

# dbsym: A TrueType Font of Database Symbols

- ❖ URL: <http://www.cs.duke.edu/~junyang/dbtools/>
- ❖ Use dbsym together with TexPoint
- ❖ Join, semijoin, and anti-semijoin

- $$\begin{aligned} R \bowtie_{R.A = S.B} S &= R - R \ltimes_{R.A = S.B} S \\ &= R - \pi_{\text{attrs}(R)} ( R \bowtie_{R.A = S.B} S ) \\ &= R - \pi_{\text{attrs}(R)} ( \sigma_{R.A = S.B} ( R \times S ) ) \end{aligned}$$

## ❖ Outerjoins

- Full outerjoin:  $R \bowtie S$
- Left outerjoin:  $R \ltimes S$  (dangling  $R$ 's are padded)
- Right outerjoin:  $R \rtimes S$  (dangling  $S$ 's are padded)

## ❖ Dependencies

- Functional ( $A \rightarrow B$ ) and multi-valued ( $A \twoheadrightarrow B$ )