PCs for AP

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Following a large response to the feature article in the August 1983 NEWSLETTER, Ed Miller, Gerry Burke, Jim Breakall and Fred Deadrick have outlined a regular column to appear in the NEWSLETTER. The column will focus on a tool of the trade that most of us are using more than we could have imagined a few years ago and the format is flexible enough to accommodate a variety of issues that should be of interest to most of us. As with other NEWSLETTER columns, reader response and input is vital to the success of this effort. Let Ed and the other Associate Editors hear from you. Editor

Personal computers are becoming an increasingly common tool of the practicing electrical engineer. This is not too surprising considering our past predilection for slide rules and mechanical calculators, and more recently, electronic calculators. The personal computer is already having a significant impact on our profession in how and where we do our work.

A recent article in the NEWSLETTER discussed some aspects of personal computers as applied to electromagnetic problems [1]. It was pointed out that an issue of common interest is that of obtaining software for engineering applications. Most of us who buy personal computers probably do so partly to learn about this new technology, but more likely to solve actual problems encountered in our work. Consequently, our time can be spent in more profitable ways than in developing software that might already exist. As one approach to addressing this problem, that article suggested the possibility of establishing a mechanism for exchanging software and other information relevant to personal computer users. A short questionnaire to elicit readership interest in doing so, possibly through the AP-S NEWSLETTER, concluded the article. Forty-six replies have been received in response. The purpose of this column is to summarize these replies and to discuss how the process of software exchange might be started.

The questionnaire requested information concerning computer type and storage media, application interests, whether the respondent would be willing to serve as a software-exchange coordinator for their type of computer, and for any comments. Results obtained are as follows:

COMPUTER TYPE

	Number	Coordinator Volunteers
Apple II	12	8
IBM PC	10	9
HP (various)	9	3
Radio Shack	5	2
Other	15	10

Some respondents have access to two or more computers, so the number of computer types exceeds the number of replies.

APPLICATION INTERESTS

Method of Moments (Antennas & Scatters)	19
Signal Processing	11
Propagation	7
GTD	5
Microwave Circuits	5
General EM	5
Other	33

Though hardly a scientific survey, these are usually what might be expected from the readers of the AP-S NEWSLETTER, except for the relatively high interest in signal processing. The latter might have something to do with the fact that signal processing was listed as an example.

Eight countries were heard from (Australia, Canada, England, Germany, Greece, Israel, New Zealand, and USA). Enough people volunteered to serve as a software coordinator that all the computer types are more than adequately covered. A more detailed summary of these responses is available from the author. The question now is, where do we go from here? We might take the case on MININEC [2] as an example of how software exchange can work. This is a public domain code that was carefully formulated, developed and validated. Also, it satisfies a need in the antenna community, judging by the number of copies that have been sent out (more than 100 between Jim Logan at NOSC and myself). Finally, it is well documented. The result is a tool that can be used rather easily and with quite a high degree of confidence.

What other kinds of software might be of general interest? I for one am interested in eigen-value and eigen-vector computations, and have spent considerable time transferring some EISPACK [3] routines to my Apple II+ (in BASIC for now). There are probably others who would find such adapted or borrowed software useful, especially since generally it has been well documented and validated. But MININEC and EISPACK do not represent the only kinds of software that might be of general interest.

Most of us have probably written some of our own routines, for example mathematical functions, matrix operations, graphics, etc. While personal software is probably not documented and/or validated as well as the previous examples, it could still prove useful to others. Therefore, it seems worthwhile to be able to accommodate this kind of software in an exchange operation.

Finally, there is proprietary software, the kind we usually purchase in computer stores. This kind of software can't be circulated. However, it could be invaluable to benefit from the experience of others before making a decision to purchase a particular product for our own use.

To summarize, this column could be useful in exchanging information about proprietary software, and in expediting the exchange of public domain, adapted and personal software. Depending on the nature and volume of inputs we receive, we expect future columns to range from describing a single code in detail, to highlighting briefly several different codes, to providing us feedback concerning various codes, and to providing hardware information. Three other individuals here at LLNL have agreed to contribute to this activity, Jim Breakall, Gerry Burke and Fred Deadrick.