Writing for

Computer Science & Engineering

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Style Specifics

Introduction

❖ Good style

    – Clear, easy-to-read writing, which can be achieved by following well-defined guidelines.

    – These are not arbitrary rules, but are principles that experienced writers follow

❖ This chapter concerns a range of specific problems that are common in technical writing

Titles and Headings

❖ Title

- Titles of papers and sections should be concise and informative, have specific rather than general terms, and accurately describe the content.

- Complicated titles with long words are hard to digest.

- A New Signature File Scheme Based on Multiple-Block Descriptor Files for Indexing Very Large Data Bases

- Signature File Indexes Based on Multiple-Block Descriptor Files

- An Investigation of the Effectiveness of Extensions to Standard Ranking Techniques for Large Text Collections

- Extensions to Ranking Techniques for Large Text Collections

❖ Don't make the title so short that it is contentless.

- "Limited-Memory Huffman Coding for Databases of Textual and Numeric Data" is awkward, but it is superior to "Huffman Coding for Databases", which is far too general.

Titles and Headings

- ❖ Title
  - Accuracy is more important than catchiness
  - **"Strong Modes Can Change the World!"** is excessive, not to mention uninformative.
  - The more interesting the title, however, the more likely that the text underneath it will be read.
  - The title is the only part of your paper that most people see; if the title does not reflect the paper's contents, the paper will not be read by the intended readership.

- ❖ **The title is meant to capture something of the flavour of the contribution, and should not be misleading as to the scope or outcome of the work.**
  - For example, titles that begin "Towards …" can be disconcerting.
  - If the title of the paper is "Towards Effective Blog Search", it suggests that effective blog search is not actually achieved in the paper, or that only one specific part of the broader problem has been tackled.

- ❖ **It would make more sense to capture just that specific part of the problem in the title, and consider the broader context only when discussing the motivation for the work.**

Titles and Headings

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- ❖ Titles and section headings do not have to be complete sentences; indeed, such titles can look rather odd
  - Duplication of Data Leads to Reduction in Network Traffic
  - **Duplication of Data to Reduce Network Traffic**

- ❖ Section headings should reflect the paper's structure.
  - If a section is headed "Lists and Trees" and the first subsection is "Lists", another should be "Trees"; don't use, say, "Other Data Structures".
  - If a section is headed "Index Organizations" the subsection heading should probably be "B-trees" rather than "B-tree indexes".

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❖ **Headings may or may not be numbered.**

- In a paper, my preference is to use only two levels of headings, major and minor, and to only number major headings.

- In a thesis, numbered chapters, sections, and possibly subsections, are appropriate. Deeper numbering allows more precise referencing, but often seems fussy.

- If all headings are unnumbered—as is required in some journals—make sure that major and minor headings are clearly distinguished by font, size, or placement.

Titles and Headings

❖ **Major headings**

  – chapters, sections, or subsections—are displayed,

❖ **A paper (or thesis chapter) consists of sections and possibly subsections.**

  – There is rarely any need to break subsections into sub–subsections.

  – Avoid breaking text into small blocks;

  – Three displayed headings on a page is too many.

  – Beware of having too few headings, though, because it is difficult to maintain the logical flow of a section over more than a few pages.

The Opening Paragraphs

❖ **The opening paragraphs**

- – set the reader's attitude to the whole paper or thesis, so begin well.
- – All of a document should be created and edited with care, but take the most care with the opening, to create the best possible first impression.
- – The abstract should be written especially well, without an unnecessary word, and the opening sentence should be direct and straightforward.

- – Trees, especially binary trees, are often applied—indeed indiscriminately applied—to management of dictionaries.
- – **Dictionaries are often managed by a data structure such as a tree. However, trees are not necessarily the best choice for this application.**

- – This paper does not describe a general algorithm for transactions.
- – **General-purpose transaction algorithms guarantee freedom from deadlock, but can be inefficient. In this paper, we describe a new transaction algorithm that is particularly efficient for a special case, the class of linear queries.**

The Opening Paragraphs

❖ **Starting an abstract or introduction with "This paper concerns" or "In this paper" often means that results are going to be stated out of context**

- In this paper we describe a new programming language with matrix manipulation operators.

- Most numerical computation is dedicated to manipulation of matrices, but matrix operations are difficult to implement efficiently in current high-level programming languages. In this paper we describe a new programming language with matrix manipulation operators.

❖ **Beginning a paper by stating that a topic is popular or that a problem is important is flat and uninspiring**

- Use of digital libraries is increasingly common.

- It is important that the cost of disk accesses be reduced in query processing.

❖ **A simpler or more specific statement may well be preferable.**

- Digital libraries provide fast access to large numbers of documents

- Query processing can involve many disk accesses

The Opening Paragraphs

❖ A typical organization for the introduction of a paper

- Use the first paragraphs to describe the context.
- It is these paragraphs that convince the reader that the paper is likely to be interesting. The opening sentences should clearly indicate the topic.
- Underutilization of main memory impairs the performance of operating systems.
- Operating systems are traditionally designed to use the least possible amount of main memory, but such design impairs their performance.

❖ Distinguish description of existing knowledge from the description of the paper's contribution.

- Many user interfaces are confusing and poorly arranged. Interfaces are superior if developed according to rigorous principles.
- Many user interfaces are confusing and poorly arranged. We demonstrate that interfaces are superior if developed according to rigorous principles.

❖ In most papers, the introduction should not flow on from the abstract, which is a summary of a paper rather than its opening. The paper should be complete even with the abstract removed.

Variation

❖ Diversity—in organization, structure, length of sentences and paragraphs, and word choice—helps to keep the reader's attention

- The system of rational numbers is incomplete. This was discovered 2000 years ago by the Greeks. The problem arises in squares with sides of unit length. The length of the diagonals of these squares is irrational. This discovery was a serious blow to the Greek mathematicians.

- The Greeks discovered 2000 years ago that the system of rational numbers is incomplete. The problem is that some quantities, such as the length of the diagonal of a square with unit sides, are irrational. This discovery was a serious blow to the Greek mathematicians.

Paragraphing

❖ **A paragraph**

- Discuss a single topic or issue.
- The outline or the argument is typically captured in the first sentence of each paragraph, with the rest of the paragraph used for amplification or example.
- Every sentence in a paragraph should be on the topic announced in the opening.
- The last sentence has higher impact than those in the body, so pay attention to sentence order.

❖ **Long paragraphs**

- Several lines of argument are being followed simultaneously.
- If a long paragraph can be broken, break it.
- Lack of variation in paragraph length makes the page monotonous, however, so don't divide your text into paragraphs of uniform size.

Paragraphing

❖ **Contextual information can be forgotten between paragraphs, and references between paragraphs can be difficult to follow.**
  - Example – Discussing a fast sorting algorithm,
  - The next paragraph should not begin "This algorithm" but rather "The fast sorting algorithm";
  - if one paragraph refers to Harvey, the next should not refer to "his" but rather to "Harvey's".
  - Link paragraphs by re-use of keywords or phrases, and with expressions that connect the content of one paragraph to that of the next.

❖ **Formatted lists can be used as an occasional alternative to paragraphs.**
  - They highlight each main point clearly.
  - The context remains obvious, whereas, in a long list of points made in a paragraph, it is hard to tell whether the later points are part of the original issue or belong to some subsequent discussion.
  - An individual point can be considered in detail without confusing the main thread of narrative.
  - They are easy to refer to

Paragraphing

❖ **List points**
- Numbered, named, or tagged.
- Use numbers only when ordering or reference is important.
- Acceptable tags are bullets and dashes; fancy symbols look childish.

Ambiguity

- ❖ **Check carefully for ambiguity. It is often hard to detect in your own text because you know what is intended.**
  - The compiler did not accept the program because it contained errors.
  - The program did not compile because it contained errors.

  - There is a new version of the operating system, so when using the "fetch" utility, error messages can be ignored.
  - There is a new version of the operating system, so the "fetch" utility's error messages can be ignored.

Ambiguity

❖ **When using pronouns such as "it", "this", and "they", ensure that the reader knows what is being referred to.**

- The next stage was the test of the complete system, but it failed.

- In addition to skiplists we have tried trees. They are superior because they are slow in some circumstances but have lower asymptotic cost.

- In addition to skiplists we have tried trees. Skiplists are superior because, although slow in some circumstances, they have lower asymptotic cost.

- The machine crashed and it was necessary to reboot it.
- The machine crashed and had to be rebooted.

Ambiguity

❖ **Premature pronouns**
  - When it was first developed, recursive compilation was impractically slow and required too much memory.

  - When recursive compilation was first developed, it was impractically slow and required too much memory.

- A common source of confusion is between speed and time
  - "increasing speed"   is easily read as increasing time

Sentence Structure

❖ Sentences should have simple structure, which usually means that they will be no more than a line or two.

❖ Don't say too much all at once

- When the kernel process takes over, that is when in the default state, the time that is required for the kernel to deliver a message from a sending application process to another application process and to recompute the importance levels of these two application processes to determine which one has the higher priority is assumed to be randomly distributed with a constant service rate R.

- When the kernel process takes over, one of its roles is to deliver a message from a sending application process to a receiving application process, and to then recompute the importance levels of these two application processes to determine which has the higher priority. The time required for this activity is assumed to be randomly distributed with a constant service rate R.

Sentence Structure

❖ **It is likewise helpful to avoid nested sentences, that is, information embedded within a sentence that is not part of its main statement**

- In the first stage, the backtracking tokenizer with a two-element retry buffer, errors, including illegal adjacencies as well as unrecognized tokens, are stored on an error stack for collation into a complete report.

❖ **Analysis**

- First, this is poor because crucial words are missing.
- The beginning should read "In the first stage, which is the backtracking tokenizer".
- Second, the main information—how errors are handled—is intermixed with definitions.
- Nested content, particularly if in parentheses, should be omitted.
- If such content really is required, then put it in a separate sentence.
- The first stage is the backtracking tokenizer with a two-element retry buffer. In this stage possible errors include illegal adjacencies as well as unrecognized tokens; when detected, errors are stored on a stack for collation into a complete report.

Sentence Structure

❖ Watch out for fractured "if" expressions.

- If the machine is lightly loaded, then response time is acceptable whenever the data is on local disks.

  - The conditions of the "if" have been separated by the consequent

- **If the machine is lightly loaded and data is on local disks, then response time is acceptable.**

- **Response time is acceptable when the machine is lightly loaded and data is on local disks.**

❖ Longer sentences can be divided by, say, simply replacing an "and" or a semicolon with a full stop.

- If there is no particular reason to join two sentences, keep them separate.

- We collated the responses from the users, which were usually short, into the following table.

- **The users' responses, most of which were short, were collated into the following table.**

Sentence Structure

❖ **Double negative**

- There do not seem to be any reasons not to adopt the new approach.
- **The new approach is at least as good as the old and should be adopted.**

❖ **Sing-song phrases can be distracting, as can rhymes and alliteration.**

- We propose that the principal procedure of proof be use of primary predicates.
- Semantics and phonetics are combined by heuristics to give a mix that is new for computational linguistics.

❖ **Organize your sentences so that they can be parsed without too much backtracking.**

- Classifying handles can involve opening the files they represent.
- **Classification of handles can involve opening the files they represent.**
- If an "-ing" suffix can be replaced by "-ation of", as in this example, then it is probably a good idea to do so

Sentence Structure

❖ If an "-ing" suffix can be replaced by "-ation of", as in this example, then it is probably a good idea to do so

- The final line in the table shows that removing features with low amplitude can dramatically reduce costs.
- The final line in the table shows that removal of features with low amplitude can dramatically reduce costs.
- In this context, developing tools is not an option.
- In this context, development of tools is not an option.

❖ Know your limits

– Experienced writers can construct complex sentences that are easy to read, but don't make the mistake of believing that something is easy to understand because you—the author—understand it.

❖ Build your text from simple sentences and concise paragraphs.

– Is each sentence motivated by the preceding text? Can you identify the sentence's purpose, that is, is it necessary?
– Could it be simplified? And so on. The habit of careful examination of your text can greatly improve your writing.

Tense

- ❖ **Most text is in past or present tense.**

- ❖ **Present tense**
  - – Eternal truths. T
  - – "the algorithm has asymptotic cost $O(n)$", not "the algorithm had asymptotic cost $O(n)$".
  - – statements about the text itself. It is better to write "related issues are discussed below" than to write "related issues will be discussed below".

- ❖ **Past tense**
  - – describing work and outcomes.
  - – "the ideas were tested by experiment", not "the ideas are tested by experiment".
  - – It follows that it is occasionally correct to use past and present tense together.
  - – **Although theory suggests that the Klein algorithm has asymptotic asymptotic cost $O(n^2)$, in our experiments the trend observed was $O(n)$.**

Tense

❖ **Either past or present tense can be used for discussion of references.**

❖ **Present tense is preferable but past tense can be forced by context.**

- **Willert (1999) shows that the space is open.**
- **Haast (1986) postulated that the space is bounded, but Willert (1999) has since shown that it is open.**

❖ **Other than in conclusions, future tense is rarely used in science writing.**

Repetition and Parallelism

❖ **Text that consists of the same form of sentence used again and again is monotonous.**

- Beginning with "however", "moreover", "therefore", "hence", "thus", "and", "but", "then", "so", "nevertheless", or "nonetheless".
- Don't overuse the pattern "First, … Second, … Last, …".

❖ **Complementary concepts should be explained as parallels, or the reader will have difficulty seeing how the concepts relate to each other.**

- In SIMD, the same instructions are applied simultaneously to multiple data sets, whereas in MIMD different data sets are processed with different instructions.
- In SIMD, multiple data sets are processed simultaneously by the same instructions, whereas in MIMD multiple data sets are processed simultaneously by different instructions.

Repetition and Parallelism

❖ **Parallels can be based on antonyms**

- Access is fast, but at the expense of slow update.

- **Access is fast, but update is slow.**

❖ **Lack of parallel structure can result in ambiguity**

- The performance gains are the result of tuning the low-level code used for data access and improved interface design.

- **The performance gains are the result of tuning the low-level code used for data access and of improved interface design.**

- **The performance gains are the result of improved interface design and of tuning the low-level code used for data access.**

Repetition and Parallelism

❖ **There are some standard forms of parallel.**

- The phrase "on the one hand" should have a matching "on the other hand".

- A sentence beginning "One …" suggests that a sentence beginning "Another …" is imminent.

- If you flag a point with "First" then every following point should have a similar flag, such as "Second", "Next", or "Last".

Repetition and Parallelism

❖ **Parallel structures should be used in lists**

- For real-time response there should be sufficient memory, parallel disk arrays should be used, and fast processors.

- Real-time response requires sufficient memory, parallel disk arrays, and fast processors.

❖ **Comparisons and relative statements should be complete.**

- If "the Entity-Relationship model is a better method for developing schema", then it is better than something else.

- Say what that something is.

Emphasis

❖ **The structure of a sentence places implicit emphasis, or stress, on some words.**

- Reorganization of a sentence can change the emphasis.
- A static model is appropriate because each item is written once and read often.
- A static model is appropriate because each item is only written once but is read often.

❖ **Inappropriate stress can lead to ambiguity**

- Additional memory can lead to faster response, but user surveys have indicated that it is not required.
- Faster response is possible with additional memory, but user surveys have indicated that it is not required.

- The first version, which has the stress on "additional memory", incorrectly implies that users had commented on memory rather than response.

Emphasis

- ❖ **Explicit stress**
  - Italics
  - Don' t italicize words *unnecessarily*
  - DON' T use capitals for emphasis
- ❖ **Rather than italicize a whole sentence, say, stress it in some other way**
  - Italicize one or two words only, or make it the opening sentence of a paragraph.

  - **The data structure has two components, a *vocabulary* containing all of the distinct words and, for each word, a *hit list* of references.**

Definitions

- ❖ Terminology, variables, abbreviations, and acronyms should be defined or explained the first time they are used.
  - Specific and concrete.
  - Don't create questions by giving definitions that refer to concepts that are unknown or uncertain.

- ❖ Use a consistent format for introducing new terminology. Implicit or explicit emphasis on the first occurrence of a new word is often helpful, because it stresses what is being introduced.
  - We use homogeneous sets to represent these events.
  - We use *homogeneous* sets to represent these events.
  - To represent these events we use homogeneous sets, whose members are all of the same type.
  - Compaction, in contrast to compression, does not preserve information; that is, compacted data cannot be exactly restored to the original form.

Choice of Words

❖ **Use short, direct words rather than long, circumlocutionary ones**

- Use "begin" rather than "initiate" ,
- "first" , "second" rather than "firstly" and "secondly" ,
- "part" rather than "component" ,
- "use" rather than "utilize" .
- Use short words in preference to long, but use an exact long word rather than an approximate short one.

❖ **The words you choose should be specific and familiar**

- The analysis derives information about software
- The "information" could be anything: optimizations, function-point descriptions, bug reports, or asymptotic cost.
- The analysis estimates the resource costs of software.

Choice of Words

❖ **Other abstract terms that are overused**
- "important", "intelligent", "method", "paradigm", "performance", and "semantic". "Difficult"
- If something is "difficult to compute", does that mean that it is slow, or memory-hungry, or requires double precision, or something else altogether?
- "Hard", "Efficient"

❖ **A common reason for using vague terms is that some authors feel they are writing badly if they use the same word twice in a sentence or paragraph, and thus substitute a synonym, which is usually less specific**
- The database executes on a remote machine to provide better security for the system and insulation from network difficulties.
- The database executes on a remote machine to provide better security for the database and insulation from network difficulties.
- The "don't repeat words" rule might apply to creative writing, but not to technical terms that must be clearly understood.

Choice of Words

❖ Some sequences of words are awkward because they can be run together to form another, valid word.

- There are some times that appear inconsistent.
- Some of the times appear inconsistent.
- Several of the times appear inconsistent.

❖ Language is not static

- Words enter the language, or go out of vogue, or change in meaning.
- "data" . Since "data" is by etymology a plural, expressions such as "the data is stored on disk" have been regarded as grammatically incorrect
- "Data" is appropriate for both singular and plural.

❖ Use a word only if you are sure that you know the meaning and can apply it correctly

❖ If you are unsure about a word, check it in a dictionary

Choice of Words

- ❖ **Some choices of word or phrase are cultural.**
  - Indian writers sometimes write "different from" where a British writer would write "in contrast to"
  - Globalization of English, however, it is often not logical to defend one usage over another.

- ❖ **Slang should not be used in technical writing**

- ❖ **Use "cannot" in preference to "can't",**

- ❖ **Don't make excessive claims about your own work.**
  - Phrases such as "our method is an ideal solution to these problems" or "our work is remarkable" are not acceptable.
  - Claims about your own work should be unarguable.

Qualifier

- ❖ Don't pile qualifiers on top of one another.
  - Within a sentence, use atmost one qualifier such as "might", "may", "perhaps", "possibly", "likely", "likelihood", or "could".
  - Overuse of qualifiers results in text that is lame and timid.
  - It is perhaps possible that the algorithm might fail on unusual input.
  - **The algorithm might fail on unusual input.**
  - **It is possible that the algorithm would fail on unusual input.**

- ❖ Example from the conclusions of a paper.
  - We are planning to consider possible options for extending our results.
  - **We are considering how to extend our results.**
  - Merten's algorithm is not dissimilar to ours.

- ❖ Qualifiers such as "very" and "quite" should be avoided, because they are in effect meaningless.
  - There is very little advantage to the networked approach.
  - **There is little advantage to the networked approach.**

Qualifier

❖ Likewise, "simply" can often be deleted.

- The standard method is simply too slow.
- **The standard method is too slow.**
- "totally", "completely", "truly", "highly", "usually", "accordingly", "certainly", "necessarily", and "somewhat"

Misused Words

- ❖ **Words that are often used incorrectly because of confusion with another word of similar form or sound.**
- ❖ **The "usually correct" form is shown on the left; the form with which each word gets confused is shown on the right.**

Usual	Other
Alternative	Alternate
Coarse	Course
Comparable	Comparative
Complement	Compliment
Dependent	Dependant
Descendant	Descendent
Discrete	Discreet
Elusive	Illusive
Emit	Omit
Ensure	Insure
Ensure	Assure
Envelope	Envelop
Excerpt	Exert
Foregoing	Forgoing
Further	Farther
Insight	Incite
Lose	Loose
Omit	Emit
Partly	Partially
Practice	Practise
Principle	Principal
Simple	Simplistic
Solvable	Soluble
Stationary	Stationery

Misused Words

❖ **Which, that, the** : Many writers use "which" when "that" is appropriate. Use "which" only when it cannot be replaced by "that".

- There is one method which is acceptable.
- There is one method that is acceptable.
- There are three options, of which only one is tractable.

- It is true the result is hard to generalize.
- It is true that the result is hard to generalize.

❖ **Less, fewer** : Use "less" for continuous quantities ("it used less space") and "fewer" for discrete quantities ("there were fewer errors").

Misused Words

❖ **Affect, effect** : The "effect", or *consequence*, of an action is to "affect", or *influence*, outcomes.

❖ **Alternate, alternative, choice**: The word "alternate" means *other* or *switch between*, whereas an "alternative" is something that can be chosen.

❖ **Assume, presume**. "Assume" means *for now, take as being true*, while "presume" means *take for granted*.

❖ **May, might, can**. Many writers use "may" or "might" when they mean "can". Use "may" to indicate personal choice, and "can" to indicate capability.

Misused Words

❖ **Basic, fundamental.** the former means *elementary* as well as *a foundation*. A result should only be described as "basic" if *elementary* is meant, or readers may get the wrong idea.

❖ **Novel, complex, sophisticated.** "Sophisticated" does not mean *new* or *novel*, but either *advanced* or *complex*. Use "novel" or "complex" if these meanings are intended.

❖ **Will, shall.** The word "shall" can seem archaic and is rarely preferable to "will". Both "will" and "shall" are often used unnecessarily and in many cases can be deleted.

❖ **Compile, compose.** In general usage, "compile" means *assemble*, *gather*, or *collect*, but it has such a strong specific meaning in computing that it should not be used for other purposes. To "compose" is to *invent* or perhaps *prepare*; it is not a synonym of "compile", even though "composed of" means *made up of* .

Misused Words

❖ **Continual, continuous.** "Continual" is not equivalent to "continuous". The former means *ceaselessly*; the latter means *unbroken*.

❖ **Conversely, inversely, similarly, likewise.** Only use "conversely" if the statement that follows really is the opposite of the preceding material. Don't use "similarly" or "likewise" unless whatever follows has a strong parallel to the preceding material. Some authors use "inversely", but the meaning is rarely clear; avoid it.

❖ **Fast, quickly, presently, timely, currently.** A process is "fast" if it *runs quickly*; "quickly" means *fast*, but does not necessarily mean *in the near future*. Something is "timely" if it is *opportune*; timeliness has nothing to do with rapidity. Also on the subject of time, "presently" means *soon*, whereas "currently" means *at present*.

Misused Words

- **Optimize, minimize, maximize**. Absolute terms are often misused. One such word is "optimize", which means *find an optimum* or *find the best solution*, but is often used to mean *improve*. The latter usage is now so common that it could be argued that the meaning of "optimize" has changed, but as there is no synonym for "optimize" such a change would be unfortunate. Other absolute terms that are misused are "maximize" and "minimize".

- **Theory, hypothesis, proposition, supposition**. These words are used in a wide variety of ways across the discipline. In some areas, "theory" is used in a strict sense, of a *hypothesis* that has been confirmed by analysis or experiment. But in some areas it is used more or less equivalently to "proposition", in the sense of *a concept that is to be tested*. Sometimes "proposition" is used to mean *assumption*, as is "supposition". That is, these terms are used both formally and loosely, in ways that can be deeply inconsistent with each other. As in other cases, be alert to the conventions within your discipline, but it is helpful to use these terms in ways that are consistent with their formal meaning, as they are part of the fundamental principles of science.

Spelling Conventions

❖ **A finished manuscript should as nearly as possible be free of spelling errors.**

- As is also true for serious grammatical errors and poor formatting, the presence of spelling errors signals to the reader—perhaps subconsciously—that the work is unreliable and has been undertaken in a lazy way.

- use a spell checker, but you should also take the effort to find mistakes by hand.

- The English-speaking countries have different spelling conventions.

- The most important thing is to spell consistently and to be consistent with suffixes such as "-ize" without introducing errors such as "expertize" or "otherwize".

- Many journals insist on their own standards for spelling and presentation, or insist that the spelling be consistently of one nationality or another, and thus may choose to modify anything they publish.

Jargon

❖ The word "jargon" means *terms used in a specialized vocabulary* or *mode of speech familiar only to a group or profession*.

- The transaction log is a record of changes to the database.
- The transaction log is a history of changes to the database

- Hughes describes an array of algorithms for list processing.
- Hughes describes several algorithms for list processing.

Foreign Words

❖ **It is polite to use appropriate characters for foreign names, if they are natively written in a Latin character set.**

❖ **Don't write "Børstⵑdt" as "Borstedt".**

❖ **"張" may have to be written as "Zhang".**

Overuse of Words

❖ Repetition of a word is annoying

  • Ada was used for this project because the underlying operating system is implemented in Ada.

  • Ada was used for this project because it is the language used for implementation of the underlying operating system.

❖ Repetition should be eliminated when the same word is used in different senses, or when a word and a synonym of it are used together.

  • Values are stored in a set of accumulators, each initially set to zero.

  • Values are stored in a set of accumulators, each initialized to zero.

❖ "this" , "very" , and "case" . Other words are even more memorable—unusual words, other than technical terms, should only be used once or twice in a paper.

❖ Excessive use of some stockword or phrase. Typical tics include "so" , "also" , "hence" , "note that" , and "thus" .

Padding

❖ Padding is the unnecessary use of pedantic phrases such as "in general", which should usually be deleted, not least because they are irritating

❖ Phrases involving the word "case" ("in any case", "it is perhaps the case") are also suspect.

- "it is frequently the case that" instead of "often",
- "a number of" can be replaced by "several", and "a large number of" by "many".

- A well-known method such as the venerable quicksort is a potential practical alternative in instances of this kind.
- A method such as quicksort is a potential alternative.

Padding

❖ **Common redundant or wordy expressions and possible substitutes for them.**

Wordy	Concise
Adding together	Adding
After the end of	After
In the region of	Approximately
Cancel out	Cancel
Conflated together	Conflated
Let us now consider	Consider
Cooperate together	Cooperate
Currently … today	Currently …
Divided up	Divided
Give a description of	Describe
During the course of	During
Totally eliminated	Eliminated
Of fast speed	Fast
First of all	First
For the purpose of	For
Free up	Free
In view of the fact	Given
Joined up	Joined
Of large size	Large

Semantic meaning	Meaning
Merged together	Merged
The vast majority of	Most
It is frequently the case that	Often
Completely optimized	Optimized
Separate into partitions	Partition
At a fast rate	Quickly
Completely random	Random
Reason why	Reason
A number of	Several
Such as … etc.	Such as …
Completely unique	Unique
In the majority of cases	Usually
Whether or not	Whether
It is a fact that	—

Plurals

❖ **A common problem in English for writers educated in another language is agreement of plurals**

- A plural noun can require a differently formed verb to that required by a singular noun.

- For example, "a parser checks syntax" whereas "compilers check programs". Simple errors such as "the instructions is" are easy to identify, but care needs to be taken with complex sentence constructions.

❖ **A particular problem is with collectives.**

- The set of positive matches are then discarded.

- The set of positive matches is then discarded.

- The range of numbers that must be considered are easy to identify.

- The range of numbers that must be considered is easy to identify.

Plurals

❖ **When describing classes of things, excessive use of plurals can be confusing.**

- Packets that contain an error are automatically corrected.
- **Packets that contain errors are automatically corrected.**
- **A packet that contains an error is automatically corrected.**

❖ **Classes may not need a plural.**

- These kinds of algorithms are irrelevant.
- **These kinds of algorithm are irrelevant.**
- **Algorithms of this kind are irrelevant.**

Abbreviation

❖ **Use abbreviations such as "no.", "i.e.", "e.g.", "c.f.", and "w.r.t."**

– These save a little space on the page, but slow readers down.

– It is almost always desirable to expand these abbreviations, to "number", "that is"

❖ **Expanding abbreviations such as "Fig." and "Alg."**

– The contracted form is the preferred style for some journals), and don't use concoctions such as "1st" or "2nd".

❖ **Avoid use of "etc." and "and so on" – never write "etc., etc." or "etc. …".**

· Methods available are random probing, extrapolation, etc.

· Methods available include random probing and extrapolation.

· Methods such as random probing and extrapolation can be used.

❖ **A slash, also known as a virgule or solidus, is often used for abbreviation**

Acronyms

❖ **Acronyms**

- As with abbreviations they can confuse the reader
- – desirable if it replaces an otherwise indigestible name such as "pneumonoultramicroscopicsilicovolcanoconiosis" – happened with DNA for "deoxyribonucleic acid".

❖ **Abbreviations end with a stop but it is unusual to put stops in acronyms.**

- – "CPU" is correct, "C.P.U." is acceptable, and "CPU." is incorrect.
- – Plurals of acronyms don't require an apostrophe; write "CPUs" rather than "CPU's".

Sexism

❖ **Forms of expression that unnecessarily specify gender are widely regarded as sexist.**

❖ **In technical writing, sexist usage is easy to avoid.**

- A user may be disconnected when he makes a mistake.
- A user may be disconnected when they make a mistake.
- Users may be disconnected when they make a mistake.
- A user who makes a mistake may be disconnected.

❖ **Don't use ugly constructs such as "s/he" or engage in reverse sexism by using "she" unless it is absolutely impossible to avoid a generic reference**

❖ **Remember that some readers find use of "he" or "his" for a generic case offensive and dislike writing that employs such usage**