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Burstersort

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Burstersort and its variants are cache-efficient algorithms for sorting *strings* and are faster than *radix sort* for large *data sets* of common strings, first published in 2003.^[1]

Burstersort algorithms use a *trie* to store prefixes of strings, with *growable arrays* of pointers as end nodes containing sorted, unique, suffixes (referred to as buckets). Some variants copy the string tails into the buckets. As the buckets grow beyond a predetermined threshold, the buckets are "burst", giving the sort its name. A more recent variant uses a bucket index with smaller sub-buckets to reduce memory usage. Most implementations delegate to multikey quicksort, an extension of three-way radix quicksort, to sort the contents of the buckets. By dividing the input into buckets with common prefixes, the sorting can be done in a cache-efficient manner.

Burstersort was introduced as a sort that is similar to *MSD Radix Sort*,^[1] but is faster due to being aware of caching and related radixes being stored closer to each other due to specifics of trie structure. It exploits specifics of strings that are usually encountered in real world. And even though asymptotically it is the same as radix sort, with time complexity of *O*(*wn*) (*w* - word length and *n* - number of strings to be sorted), but due to more optimal memory distribution it tends to be twice as fast on big data sets of strings.

References

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- ^a ^b Sinha, R.; Zobel, J. (2005). "Cache-conscious sorting of large sets of strings with dynamic tries" (PDF). *Journal of Experimental Algorithmics* **9**: 1.5. doi:10.1145/1005813.1041517 .
- A burstersort derivative (C-burstersort), faster than burstersort: [Cache-Efficient String Sorting Using Copying](#)
- The data type used in burstersort: [Burst Tries: A Fast, Efficient Data Structure for String Keys](#)
- [Efficient Trie-Based Sorting of Large Sets of Strings](#)
- [Engineering Burstersort: Towards Fast In-Place String Sorting](#)

External links

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- A burstersort implementation in C++: [Free C++ Copy-Burstersort Library](#)
- A burstersort implementation in Java: [burstersort4j](#)
- Judy arrays are a type of copy burstersort: [C implementation](#)

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