



KEEPING THE TREAD ON INVENTED WHEELS

by

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Introduction

There are approximately 17,000 students enrolled at the University of Oregon, including some 3600 in graduate studies. The University has 932 full-time faculty members engaged in teaching and research. The University is a liberal arts institution, but also includes nine professional schools and colleges.

The University of Oregon Computing Center operates an IBM 360/50 and a DEC PDP-10. The 360/50 is a batch processing system and the PDP-10 is used for timesharing.

Our budget for software is \$7500 for 1976-77 which includes \$1500 for new acquisitions.

Storage Costs

Libraries on the 360/50 consume two 2314 non-resident disk packs plus 300 tracks of on-line 2314 storage. The PDP-10 on-line libraries are stored using about one third of an RP02 disk pack. The Center has five RP02 disk drives. Resources for library maintenance also consume 130 DEC tapes for the PDP-10 and a combined total of 60 magnetic tapes for the two systems.

Library Content

Libraries and packages on the 360/50 include the following:

Simulation packages

Dynamo II
GPSS
Simscrip

Statistical packages

BMD
BMDP

SPSS
SSP

Miscellaneous packages

DISKLIB (independent statistical programs & adaptations)

Mini-Stat Pack - group of short, simple statistical routines designed to run on free WATFIV.

CALCOMP
MPS/360 Linear programming
CONTRIB

The PDP-10 packages and libraries include the following:

Statistical packages

SSP scientific subroutine
Statpack statistical programs from Western Michigan
STAT-10 group of short simple statistical routines
TENLIB independent statistical programs and adaptations

Graphics package

Contributors library - includes SIMULA, PASCAL, LISP.

The Contributor's Libraries are made up of programs that are user written or obtained and included in one or the other CONTRIB library based on their quality and general interest to center users. The programs offer a variety of functions not otherwise available to users. The programs must be documented and source and test data provided. Modifications and bug fixes unlike supported programs are normally the responsibility of the provider. However, as with all rules there are exceptions and the user services staff does under certain circumstances assume responsibility for

program modifications and bug fixes to contributed programs.

Staffing

The user services programming staff is maintained at approximately 7 F.T.E. (full-time equivalent) persons. Staffing the maintenance function normally consumes .5 F.T.E. for the DEC PDP-10 libraries and .2 F.T.E. for the IBM 360/50. Approximately .3 F.T.E. of this time is student help and .4 F.T.E. is full-time programming staff. It has proven satisfactory for us to use student personnel to do the often boring and time-consuming maintenance tasks required on libraries. Students usually still have a high level of enthusiasm even for the tedious work assignments. A full-time programmer for each machine is given the responsibility for the library maintenance on that machine. Students work under the direction of the full-time staff member. This provides continuity between modifications (and between students!) and delimits the responsibility. Group discussions with center staff and under some circumstances users are conducted prior to any major library modifications. Maintenance usually entails updating purchased and leased software packages such as SPSS and BMD, modifications of packages and programs to run with systems changes at the Computing Center, and installing and testing newly acquired software.

Our maintenance function also includes checking out trouble reports from users on suspected program malfunctions. All the library programs and packages have their own idiosyncrasies. SPSS is at one end of the difficulty spectrum in that it is well documented and modifications can always be counted on to work as described. BMD is at the other end; the documentation does not always specify the necessary modifications to be made and time allocated is usually 40-50 programmer hours plus about 35 hours of machine time compared to the 2 programmer hours and 15 minutes of machine time given to SPSS.

Record Keeping

Staff turnover and time lapses between modifications to packages require an internal bookkeeping of modifications made. We keep a file folder on every distinct program or package with an entry for every time a change is made, and the date and initials of the person responsible for the modification. Historical information includes package name, version number, developer, date

program arrived, category of use, purpose of program, type of program, catalogued procedures utilized, source language, source character format, operating system used to generate, commercial manuals available, local documentation, description of input and output, person responsible for maintenance, known bugs, maintenance aids, hardware required to run program, operator instructions, location of load modules, source files and backups and hints on future modifications to the program.

User Notification

Since one of the major gripes from users is that programs are not stable, we post anticipated changes one issue of the newsletter in advance of the modification and run a message-of-the-day several days prior to the change for the appropriate machine. Additionally we offer free consulting and hand-holding for modifications which cause a major impact on user communications with a package.

Housecleaning and Tally of Usage

One of the more important but least heralded aspects of maintenance is culling out the turkey programs and duplications of programs that are bound to occur from time to time. We pay particular attention to this aspect of maintenance because our disk space resources are so limited. Clean-up advantages will also be noted in cutting down the total maintenance responsibility and the documentation work load. Uncluttered libraries lessen the consultant's responsibility to keep track of programs with similar purposes and, of greater importance, the need to be conversant with programs of marginal or poor quality.

We run a tally program for CONTRIB and DISKLIB libraries which counts accesses to each program. Periodically this usage is reviewed and seldom or never used programs become candidates for expungement. Such programs are pulled off the system and their sources and documentation are held in limbo for one year. At the end of one year all sources and references to these programs are destroyed. The period of one year is chosen so that the occasional user will not be left holding the bag when he or she arrives for that once a year computer run. When this once-a-year user turns up, we offer free consulting and programming to switch their application to a more suitable or similar program that we have chosen

to maintain. If the user prefers, we will give them their own personal copy of the deleted program to use as they wish.

What Do the Users Want

One of the more difficult aspects of libraries for us at Oregon is obtaining user involvement in acquisitions. Since our software budget for new acquisitions is relatively small there are not many packages we can afford to add to our libraries. Our users do not tend to be terribly knowledgeable about what software is available, and seem to be generally satisfied to live with our current offerings. We survey our user population every other year on their evaluation of the Computing Center services and at that time ask for suggestions on software. When packages of interest are noted in Computing literature, the relevant departments or users are notified. The Center in most instances offers to install, test, and maintain new software if it will be available to all users and if the requesting department will pay the purchase or lease price. Our own software acquisitions are limited to things we deem to have universal user appeal.

Are Those Freebies Worth It

Occasionally packages and programs are available to university computing centers for the cost of the tape copy. Our experiences with such packages in most instances has been that you get what you pay for. These "free gifts" often lack accurate documentation, require extensive modifications to run on our systems and often have some interesting bugs which require endless programmer time to repair. When you add something to your library, users rightly or wrongly will hold your Center responsible for the correct operation of the programs. This holds true whether or not your group is responsible for development of the program(s). These free programs can end up costing a great deal of staff and machine time before they become usable.

Documentation

Well-maintained libraries will go totally unappreciated if they are unused. Documentation is the key to directing user attention to appropriate programs. All of the Computing Center programs can be referenced through the Master Catalogue in our documents room. References to libraries are also found in the Center-produced User's Manuals. Additional documentation is

available in vendor supplied manuals and Center write-ups. New programs are advertised in the newsletter and when appropriate, tutorials are presented to discuss the usage of new programs and packages.

The PDP-10 CONTRIB Library documentation is maintained on-line with three levels of information: (1) List of the programs, with a short abstract of each and instructions for accessing further information, (2) a set of files containing detailed information on how to access and use each program, and (3) a set of files with complete information on each program is maintained on magnetic tape.

Statistical programs are in extremely heavy demand at the Computing Center and a major difficulty for consultants and users alike is knowing what statistical programs we have, what are the program's capabilities and limitations, and on which machine they are maintained. Our resident scribe has developed a beautifully indexed manual broken down into nineteen (19) statistical areas. Within each area are listed all applicable programs and a descriptive page on each program. The individual program descriptions provide the following information: ease of use, on which machine the program resides, package of which program is a part, program capabilities, program limitations, and output of programs and pointers to further documentation.

This manual is daily proving its weight in gold. It allows all consultants to be helpful in statistical reference questions without being expert statisticians. An additional advantage is that the catalog points up duplications in programs and we hope it will help keep our libraries uncluttered.

One major unanswered question on the expense of library maintenance is where the staff costs for the documentation effort are or should be recovered. There is a minimal copying charge for write-ups and center produced manuals but the revenue from these sales does not approach covering the salary of the one F.T.E. of staff that is involved in documentation.

Support Problems

There was a time when most of the members of our user services staff knew something about all our library programs. The next progression was that at least one staff member knew something about a given program or package. We are now at the point where growth and acquisitions exceed

our ability to offer complete consulting and documentation support on all packages and programs in our libraries. This is a problem area that we have not yet addressed satisfactorily. With our small staff, the exit of one employee can end our ability to offer consulting assistance on programs, libraries and languages that were in that individual's area of expertise. The updates and modifications to these programs and packages can be handled to our satisfaction, but it is the ability to assist users in their communication with the package that is often difficult. Where possible, notations are made in Center documentation to warn users that consulting help is not available for a particular program and usage of the program is at their own risk.

We at Oregon certainly do not have all the answers in library maintenance but hopefully this paper, if nothing else, will promote discussion about alternatives and improvements that can and are being made in the area of maintenance at other installations.