Sorting Network LaTeX Test

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Sorting networks exported in TeX format from the `WinVerifyAndDraw` tool in Parberry [5] contain a `picture` environment that can be directly input to your LaTeX file using the `\input` command. For example, suppose you have exported a sorting network to file `exported.tex`. Use the following to incorporate this file as a figure in your LaTeX document.

```
\begin{figure}
  \centering\input{exported.tex}
\end{figure}
```

The remainder of this document will show you how it looks using the exported files `knuth16h.tex` (exported in `Horizontal` draw mode) in Figure 1 and `knuth16v.tex` (exported in `Vertical` draw mode) in Figure 2.

Knuth [1] depicts sorting networks with the channels drawn horizontally and the comparators drawn vertically (see, for example, Figure 1). Each comparator directs the minimum of its two inputs to the upper channel and the maximum to the lower channel. The inputs are presented at the left and the outputs appear at the right in non-decreasing order from top to bottom.

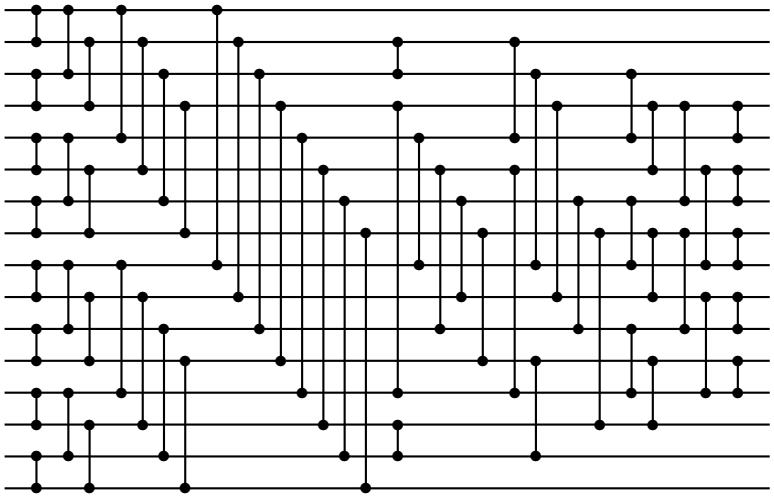

Figure 1: A 16-input sorting network from Knuth [1].

Parberry [2, 3, 4] depicts sorting networks with the channels drawn vertically and the comparators drawn horizontally (see, for example, Figure 2). Each comparator directs the minimum of its two inputs to the left channel and the maximum to the right channel. The inputs are presented at the top and the outputs appear at the bottom in non-decreasing order from left to right.

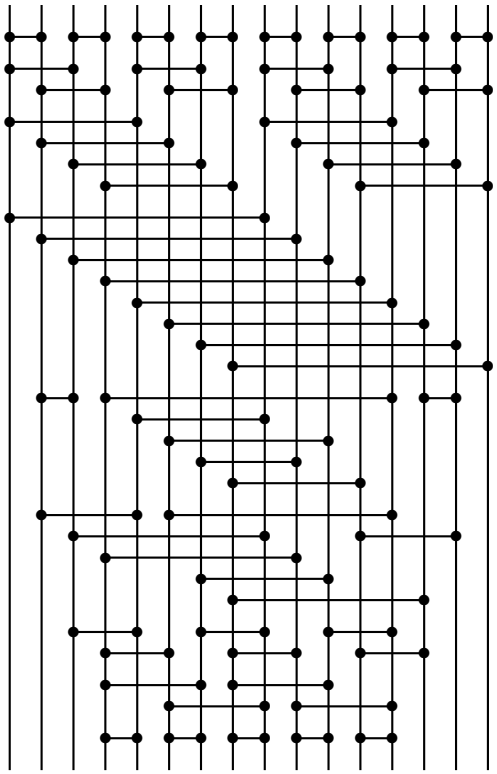

Figure 2: A 16-input sorting network from Knuth [1] drawn in the style of Parberry [2, 3, 4].

References

[1] D. E. Knuth. *The Art of Computer Programming*, volume 3. Pearson Education, 1997.

[2] I. Parberry. Single-exception sorting networks and the computational complexity of optimal sorting network verification. *Mathematical systems theory*, 23(1):81–93, 1990.

[3] I. Parberry. On the computational complexity of optimal sorting network verification. In *Parle91 Parallel Architectures and Languages Europe*, pages 252–269. Springer, 1991.

[4] I. Parberry. The pairwise sorting network. *Parallel Processing Letters*, 2(2,3):205–211, 1992.

[5] I. Parberry. Sorting network exhaustive search. https://github.com/Ian-Parberry/sorting-network-search, 2022.