O’Neil et al. combine well-known techniques for indexing joins between tables to create a method that efficiently performs common multi-table joins through bitmap indices. In their paper, they focus mainly on star-joins, but their method can also be applied to other types of joins. A star-join consists of a fact table that is joined with multiple dimension tables.

They review some of the techniques used in their method for performing the join operations. The join index is a representation of a pre-computed join that associates a column’s values and the rows two tables that fulfill the joint condition. Join indices can be represented as B-Trees, or hash indices, and can be organized in any of the following ways:

“look up by common join column value listing record identifiers (RIDs) of rows in both tables that join with that value”

“lookup by RID for each row one table giving a list of RIDs of a second table for rows that join with the first row”

“lookup by (non-join) column value of one table giving a list of RIDs of a second table for rows that join with the rows in the first table with that column value;

or by variations of these 4; for example where single column values are extended to multiple columns.