

commands like "stemleaf" (that does a stem-and-leaf display of data) or "polish" (that performs a median polish on a matrix table) you must know about Tukey's methods of data analysis. The documentation (a 234-page manual) is adequate for learning the ISP language, but it does not demonstrate or teach the basics of most of the statistical methods employed. We found that learning to use ISP involved a rather major commitment of time and effort. Since it is not a menu-driven system of packaged routines, it requires learning a completely new computer language that differs in syntax and structure from FORTRAN. For example, the Macintosh program Cricket Graph was immediately used by workers in our laboratory to plot and fit data. This same group was largely unwilling, over a period of several months, to take the time to learn and use the considerably more powerful ISP system. There are several other useful systems for treating experimental data and doing calculations on the IBM PC. For example, the SAS software package that has been widely used on IBM mainframes is now available in a microcomputer version. It would probably be worthwhile for someone interested in one of these very useful packages to intercompare several in terms of scope, documentation, and ease of implementation before selecting one.

In conclusion, ISP is a new language and system that is useful for statistical treatment and presentation of data and for scientific calculation for those willing to make the non-negligible effort to learn the system and its fundamental capabilities.

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PC-ISP. Interactive Scientific Processor. Chapman and Hall: 29 West 35th Street, New York, NY 10001. List price \$395.

PC-ISP is a command language for an IBM PC (with at least 640K RAM and two 360K floppys or one floppy and one hard disk drive) that can be used to analyze (e.g., statistically) experimental data. The language consists of about 74 commands and 72 built-in functions for operating on data sets of up to about 13 000 values. These include commands for manipulation of matrices, color graphic display of results, and curve fitting and smoothing. The commands can be clustered into short programs (macros) that can be retained as a file and used to carry out rather sophisticated calculations and data manipulations. The language is also useful in performing calculations, because a single ISP command can represent many lines of code in BASIC or FORTRAN. Thus only a few array-oriented ISP commands are needed to set up a series of numbers for a particular variable (x), calculate some function of x , and display the results by color graphics.

In addition to the many commands within ISP, such as "ft" to perform a fast Fourier transform or "smpline" that smooths data by constructing a spline function, a special command "cli" (command language interface) is available that executes an operating system command and returns to ISP. This is useful in editing ISP files and accessing FORTRAN and BASIC programs. The data files in ISP are read by an "input" command. This can be used to read the keyboard as well as both formatted and unformatted/binary files (e.g., produced by an A/D converter). ISP does not contain commands for data acquisition or external system control.

Full utilization of ISP requires a good familiarity with matrices and matrix operations and expertise in statistical methods. Thus to use