

# Batching for TCS Papers\*

Chethan Kamath

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Often times when writing TCS papers, we need to define multiple instances of the same object, e.g., sets. Instead of defining each instance separately, it is desirable to batch-define them so that there is minimal amount of  $\LaTeX$  code. This note serves a minimal-working example of the  $\TeX$  code that I ended up converging to, thanks to [1, 2, 3, 4, 6] – an explanation of the code can be found as comments in the `.tex` file. To demonstrate the code, some of the notation from my thesis [5] has been ported to the new macros:

- We use straight font to denote algorithms, circuits and protocols (e.g.,  $A, C, PP$ ), calligraphic font to denote sets (e.g.,  $\mathcal{I}, \mathcal{H}$ ), bold face to denote complexity classes (e.g.,  $\mathbf{P}, \mathbf{NP}$ ) or vectors (e.g.,  $\mathbf{v}, \mathbf{m}$ ), small caps to denote problems or languages (e.g.,  $\text{FACTORING}, \text{SVL}$ ). Polynomials, functions and events are in normal math mode (e.g.,  $p(n), \text{trace}, \text{bad}$ ).

## References

- [1] EGREG, *What exactly do `\csname` and `\endcsname` do?*.  $\TeX$ .Stackexchange answer 39382, accessed 27/12/2023.
- [2] EGREG, *Proper way to use `\ensuremath` to define a macro useable in and out of math mode*.  $\TeX$ .Stackexchange answer 20099, accessed 27/12/2023.
- [3] EGREG,  *$\LaTeX$  for loop `\@for`*.  $\TeX$ .Stackexchange answer 100684, accessed 27/12/2023.
- [4] FEUERSÄNGER, C., *Notes On Programming in  $\TeX$* . Revision 1.18.1, 2021.
- [5] KAMATH, C., *On the Average-Case Hardness of Total Search Problems*. PhD thesis, IST Austria, 2020.
- [6] KNUTH, D., *The  $\TeX$ book*. 1986.

## A Versions

1. *Version 1.1*: Implemented loops using native  $\TeX$  command `\@for` (which slightly changes the syntax of `\InitiateObjects` macro).
2. *Version 1.0*: Supports basic batching of objects, with loops implemented using `\forcsvlist` from `etoolbox` package.

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\*Version 1.1