CSE 669, Scholarship Skills, Winter 2018, Week 2

Core Rules for Better Writing

Thanks to Todd Leen, Andrew Black,Tim Sheard

Core Rules for Better Writing

- Good writing is clear, concise, and simple.
- Good writing is easy to read. A good paper educates the reader without frustrating him or her. Write to be understood, not to impress.
- The “Core Rules” on the next few slides will help you write better. The rules *do not* cover everything that we will talk about. They *do* provide several important guidelines that can dramatically improve your writing.

Use Active Voice

The syntactic correctness of each command is checked by the parser

The parser checks the syntactic correctness of each command.

Subsequent look-up times are reduced by caching the directory node.

Caching the directory node reduces subsequent look-up time.

Passive voice often results from avoiding personal pronouns (we, I, you).

Learning effects were minimized via randomized order of tasks.

The study design minimized learning effects via ...

e.g.

Use Active Voice

The total storage cost of the index can be reduced through data compression.

Data compression can reduce the total ....

The storage requirements can be reduced further.

Appropriate index design can reduce storage req...

Frequent disk accesses must be avoided for efficiency.

The indexing system must avoid frequent disk

Use Active Voice

Active voice is more specific, and therefore more informative and clearer than passive voice. (In passive voice, the subject is often missing.)

Active voice is frequently more concise than passive voice.

Active voice is more direct and forceful.

If you do nothing more than concentrate on using active voice, your writing will improve!

More info on passive voice at:

https://writingcenter.unc.edu/tips-and-tools/passive-voice/

Also, Use Active Verbs

```
If we make a comparison of
  execution times with and
  without logging, …

The need to minimize user
  interaction is in contradiction
  with the requirement to provide
  many search options.
```

ORGANIZE TO HELP THE READER
Put Key Ideas in Lead Position

- Within *sections* of a paper (except the introduction):

  Put KEY IDEAS in LEAD POSITION. The introductory paragraph in a section should summarize the key ideas in that section. The following paragraphs get more specific about the details of the key ideas. Thus the paragraphs within a section move from the general to the more specific, from the most important to the least important.

Paragraph Order

1. Techniques for index compression
2. Space savings from more keys per disk page
3. Compression requires time to compress on update and decompress on lookup
4. I/O savings from reduced height of the index
5. Compressing index keys reduces space and disk accesses, but requires more CPU time.

ORGANIZE TO HELP THE READER
Put Key Ideas in Lead Position

Within each *paragraph*

Put KEY IDEAS in LEAD POSITION. The first sentence in a paragraph should carry the most important ideas. The following sentences flesh out the particulars of the ideas. Thus, sentences within a paragraph move from general to more specific.

Sentence Order

How can an index handle multiple data records for a given search key?

One option is to repeat the key for each record.

This option requires extra space for the repeated keys, and may require visiting multiple leaf nodes on lookup.

A second possibility is using a single instance of the search key, followed by a list of records for that key.

While this option saves space, locating records is more complicated and the structure of nodes is more varied.

Furthermore, the maximum number of records per leaf node will depend on the degree of key duplication, requiring more complex calculation for balancing the index.

ORGANIZE TO HELP THE READER
Put Key Ideas in Lead Position

EXCEPTION: When you're trying to persuade the audience, you can lead them along and give the key idea, or punchline, at the end. Mathematical developments frequently use this structure.

However don't overuse this format, particularly when the argument is long.

"Punchline Last"

What would happen if we did not remove an index entry upon deletion of the corresponding record.

If we later search using the key for that record, the record pointer will lead to an empty slot in the data page or a different record.

In either case, the look-up routine needs to read a data page and incorporate an extra check for the correct key.

However, the first time it discovers the referenced record is missing, it can update the index, or at least flag the index entry as out of date.

Leaving index entries in place means the search tree will be larger than necessary, which possibly increases look-up time.

Also, with the flag-bit option, we may need to rebuild the index periodically to garbage-collect out-of-date entries.

"Punchline Last" Continued

The deferred processing of index entries might also cause a problem if search keys are supposed to be unique in the index, as a deleted record can share a key with a newly inserted record.

We see that deferred processing of index entries on record deletion is possible, but incurs increased costs on lookup and might violate index constraints.

Putting Key Ideas in the Lead Position …

- Helps prepare the reader for what's coming
- Allows the reader to skim efficiently.

Don't Make Unsubstantiated Statements

- Statements of belief or of fact should be backed up either by (i) a specific result of your own work or by (ii) explicit citations to the literature.

```
Data-stream engines have become an
  important component of most system-
  monitoring applications.
```

```
Data analytics tasks increasingly
  require cluster- and cloud-based
  parallelism.
```

(Don't believe other authors without evidence.)

Be Concise

Avoid wordiness.

```
In a situation in which updates outnumber
  reads, index costs can outweigh the
  benefits.
```

```
The Tri-Max algorithm has the capacity to
  handle noisy data.
```

```
The classification algorithm must re-
  cluster in the event that clusters start
  to overlap.
```

```
The reason to consider an alternative to
  using a touch-based interface is the
  absence of support on desktop and some
  laptop computers.
```

Be Simple

Avoid "fancy" words

```
Renormalization facilitates the
  convergence of the algorithm.
Insertion of a key commences by a lookup
  of the key value in the index.
Consider the steps involved when a user
  conceptualizes an information need.
The prev variable references the previous
  cluster center.
```

Even if the reader knows the "fancier" word, he or she will comprehend the "plain" word more quickly.

Use a Consistent Lexical Set

Use the same word to refer to a concept throughout the paper.

```
Our system has four main modules. The
parsing component analyzes the command
and checks that the target file exists.
The analyzer locates the search phrase
within the command. The expression is
then passed to the term-expansion
routine.
```

Warn the reader about synonymous terms.

```
We use buffer and page slot
interchangeably in this section.
```

Define Terms When First Introduced

Don't make the reader guess what you mean until the last section of the paper, where you finally get specific about the meaning of a term.

Sect 2: The optimizer uses a calibration constant to accommodate differences in processor speeds.

Sect 4: The *calibration constant* for a processor is the ratio of its measured I/O speed to that of a reference processor.

The caller must supply a convergence criterion (a bound on the residual error).

AVOID SINGLE-SENTENCE PARAGRAPHS

Single sentence paragraphs are usually an indication that there's a problem with organization. Figure out where the idea belongs.

But maybe a sentence doesn't go well with other paragraphs.

It may be that it's not important enough to develop into its own paragraph, but doesn't fit in one of the existing paragraphs. If that is the case, then remove it!

Re-write

When you re-write (especially a section, paragraph, or sentence that you know is difficult to read) keep asking yourself "what do I really mean?" Allow yourself several passes to get rough spots really concise, really simple, and really clear.

A good way to get more concise is to ask yourself if words in a sentence, or sentences in a paragraph are helping you make the key points, or whether they can be discarded.

But also consider whether you've left out important information that the reader needs to know.

One Rule to Rule Them All

- typos + errors
- disorganization
- redundancy
- formatting distractions

The reader's time is your most precious resource. Don't waste it.

What wastes time?
- Ambiguity
- Abbreviations (if not explained)
- Lack of specifics
- gaps in reasoning or explanation
- incompleteness – see other pages

Core Rules for Better Writing

(Pin them to your wall so they're in front of you as you write!)

- Use active voice.
- Put KEY IDEAS in LEAD POSITION of sections and paragraphs.
- Don't make unsubstantiated statements.
- Be concise.
- Be simple.
- Use a consistent lexical set.
- Define terms when first used.
- Avoid single sentence paragraphs.
- Rewrite with an intent to make things simpler, more concise, and clearer.

See also:

http://writing.wisc.edu/Handbook/ClearConciseSentences.html