

IBM Journal of Research and Development: Information for Authors

This paper combines background information about the IBM Journal of Research and Development with guidelines for the preparation of Journal manuscripts. The purpose is to acquaint authors with the Journal as a primary, professional publication and to present suggestions to ease the work of author and editor in preparing clear, concise, and useful manuscripts.

Introduction

The *IBM Journal of Research and Development* is a bimonthly, professional, technical publication directed to an international and interdisciplinary audience of engineers, scientists, and technical management. Beginning with the first issue in 1957, the *Journal's* circulation has grown from about 10 000 to 30 000 copies, the net increase being almost entirely outside IBM. More than 15 000 current subscribers worldwide are associated with academic and industrial institutions and government; 2500 are libraries. Thirty-five percent of the total distribution is outside the United States, to more than 100 countries. The *Journal* is indexed or abstracted by 36 documentation services, including French, German, Japanese, and Russian language publications [1].

Papers published in the *Journal* describe original work by the authors in all areas of technical endeavor within IBM, e.g., the sciences, research methods and results, engineering and technology, mathematics, computer science, and programming. The *Journal* also publishes short communications and technical letters, titles of papers published by IBM authors in other technical literature, and titles of recent IBM patents.

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An employee of IBM or the IBM World Trade Corporation may subscribe without charge by forwarding a request through his manager to the *Journal's* Circulation Department, CHQ Armonk, or, in World Trade countries, to the country Literature Coordinator. (For other subscription information, refer to the inside front cover of the *Journal*.)

Editorial policy

• Sources of papers

Manuscripts are sought from all divisions and subsidiaries of the company. The *Journal* editors encourage the planned disclosure of nonproprietary information on significant IBM technical accomplishments and assist authors in the development of manuscripts. The Editorial Board members, on the staffs of research and development laboratories, contribute to publication planning and serve as liaison between local management and the *Journal* editors [2].

Both authorship and submittal of manuscripts are voluntary. Papers by IBM and non-IBM coauthors may be submitted; reports of work generated or supported by IBM

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contracts or grants may be considered for publication; and non-IBM authors may be invited by the Editor to contribute to a topical group of papers or for a special purpose.

• *Content*

Manuscripts should represent original, professional-level, technical work done by the authors which is unpublished and has not been submitted for publication elsewhere. (An IBM Technical Report is not considered prior publication.) Review or survey papers that contribute new knowledge or insight to a technical discipline are also considered for publication.

Although each paper may be directed to specialists in a particular field, opening paragraphs should give orienting information to readers who are specialists in related fields. The body of the paper should not be diluted or oversimplified for the general reader.

Authors should emphasize what is novel and original in their work compared to what is already known or published. The author's rationale for his design choices and the reasoning leading to his new experimental or theoretical results make interesting and valuable reading. Least desirable is a routine description of a procedure, system, device, or calculation that provides no new information to the author's peers.

References to IBM products should be limited to those that are essential in context to the specific technical matter under discussion. No reference should be made to classified or other documents, including IBM reports, that are not available for general distribution. Private communications and unpublished papers that *must* be cited should be designated as such and the originator clearly identified.

• *Clearance and review*

Manuscripts submitted to the *Journal* must have the prior management and legal clearances that are required at the author's location for external publication. In some cases the *Journal* can begin reviewing a manuscript before the local clearance procedure is completed, but uncleared material cannot be processed beyond internal reviewing. Publication clearances must be obtained by the author before a substantive review can be performed. It is the author's responsibility to obtain such clearances.

Submitted manuscripts are reviewed independently and anonymously by selected IBM and non-IBM scientists or engineers who are experts in the field of the paper and who advise the editors on the professional merit of the work and the quality of the presentation. Questions such as the following are used by the editors and reviewers to evaluate manuscripts:

1. Is the information original and is it significant as a scientific or an engineering contribution?
2. Is the work or computation accurate, correct, and complete enough to justify the conclusions presented in the paper?
3. Does the introductory and summary material inform the reader of the content and importance of the work described and is the main body of the paper written for maximum comprehension?
4. Is adequate credit given to other workers by means of cited references?

• *Special distribution*

The author of a published paper receives 95 reprints (additional copies may be ordered), and authors may recommend complimentary copies or subscriptions for colleagues and qualified members of educational institutions. The Editor also considers recommendations for special distribution of a topical issue or set of related papers in an issue to ensure that such papers are brought to the attention of those interested in the author's field of work.

Manuscripts

• *Submittal*

In final typescript form, manuscripts should be submitted, with all illustrations and all authors' biographies attached, to the editorial staff at Armonk. It is recommended that the text be transmitted via VNET. Contact the *Journal* editorial staff for specific details.

• *Format*

This "Information for Authors" is a general example of the style and format to be used. Use of section headings below the third level should be avoided. Any issue of the *Journal* can provide more specific examples.

The entire manuscript—title, abstract, text, references, biographies, tables, and figure captions—should be typed, or formatted for printout, double-spaced on 8.5 × 11-inch paper, one side only, with wide margins.

It is preferred that authors' names appear on the title page with initials only; however, this is not an absolute requirement. If a full name is requested, it will appear as such, and all co-authors will be expected to use full names for consistency.

The set of references and notes, the authors' biographies, the list of figure captions, and any illustrations or tables should be on separate pages at the end of the manuscript. Pages should be numbered consecutively.

• *Title and abstract*

The title, abstract, and author's name should appear on the first page. (The author's location is given after the refer-

ences.) The title should be concise. The abstract, which will be disseminated by information retrieval services, should enable readers to assess their interest in the full paper.

An abstract should be concise but self-contained, generally one paragraph, and fewer than 200 words. It should be an accurate, abbreviated representation of the purpose, methods, results, and conclusions presented in the full document. Symbols and abbreviations should be defined or avoided; footnotes and reference numbers should not be included.

● *References and notes*

The references, and notes that cannot be expressed parenthetically in context, should be cited on line (not superscripted) by means of consecutive numerals in square brackets and should be collected in the same order on a separate page following the acknowledgments or appendices at the end of the paper.

Citations of periodicals should consist of the initials and last name of each author, full title of the paper, periodical name, volume number, inclusive page numbers, and (in parentheses) year of publication. Abbreviations used in the professional society style manuals are generally acceptable [3-5].

Citations of books should include the initials and last name of each author or editor, title of the book, publisher's name and location, year of publication, and chapter or inclusive page numbers.

References to miscellaneous documents should follow similar forms and must contain enough information to allow the reader to obtain a copy.

● *Biographies*

Information in biographic sketches should be reasonably consistent in quality, style, and length for all authors. Typical information to be included follows:

- Full name.
- Full mailing address.
- Formal position title and nature of current work and specialty (brief but specific); date joined IBM; previous IBM assignments.
- Previous significant employment (name, dates, and location of company and nature of responsibilities).
- Education (degrees and years obtained, major course of study, colleges and universities attended, and their locations).
- Professional society memberships.
- Published books.
- Significant professional awards and honors (include dates and subject area for which the award was given).

● *Units*

Use of the International System of Units (SI) [6-8] is required; non-SI values may be given parenthetically.

● *Equations*

The important mathematical equations and expressions, which usually require additional vertical space, should be displayed on separate lines and should be numbered consecutively. Equations may be typed or written in black ink. Each equation should be punctuated as if it were an integral part of the text, i.e., as if it were a word, phrase, clause, or sentence, unless the punctuation would alter the meaning, as in a programming statement.

Clarity of meaning should be ensured by unambiguous use and placement of indices and operation symbols. Other recommendations:

1. Avoid subscripts or superscripts on subscripts and superscripts where possible.
2. Distinguish between capital and lower case letters; avoid confusion between the letter I and the numeral 1, and between the letter O and the numeral 0.
3. Identify special symbols and typefaces; put a wavy line under characters to be set in boldface, such as vector and higher-rank tensor quantities.

● *Tables*

Tables should be typed on separate pages, each with its title at the top, and should be numbered in sequence with arabic numerals. Each column heading should be short and self-explanatory, e.g., the symbol or name of a parameter, the unit in which the data are expressed, and the power of ten (if used). Footnotes are preferable to explanations in the headings or body of a table; they should be placed at the bottom of the table and referred to within the table by superscript lowercase letters, asterisks, daggers, etc.

● *Illustrations*

Each illustration should be submitted on a separate page and should be numbered in sequence with an arabic numeral. The number of illustrations should be minimized. Illustrations should be designed to emphasize only the main contributions in the paper.

Line drawings, if properly prepared, can be photographed but otherwise will be redrawn to *Journal* specifications. Experimental-data and computer-plotted graphs will normally be photographed to retain accuracy; axes, labels, and scales can be added.

Photographs must be sharp and of good contrast, have a glossy finish, and be identified on the back. Use a supplementary sketch or photocopy to indicate necessary labels or

scales. Polaroid prints may be acceptable for displaying oscilloscope traces and as microscope photographs. Pictures of apparatus will be used only to show novel technical details.

Special requirements for artwork may be accommodated when they will aid in communicating results.

References and notes

1. A current list of the publications that abstract or index the *IBM Journal of Research and Development* is published on Cover 3 of each issue of the *Journal*.
2. Members of the Editorial Board and their locations are listed on Cover 2 of the *Journal*.
3. *Handbook for Authors* and "Manuscript Requirements," American Chemical Society Publications, Washington, DC 20036, 1967 and 1976, respectively.
4. "Information for IEEE Authors," Institute of Electrical and Electronics Engineers, New York, NY 10017 (an undated collection of reprints from the *IEEE Spectrum*, August 1965 and March and May 1966).
5. *Style Manual*, American Institute of Physics, New York, NY 10017, second edition, revised April 1973.
6. *The International System of Units (SI)*, C. H. Page and P. Vigoureux, Eds., National Bureau of Standards Special Publication 330, August 1977; available as item C13.10:330/3 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
7. *Metric Editorial Guide*, IBM edition, American National Metric Council, Washington, DC 20036, September 1976.
8. *SI Metric Reference Manual*, SR23-2725-1, IBM Corporate Headquarters, Armonk, NY, 1973.

Harlow Freitag IBM Corporate Headquarters, 44 South Broadway, White Plains, New York 10601. Dr. Freitag is currently Editor of the *IBM Journal of Research and Development*. He joined IBM in Poughkeepsie, New York, in 1958. He has held several technical and managerial positions in design automation, systems engineering, and software engineering. He was formerly a member of the Group Staff of the Data Processing Product Group and prior to that was assistant director of the Computer Sciences Department at the Thomas J. Watson Research Center, Yorktown Heights, New York. He received his B.S. in chemistry (with honors) from New York University and his M.S. and Ph.D. in chemistry from Yale University, New Haven, Connecticut, the latter in 1959. Dr. Freitag is a Fellow of the Institute of Electrical and Electronics Engineers and a member of the Association for Computing Machinery and Sigma Xi.