

**Explaining Missing Answers to Top-k SQL Queries**

**Abstract:**

Due to the fact that existing database systems are increasingly more difficult to use, improving the quality and the usability of database systems has gained tremendous momentum over the last few years. In particular, the feature of explaining why some expected tuples are missing in the result of a query has received more attention. In this paper, we study the problem of explaining missing answers to top-k queries in the context of SQL (i.e., with selection, projection, join, and aggregation). To approach this problem, we use the query-refinement method. That is, given as inputs the original top-k SQL query and a set of missing tuples, our algorithms return to the user a refined query that includes both the missing tuples and the original query results. Case studies and experimental results show that our algorithms are able to return high quality explanations efficiently.