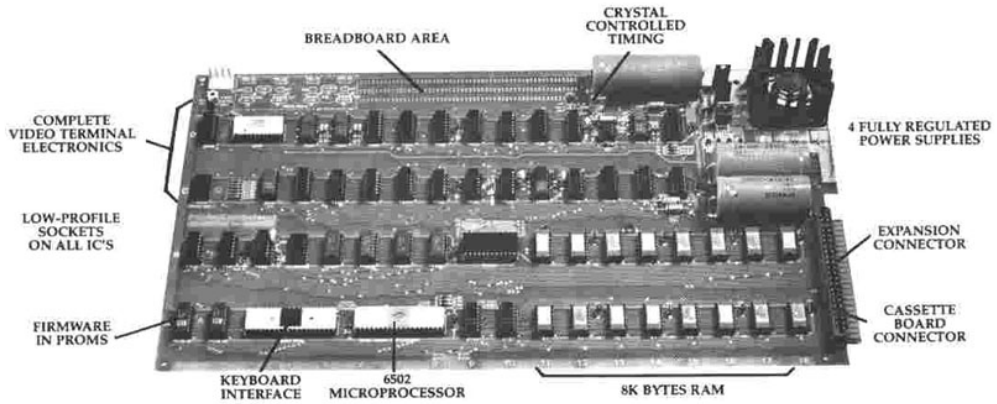
**No More Switches, No More Lights.**

Compared to switches and LED's, a video terminal can display vast amounts of information simultaneously. The Apple video terminal can display the contents of 192 memory locations at once on the screen. And the firmware in PROMS enables you to enter, display and debug programs (all in hex) from the keyboard, rendering a front panel unnecessary. The firmware also allows your programs to print characters on the display, and since you'll be looking at letters and numbers instead of just LED's, the door is open to all kinds of alphanumeric software (i.e., Games and BASIC).

**8K Bytes RAM in 16 Chips!**

The Apple Computer uses the new 16-pin 4K dynamic memory chips. They are faster and take ¼ the space and power of even the low power 2102's (the memory chip that everyone else uses). That means 8K bytes in sixteen chips. It also means no more 28 amp power supplies.

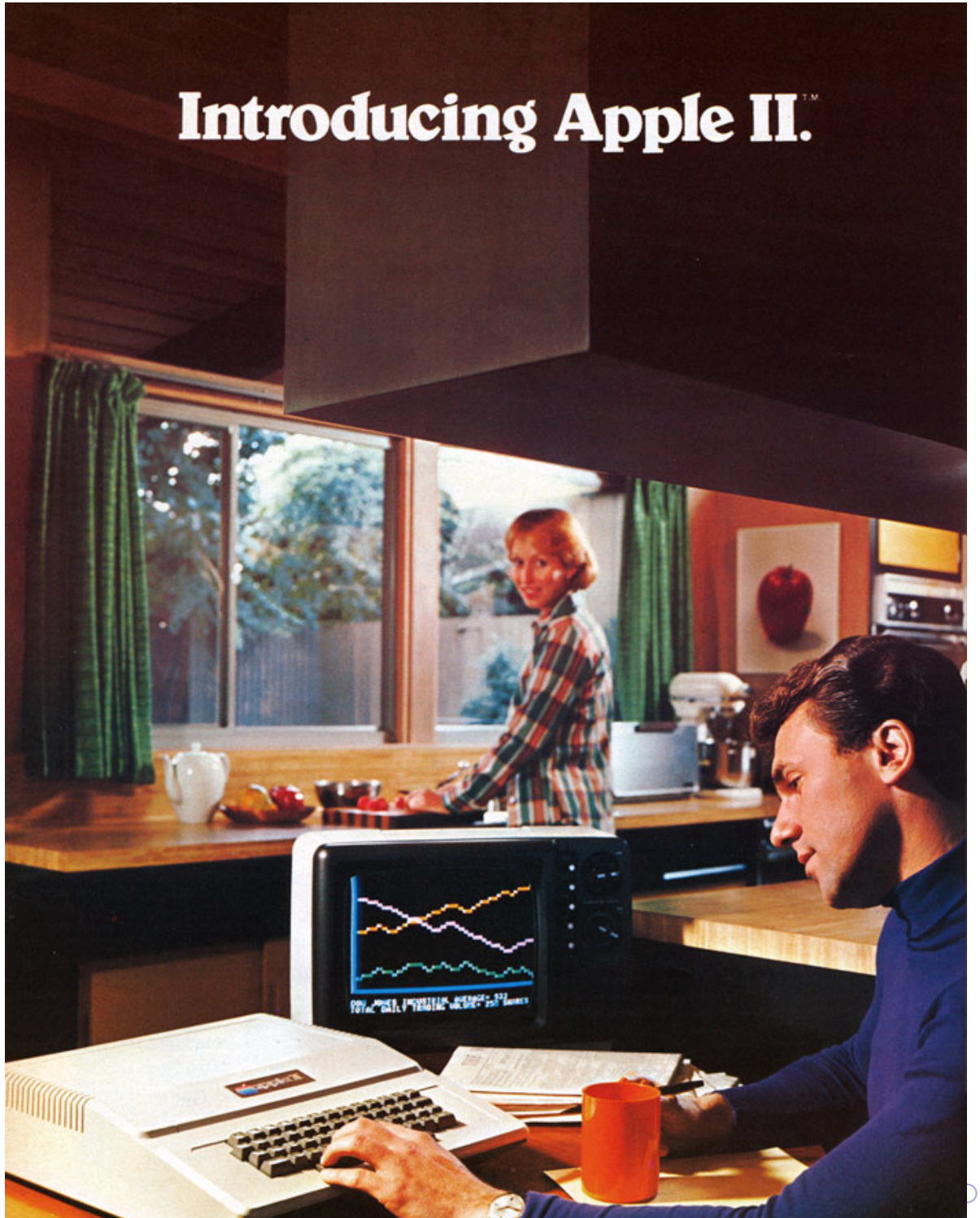
The system is fully expandable to 65K via an edge connector which carries both the address and data busses, power supplies and all timing signals. All dynamic memory refreshing for both on and off-board memory is done automatically. Also, the Apple Computer can be upgraded to use the 16K chips when they become available. That's 32K bytes on-board RAM in 16 IC's —the equivalent of 256 2102's!




Steve Wozniak

Steve Jobs

April 1977



April 1977

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

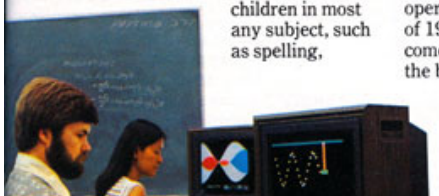
Clear the kitchen table. Bring in the color T.V. Plug in your new Apple II,* and connect any standard cassette recorder/player. Now you're ready for an evening of discovery in the new world of personal computers.

Only Apple II makes it that easy. It's a complete, ready to use computer—not a kit. At $1298, it includes features you won't find on other personal computers costing twice as much.

Features such as video graphics in 15 colors. And a built-in memory capacity of 8K bytes ROM and 4K bytes RAM—with room for lots more. But you don't even need to know a RAM from a ROM to use and enjoy Apple II. It's the first personal computer with a fast version of BASIC—the English-like programming language—permanently built in. That means you can begin running your Apple II the first evening, entering your own instructions and watching them work, even if you've had no previous computer experience.

The familiar typewriter-style keyboard makes communication easy. And your programs and data can be stored on (and retrieved from) audio cassettes, using the built-in cassette interface, so you can swap with other Apple II users. This and other peripherals—optional equipment on most personal computers, at hundreds of dollars extra cost—are *built into* Apple II. And it's designed to keep up with changing technology, to expand easily whenever you need it to.

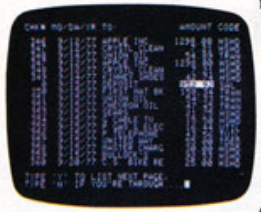
As an educational tool, Apple II is a sound investment. You can program it to tutor your children in most any subject, such as spelling, history or math. But the biggest benefit—no matter *how* you use Apple II—is that you and your family increase your familiarity with the computer itself. The more you experiment with it, the more you discover about its potential.



Start by playing PONG. Then invent your own games using the input keyboard, game paddles and built-in speaker. As you experiment you'll acquire new programming skills which will open up new ways to use your Apple II. You'll learn to "paint" dazzling color displays using the unique color graphics commands in Apple BASIC, and write programs to create beautiful kaleidoscopic designs.

As you master Apple BASIC, you'll be able to organize, index and store data on household finances, income tax, recipes, and record collections. You can learn to chart your biorhythms, balance your checking account, even control your home environment. Apple II will go as far as your imagination can take it.

Best of all, Apple II is designed to grow with you. As your skill and experience with computing increase, you may want to add new Apple peripherals. For example, a refined, more sophisticated BASIC language is being developed for advanced scientific and mathematical applications.



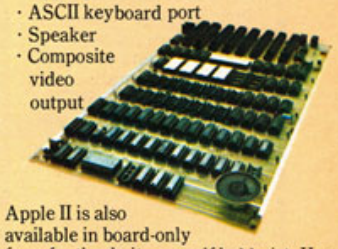
And in addition to the built-in audio, video and game interfaces, there's room for eight plug-in options such as a prototyping board for experimenting with interfaces to other equipment; a serial board for connecting teletype, printer and other terminals; a parallel interface for communicating with a printer or another computer; an EPROM board for storing programs permanently; and a modem board communications interface. A floppy disk interface with software and complete operating systems will be available at the end of 1977. And there are many more options to come, because Apple II was designed from the beginning to accommodate increased power and capability as your requirements change.

If you'd like to see for yourself how easy it is to use and enjoy Apple II, visit your local dealer for a detailed brochure. Or write Apple Computer Inc., 20863 Stevens Creek Blvd., Cupertino.

Apple II™ is a completely self-contained computer system with BASIC in ROM, color graphics, ASCII keyboard, lightweight, efficient switching power supply and molded case. It is supplied with BASIC in ROM, up to 48K bytes of RAM, and with cassette tape, video and game I/O interfaces built-in. Also included are two game paddles and a demonstration cassette.

## SPECIFICATIONS

- **Microprocessor:** 6502 (1 MHz).
- **Video Display:** Memory mapped, 5 modes—all Software-selectable:
  - Text—40 characters/line, 24 lines upper case.
  - Color graphics—40h x 48v, 15 colors
  - High-resolution graphics—280h x 192v; black, white, violet, green (16K RAM minimum required)
  - Both graphics modes can be selected to include 4 lines of text at the bottom of the display area.
  - Completely transparent memory access. All color generation done digitally.
- **Memory:** up to 48K bytes on-board RAM (4K supplied)
  - Uses either 4K or new 16K dynamic memory chips
  - Up to 12K ROM (8K supplied)
- **Software**
  - Fast extended Integer BASIC in ROM with color graphics commands
  - Extensive monitor in ROM
- **I/O**
  - 1500 bps cassette interface
  - 8-slot motherboard
  - Apple game I/O connector
  - ASCII keyboard port
  - Speaker
  - Composite video output



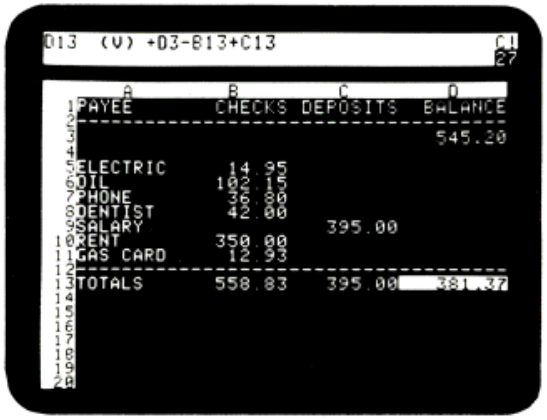
Apple II is also available in board-only form for the do-it-yourself hobbyist. Has all of the features of the Apple II system, but does not include case, keyboard, power supply or game paddles. $598.

PONG is a trademark of Atari Inc.

*Apple II plugs into any standard TV using an inexpensive modulator (not supplied).

# 1979: Visicalc: The First Spreadsheet

VISICALC™




A Visible Calculator

For the

**APPLE II**

# REFERENCE CARD

A Product of

**Software Arts, Inc.**

Distributed Exclusively By

**PERSONAL SOFTWARE INC.**
592 Weddell Drive
Sunnyvale, CA 94086
(408) 745-7841





## MOVING THE CURSOR

| | |
|---|---|
| ← → | Moves the cursor left, right, up or down. |
| *space bar* | Switches the direction indicator between horizontal (–) and vertical (!). |
| ; | If two windows, moves the cursor from one window to the other. |
| > | Go To command. Type the coordinates of the entry where you want the cursor to go; end with RETURN. |

## THE ESC KEY

The ESC key is used to recover from simple typing mistakes. It usually erases the last thing that you typed. If you press ESC enough times, it will abort what you are doing and return VisiCalc to a blank prompt line.

## SETTING A LABEL ENTRY

Label entries start with a letter (A–Z), or with the quote character ("). Terminate entering a label entry by pressing ←, →, or RETURN. Correct errors by pressing ESC. The prompt line will say LABEL while a label entry is being typed.

## SETTING A VALUE ENTRY

A value entry displays the calculated value of the expression stored at the entry. Expressions consist of numbers, coordinates of other value entries (value references), functions (such as @SUM), arithmetic operators (+ – * / ^) and/or parentheses. Expressions are evaluated strictly from left to right except as modified by parentheses. You must start an expression with a +, a digit (Ø–9), or one of the symbols @ – ( . or #. The prompt line will say VALUE while an expression is being typed. Terminate entering an expression by pressing ←, →, or RETURN. Errors can be corrected by pressing the ESC key. Examples of expressions are:

| | |
|---|---|
| 12.34 | A normal number |
| .1234E2 | A number in scientific notation |
| 2+2 | An arithmetic expression |
| +B4 | A value reference |
| 2*B4 | An expression with a value reference |
| 2*(3+4) | An expression with parentheses |

# Apple II Specifications

| | |
|---|---|
| Processor | 1 MHz 8-bit NMOS 6502 |
| Memory | 4–64K |
| ROM | 8–12K |
| Display | 40×24 text (uppercase only) |
| | 40×48 16-color |
| | 280×192 4-color |
| Storage | Cassette interface |
| | 140K 5.25" floppy |
| I/O | Keyboard |
| | 1-bit sound with speaker |
| | Two-axis, three-button joystick |
| Supplied s/w | Monitor |
| | BASIC interpreter |