

PASCAL USER'S GROUP

USER'S
GROUP

PASCAL NEWSLETTER

NUMBER 7

COMMUNICATIONS ABOUT THE PROGRAMMING LANGUAGE PASCAL BY PASCALERS

FEBRUARY, 1977

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PASCAL USER'S GROUP POLICIES

Purposes - are to promote the use of the programming language Pascal as well as the ideas behind Pascal. Pascal is a practical, general purpose language with a small and systematic structure being used for:

- * teaching programming concepts
- * developing reliable "production" software
- * implementing software efficiently on today's machines
- * writing portable software

Membership - is open to anyone: particularly the Pascal user, teacher, maintainer, implementor, distributor, or just plain fan. Institutional memberships, especially libraries, are encouraged. Membership is per academic year ending June 30. Anyone joining for a particular year will receive all 4 quarterly issues of Pascal Newsletter for that year. (In other words, back issues are sent automatically.) First time members receive a receipt for membership; renewers do not to save PUG postage.

Cost of membership per academic year is \$4 and may be sent to:
Pascal User's Group/ %Andy Mickel/University Computer Center/227 Exp Engr/
University of Minnesota/Minneapolis, MN 55455 USA/ phone: (612) 376-7290

In the United Kingdom, send £2.50 to:
Pascal Users' Group/ %Judy Mullins/Mathematics Department/The University/
SOUTHAMPTON/S09 5NH/United Kingdom/ (telephone 0703-559122 x2387)

PASCAL NEWSLETTER POLICIES

The Pascal Newsletter is the official but informal publication of the User's Group. It is produced quarterly (usually September, November, February, and May). A complete membership list is printed in the November issue. Single back issues are available for \$1 each. Out of print: #s 1,2,3
#4 available from George Richmond/Computing Center/U of Colorado/Boulder/80309

The contribution by PUG members of ideas, queries, articles, letters, and opinions for the Newsletter is important. Articles and notices concern: Pascal philosophy, the use of Pascal as a teaching tool, uses of Pascal at different computer installations, portable (applications) program exchange, how to promote Pascal usage, and important events (meetings, publications, etc.).

Implementation information for the programming language Pascal on different computer systems is provided in the Newsletter out of the necessity to spread the use of Pascal. This includes contacts for maintainers, documentors, and distributors of a given implementation as well as where to send bug reports. Both qualitative and quantitative descriptions for a given implementation are publicized. Proposed extensions to Standard Pascal for users of a given implementation are aired. Announcements are made of the availability of new software writing tools for a Pascal environment.

Miscellaneous features include bibliographies, questionnaires, and membership lists. Editor's notes are in Pascal style comments (**).

WRITTEN INFORMATION FOR THE Newsletter IS EASIER TO PRINT IF YOU TYPE ALL MATERIAL 1/2 OR DOUBLE SPACED SO THAT IT IS IN "CAMERA-READY" AND "PHOTO-REDUCIBLE" FORM FOR THE PRINTER. REMEMBER, ALL LETTERS TO US WILL BE PRINTED IN THE Newsletter UNLESS THEY CONTAIN A REQUEST TO THE CONTRARY. AN OVERRIDING GUIDE SEEN IN AN OLD MAD MAGAZINE APPLIES: "all the news that fits, we print!"

- Andy Mickel, editor, John P. Strait, associate editor, December 29, 1976.

POLICY



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PART I - Promoting Pascal Usage

This concerns large computer centers with many users who can be thought of as consumers of computer software. If we consider only the users (including the computer center staff) who write programs in a programming language (rather than, say, use a package such as SPSS - Statistical Package for the Social Sciences) then the problem comes down to converting users from established and less desirable languages such as FORTRAN, ALGOL-60, BASIC, and PL/I to Pascal.

William Waite's valuable guest editorial in Software, Practice and Experience Vol. 3, pp. 195-6, provides many of the guidelines. He states that the support available for a language is more important than the features in the language itself. He likens languages to "species which inhabit certain ecological niches." The analogy has been quite useful in identifying ways of promoting Pascal at the University of Minnesota (see also Editor's Contribution Pascal Newsletter #5). Waite goes on to say that only when a more efficient competitor for a given language's life support systems is introduced into the ecosystem will the given language be ousted. At many universities, then, Fortran is a very healthy species which occupies, according to Waite, "the niche created by 'scientific' computation" (perhaps numerical computation is a better term).

The specific checklist given by Waite includes:

- 1) Is a sufficient library of standard procedures available?
- 2) Can the relevant ones be extracted automatically?
- 3) Is there easy interface with computer system utilities such as the file manager and the sort/merge package?
- 4) Is there easy interface for assembler if performance measurement shows critical procedures which are not adequately optimized by the translator?
- 5) Will consultation and programming assistance be available if I have problems with the language?
- 6) Is there sufficient program preparation equipment (interactive terminals, keypunches) with the proper character sets?
- 7) Will the computer system provide reasonable turnaround for programs written in the language?

EDITOR'S CONTRIBUTION

If we take an "advocacy" position with respect to Pascal in order to promote its use, these and other aspects come into play. At the University of Minnesota, the following proved very useful since we began using Pascal in 1972.

- 1) The prevailing view that a language processor should be given support only proportional to its usage cannot be tolerated. To give a language processor a fair chance, it must be actively promoted for awhile and then its acceptance evaluated. The intrinsic merit of the language and its processor should be the determining factors.
- 2) Proper user documentation helps promote the language. Pascal starts with Pascal User Manual and Report. In addition a local computer center should provide two documents: A) a double-sided one sheet handout describing the local Pascal facilities to satisfy the numerous requests for information made by walk-in users. On this sheet should be a date, place, author, and a description of the purpose of the sheet. The installation's Pascal facilities include references for more information (including P,UM&R and the other document described below); a description of the compiler or interpreter, its origin, reliability, commonly used options, and how to use the system in both batch and interactive modes (this includes command sequences and a description of the form of compile-time and run-time messages); and a small character set table if substitutions need to be made. B) a larger (20-30 page document) both in printed copy and in machine retrievable form which includes an introduction describing the scope of the document; information about the programming language Pascal, its history, uses, implementations, general and short description of its semantics and syntax; a history of the particular implementations (Pascal compilers) the computer center is running (current features and future developments); a description of the implementation, how it works, the specific definition of the sizes of scalar types, predefined (non-standard) identifiers, compiler options and switches, differences between this implementation and the standard; how to run programs under the implementation both in interactive and batch modes, program preparation, character sets, the commands to invoke the compiler or interpreter; guidelines, hints and cautions for effective usage, error messages, how to use software writing tools such as the cross-referencer, prettyprinter, source language editor, etc.; a detailed annotated list of references: introductory texts, reference manuals, books on applications, and sources of current information.
- 3) Enough people must be available for helping users with problems in their programs.
- 4) Publicity for Pascal to keep it constantly in the eye of the computer center user community: 2-3 week short courses in the language; articles in the computer center newsletter promoting the language as well as announcing planned changes in versions;

EDITOR'S CONTRIBUTION

living, "useful", well written, and simple example programs to show the language at its best: (e.g. a fancy calendar program - what better way to get people's interest?).

- 5) When converting persons remember that: don't wastetime converting Fortran and assembly language programmers who are overly concerned with machine efficiency. They will persist in their habits. Pascal's strengths lie in reducing the number of runs one has to make on program development, and because Pascal is nearly as efficient in terms of machine time as Fortran, less actual computer time is used; new programmers are the best bet, the computer science department can made a great contribution by teaching the language to new programmers and using it in other parts of the curriculum; urge people to write new programs in the language rather than getting them to convert old programs - although the latter may produce converts astounded at better solutions arrived at because they were able to think more clearly and conceive of a better algorighm in a systematic language (Pascal).

After bringing Pascal from nowhere to third out of 20 languages in four years we feel that support for Pascal is sufficient to survive and "ecological counterattack" and will continue to erode Fortran's base of users as we satisfy more of William Waite's principles - particularly in the area of libraries of procedures.

PART II - Pascal and Standards

There has not been time to receive the reaction to the proposals which appeared in Newsletter #6. Formal standardization of Pascal as it is now (by an official standards organization such as ISO or ANSI which could then have economic enforcement in the marketplace) is pretty straightforward. Changing Pascal is certainly a political problem, and even deciding how to pick a committee and when and where it could meet may prove to be overwhelming. A lot of issues regarding specific changes are not clear cut. We are a loose union, not a tight band, of devotees.

What we should concentrate on is conventionalizing the few recurring extensions in the various implementations of Pascal. We can use the Newsletter for that. I cannot overemphasize my conviction that much, careful consideration was given to what features were left out of Pascal as it has evolved. We must always go back to the design goals of compactness, vehicle for portability, vehicle for teaching systematic programming, and a tool to write efficient production programs. We should not use Pascal for purposes it was not intended (such as writing an operating system). One should not misuse or break any tool. Note that other languages have been designed for those tasks (in the case of operating systems with the need to express concurrent

processes we have Brinch Hansen's Concurrent Pascal, Hoare's SIMONE, and a rumor about Wirth's MODULA).

I hope my editorial in PUGN#6 did not seem too confused - I was trying to be compromising and all-encompassing and I still lack a lot of answers.

One final note: the wholeSALE bending of Pascal to make it conform to conventions of Burroughs ALGOL (as described in the report: "Burroughs Pascal: Some Implementor's Thoughts) is alarming. Why have a different language (Pascal) available which can bridge Burroughs users to software written on other machines if one adopts so many features from an existing Burrough's language: Burroughs Extended ALGOL? One might as well stick to Burroughs ALGOL. At best it's PascALGOL! Why get so upset? Implementors are not operating in a vacuum; they affect all of us on the issue of standards and portability.

PART III - PUG and Pascal Newsletter

PUG now has 598 members in 24 countries and 44 states. We have been growing steadily at the rate of 60 members/month since we started. By June, then, we should have almost 1000 members. This will cause us financial anguish in the form of growing pains. So the result is very poor service regarding back issues. Sorry. It's hard to plan ahead with the small budget we have.

Speaking of slow distribution, as I write this I'm sure some of you have not yet received #6. This will make #8 longer when the reaction arrives. #5 and #6 were big and were mailed overseas by air so that we could get the Pascal movement back on track. We also printed nearly everything that came to our attention. This satisfied the individual urgent questions we had been receiving about newsletters and implementations. This did cost us money and that is why #7 is small and will not go by air overseas. We are happy to report that things seem to be much improved as the information has gotten out via the newsletter. We have tried to take an advocacy position with the goal of furthering Pascal. We hope that this hasn't offended anyone.

The bright area is the UK distribution center which is getting lots of members and has eased the overseas distribution load for us.

Thanks for all the compliments regarding the newsletter. We shall try to "keep up the good work." But we do need the help requested for handling some departments of the newsletter and functions of the User's Group written in PUGN#6.



December 29, 1976

