

Notes for Authors

The purpose of writing a technical report is to introduce results and disclose them in order to permit their use as a basis for action by others.

The prime requirements of a good article are precision and clarity. A writer should attempt to say exactly what is meant, and should say this so clearly that misunderstanding is impossible. Most frequently, obscure writing and imprecision are the result of inadequate vocabulary and poor organization.

An article must be understandable to its readership. As *Computing Systems* is targetted at a technical and professional audience, technical terms and abbreviations are not only acceptable, but preferable: technical material can frequently be more easily conveyed in specialist terminology.

A well-written article is readable. This does not mean that an article should be read rapidly without thought or attention. It means that the reader ought to devote thought and attention to the subject matter, not having to dissipate energy on poor organization, obscure vocabulary, or defective form.

Articles should be written in clear and effective English. Paragraphs should concern single topics, clearly stated and well-developed. Each sentence should have a subject and a predicate; syntax should not be so convoluted that the totality is incomprehensible.

A good article is concise. A concise article is easier to read than a verbose one. In general, verbosity is the result of the writer's inability to say to the reader what was meant on the first attempt.

Preparation

Syntax

While it is obvious that sentences should have subjects and predicates, it is apparently less clear that the subject and verb in a sentence should agree in number: if the subject of a sentence is plural, the verb must be plural; if one is singular, the other must be singular.

The three words occurring as subjects which seem to cause the most trouble are *none*, *data*, and *many*. *None* is singular:

None of the many text editors is totally satisfactory.

Even though *editors* is plural, the subject of the sentence is *None*, so the verb is singular.

However, in

Many text editors are hard to use.

Many is the subject, so the verb is plural.

Please remember that *data* is plural:

The data are...

Punctuation

There are two types of punctuation in English: *terminal* and *nonterminal*.

Terminal punctuation occurs at the end of an utterance. There are only three types of terminal punctuation: the period [.], which occurs at the end of a statement; the question mark [?], which occurs at the end of a request; and the exclamation point (or “bang”) [!], which may occur at the end of a demand, an interjection, or an exclamation. *Never* duplicate or triplicate question marks or exclamation points.

There are nearly a dozen *nonterminal punctuation* symbols used in standard writing: the semicolon [;], the comma [,], the colon [:], the hyphen [-], the dash [-], parentheses [()],

quotation marks [“ ”], the apostrophe [’], and ellipsis [...] are the most common.

The *semicolon* may be used as a linking connective

C++ is an object-oriented programming language; APL isn't.

where it takes the place of a coordinating conjunction. The semicolon may also take the place of a comma in some sequences:

Among the more prolific English novelists, one might mention Trollope, who wrote over 40 novels; Powell with 18; and Dickens, Meredith, and Thackeray with over 15 each.

The *comma* seems to be a common nemesis. Most comma faults are the result of overuse, rather than omission. The comma should be used before a coordinating conjunction joining two independent clauses:

I bought a Mac, but Irv bought an Apollo.

Commas should be used after subordinate clauses which introduce sentences:

With the advent of the laser printer, line printers seem to have disappeared.

Commas are used to set off appositives:

Dennis M. Ritchie, one of the fathers of UNIX, is still productive.

Dates and addresses are punctuated by commas:

On June 6, 1944, while I was living at 151 West 16th Street, New York City, the allies landed in Normandy.

Elements in a series are set off by commas:

LISP, APL, COBOL, PASCAL, ALGOL, and C are computer languages.

The *colon* signals the reader that the material following it amplifies, explains, or completes that which has preceded it:

He felt there were but two sensible languages: English and C.

The *dash* may be used to indicate the interruption of a chain of thought and the insertion of parenthetical material:

The Macintosh SE – not to be confused with the Macintosh II – comes with a 20Mb disk.

Parentheses are used to enclose unimportant material:

He always used specific *troff* macros (-me).

Quotation marks are used to set off a writer's or speaker's exact words or to enclose slang expressions:

"Why in the world," he asked, "are you using APL?"

What did Milton mean by "Man's first disobedience"?

Television is sometimes called the "boob tube."

Please note here that – in general – punctuation appears within the quotation marks. It appears outside the quotation in the second example because the question is not Milton's.

The *apostrophe* is used to indicate contractions and possessives:

That's Bob's terminal. (= That is the terminal that belongs to Bob.)

The "Watson Lab" is one of IBM's three research sites.

Though the apostrophe is occasionally used to indicate the plural of an acronym

There are 2000 PC's in use in Alameda County.

this is *unacceptable*. Use

There are 2000 PCs...

Ellipsis, as above, is used to indicate that a statement is incomplete, or that something has been omitted:

"You touch that keyboard," I said, "and I'll ..."

The opening sentence of *Paradise Lost* ("Of man's first disobedience ... in Prose or Rhyme") is 16 lines long.

The *hyphen* is used in compound numerals and at the end of a line to indicate that a word is incomplete:

ninety-six, seventy-five, three thousand and twenty-one,
seventy-six nanoseconds

always consult a dictionary on where to syllabify

Numerals

In text, numerals one (1) through ten (10) should be spelled out, except when they refer to mathematical expressions or physical measurements.

The system runs on eight VAXes.

The CPU is connected to 14 printers, two modems, and a console.

We use 3.14 in the following equations.

The cable length is limited to 50 meters.

Units

Though mks units are preferred to fps units, both "English" and "metric" units are acceptable.

If you use terms like *coulombs*, *Newtons*, *Henrys*, etc., which are not common in computer science, please define them the first time they occur:

Newtons = kilograms x meters/second²

Abstracts

Each article should be preceded by a formal abstract of no more than 300 words. This abstract should not be a mere duplication of either the first or the last section of the article. A reader of the abstract should have a good idea of what the article is about.

References

Intext references should refer to an alphabetical list at the end of the submission. The references may be either to a numbered reference or to the first author of the reference. Do not use referential footnotes.

Bibliographical references should be of the form

J. R. Bell, Threaded Code, *Communications of the ACM*, 16(6):370-372, June 1973.

or

H. M. Deitel, *An Introduction to Operating Systems*, 2nd Ed., Reading, MA: Addison-Wesley, 1990.

or

B. Stroustrup, The C++ Programming Language – Reference Manual, AT&T Bell Laboratories Computing Science Technical Report 108, 1984.

or

M. Girard and A. A. Maciejewski, Computational Modeling for the Computer Animation of Legged Figures, *SIGGRAPH '85 Conference Proceedings* 19, pages 263-270 (July, 1985).

The intext references should thus read:

[Deitel 1990; Girard et al. 1983]

or

[Girard & Maciejewski 1985]

Footnotes

Please use as few footnotes as possible. If footnotes are necessary to your contribution, they should be as succinct as possible. Footnotes should be numbered consecutively and (in hardcopy) located on the appropriate pages of the article.

It should be noted that footnotes, when not referential, are asides to the reader. As such, they can usually be incorporated into the text as parenthetical expressions or, if extensive, they can be placed in appendices. Moving the eye to the foot of a page is generally disruptive to the flow of reading.

Headings and Subheadings

Computing Systems uses three levels of heading. If it is absolutely necessary, a fourth level may be used. If your "outline" has yet more levels, you might want to reconsider the general organization of your contribution.

Figures and Illustrations

For each figure or illustration two (2) high quality glossy prints, original laser output, or original drawings should be submitted. Identify each figure or illustration *on the back* to reduce confusion. *Photocopies are unacceptable* as they will not print satisfactorily.

To make *absolutely certain* that your figures and illustrations fit the format of *Computing Systems*, they should be scaled so that their horizontal width is no greater than 4.66 inches (11.75 cm.); the vertical height of the text area on each page is 7.58 inches (19.25 cm.).

Tables, equations, and formulas

Tables should supplement the text, not duplicate it. Remember that tables full of mathematical data are hard to read. If you feel that the inclusion of such data is necessary, think of relegating it to an appendix. Insertion of tabular data is disruptive to smooth reading of an article or report.

Graphs have advantages over tables, but they also have disadvantages. For example, the relationship between two variables can be most strikingly represented on a graph; tables present greater precision than graphs.

Every chart, table or graph should bear a title which identifies it clearly. On a graph, axes should be labelled unambiguously; similarly, rows and columns in tables should be marked.

To make *absolutely certain* that your tables fit the format of *Computing Systems*, they should be scaled so that their horizontal width is no greater than 4.66 inches (11.75 cm.); the vertical height of the text area on each page is 7.58 inches (19.25 cm.).

Please use *tbl* and *eqn* whenever possible.

There are many things which might be added concerning displays. All of them have been expounded in

E. R. Tufte, *The Visual Display of Quantitative Information*,
Cheshire, CT: The Graphics Press, 1983.

Macros

Computing Systems is formatted using *ditroff*, the *-me* macro package and some customization macros. The additions are available on request from *{uunet,ucbvax}!usenix!strong*.

Peter H. Salus

The cover and interior layout of *Computing Systems* were designed by Wolfgang Lederer.