Breaking 'bytes' and 'bits' together

By SHARON NOGUCHI

Every other Wednesday evening, about 300 people gather in the Stanford Linear Accelerator Center auditorium in Menlo Park to "share a byte with a friend."

The fare consists of bits, circuits, memory boards, paper tapes, hexadecimal loaders, and other computer components. It is a meeting of the Homebrew Computer Club, a collection of computer hobbyists gathered to exchange information on the machines they invent, assemble, modify, program, run and play with at home.

A byte is a unit of memory capacity having eight data bits.

Homebrew, begun in March last year, may be the oldest computer club in the U.S., its founders said. Its members range from high school students to accountants to physicists.

Richard Delp of Sunnyvale, a computer engineer, is assembling an IMSAI 8080 microcomputer to experiment with algorithms.

Gary Fariss, also of Sunnyvale, has a true "homebrew" model he put together from scratch. Fariss, a system programmer for Control Data Corp., is also an amateur radio buff and has programmed the computer to decode Morse code.

Homebrew meetings begin with a "mapping period" where people advertise problems or advice. Announcements sound like, "Has anybody put together a Pennywhistle 103?" Or, "I don't have any hardware but I would like to cooperate with someone and write some software (programs)."

"I have three extra Star Trek tapes that will produce a galactic map," is a typical offer.

Then, during the "random access" period those calling for help try to match up with those with more expertise. Spare tapes, manuals and program listings are placed on a table at the front of the room for those needing them.

"It's great," Robert Baer of Palo Alto said. "There are a lot of guys from computer companies. They'll spend hours and help you with your problems."

"Since this is a technical hobby, all people can't be programmer and technician for themselves," according to Gordon French, Homebrew librarian, in whose Menlo Park garage the club began.

At the first meeting 22 people showed up; by the second meeting people were out in the driveway and members began searching for a larger meeting hall.

Such cooperation is viewed dimly by part of the computer industry. Herb Grosch of Computerworld magazine said in a recent editorial, "What disturbs me most is (this) counterculture attitude: private property is an obsolete idea."

Is that the idea behind Homebrew?

In the "great software debate," hobbyists are sometimes accused of stealing programs.

Software refers to programmed instructions that allow the computer to run. It includes paper tapes, pin-out charts (a map of the computer's contents), computer languages and compilers. Hardware refers to the computer parts themselves.

Many hobbyists think computer manufacturers should provide software at reproduction cost, according to Robert Reiling, editor of Homebrew's newsletter. Several companies do. Other companies charge from $75 to $500 for it.

"You've got to realize the investment of the average hobbyist is going to run from $1,000 to $1,500. It's absolutely absurd to ask $500 for a manual and programs to operate the computer. It's like selling a stereo system and then asking $500 apiece for records," said French.

William Gates, a software writer, said in an open letter to hobbyists, "Is this fair? ... No one besides us has invested a lot of money in hobby software."

Yet French stressed the U.S. copyright laws allow people to copy materials for their own use. Homebrew members may check out materials from the club library to duplicate. The club itself does not duplicate materials.

Homebrew publishes a monthly newsletter of new developments, library listings, reports on mail-order and other companies and other clubs.
Two young computer enthusiasts who couldn't afford to buy a micro-computer last year instead put together their own — and it was so successful they've decided to market it.

On May 1, Steven Jobs, 21, and Stephen Wozniak, 26, will deliver 60 models of Apple Computer I to computer shops in Mountain View and Orange, Calif.

They also will market blank circuit less computer boards for hobbyists who want to build their own computers. The boards have metal tracers and a legend for where to place circuits.

Jobs is a part-time physics student at Stanford University; Wozniak designs calculators at Hewlett-Packard in Cupertino.

A year ago, neither knew much about micro computers, though each had a background in standard computers.

They joined the Homebrew Computer Club at SLAC and after six months built a computer based on the 6502 Mos Technology microprocessor (known as the computer “chip,” or the heart of a computer). The number of requests they received for their computer prompted them to go into business. The complete computer board, including memory, without a case, will sell for about $550.

Apple Computer I has a simpler, smaller, less expensive and more versatile computer board than existing models, Jobs said. “Dynamic memory” — whose contents can be controlled by users, in contrast to “static memory” — and multifunction circuits are two basic ideas behind the computer.

Despite competition from larger, established firms, Jobs and Wozniak see a bright market outlook. More and more people are buying computers and even those who already have a computer want another, Jobs said.

“It’s like a car. People don’t use them just to go places. They’re used for other reasons, like to impress other people,” he said.
By Christmas, department stores will feature home computers as the latest home entertainment, Paul Terrell, co-owner of the Bay Area's first computer store, predicted.
The Byte Shop, at 1063 West El Camino Real in Mountain View, sells computer kits and parts, programs, books and magazines geared for the home computer enthusiast.
The micro computers can be programmed in high-level language, like BASIC and FORTRAN, rather than machine language that is time-consuming to program.
Home operators also need a tele-type and a television screen for input and output memory to hold program instructions and data. Or, the computers can be tied into a home television set or tape recorder.
The entire packet may be purchased for about $1,000.
About 70% of the Byte Shop's customers are hobbyists, Terrell said. They are programming computers can be programmed to produce digital music on a stereo system, draw geometric designs on a television screen, operate home appliances or play games.
He said the home computer market is rapidly expanding, though hobbyists usually have some computer background. "It's just like the development of hi-fi (radio). When it first came out, there were the little guys out there building sets. Later, when the market was proven, the big guys (companies) came out. But initially there were some 100,000 people with screwdrivers and soldering irons figuring out how to make the things work," he said.
Terrell and his partner, Boyd Wilson, opened the Byte Shop December 7. Previously, they were northern California sales representatives for the MITS firm. They found most of their customers wanted computers for personal use, rather than work.

In an experiment to test the hobbyist market, Terrell and Wilson quickly sold 10 computer kits they had bought from MITS. "We decided if we could do this well on the side, we'd do great if we had a store people knew about," Terrell said.
So far, his prediction seems to be coming true.
Sales in December were $7,000, and Terrell estimated last month they reached $40,000.
Terrell and Wilson have early run into difficulties appealing to their shop. Computer companies were used to selling only in large quantities, or in small quantities through the mail.
In January they decided quantity buying would improve profit margins, and they decided to franchise.
Byte Shop No. 2 opened March 2 at 3400 El Camino Real in Santa Clara, and Byte Shop No. 3 is scheduled to open May 1 at 2559 S. Bascom Avenue in Campbell.