**Theory of answering queries using views**

**Introduction:** The paper surveys the theoretical issues concerning the problem of answering queries over a database schema using a set of views on the same schema. The paper analyzes various aspects like query optimization, database design, data integration, data warehouse design, web-site design and semantic data caching.

**Literature Review:** There has been many applications based on the problem of answering queries using views ranging from algorithmic designs to implementation in commercial systems. An important distinction that has been made in the theoretical work is between the problem of query rewriting where the output is a query expression for computing the answers from the views, and the problem of query answering, where the result is the set of all possible answers, we can obtain for the queries from the views.

**Implementation:** Firstly, paper defines rewriting of queries using the views to obtain query expressions whose sub-goals are either view relations or comparison predicates. There are two types of query rewritings namely, equivalent rewriting and maximally contained rewritings. The former is usually considered when dealing with query optimization and maintain physical data independence. However, in context to data integration we cannot always find an equivalent rewriting from the sources. In such scenarios, finding maximally contained rewritings defined with respect to a query language comes handy. Since, the maximally contained rewriting is language dependent, it may not find all the answers and hence, the concept of certain answers is introduced which states that a tuple is a certain answer of the query Q if it is an answer for any of the possible database extensions that are consistent with the given extensions of the view.

**Results:** If the new query is equivalent rewriting of the original query then both will generate same certain results independent of the state of the database or the views. On the other if the new query is maximally contained rewriting it may just produce subset of the answers given a state of a database and it is language dependent. It is shown that under the open world assumption finding all the certain answers in polynomial time is possible, but this is not the case under closed world assumption.

**Discussion:** There are a lot of issues that remain open for research. Like studying rewriting algorithms in the presence of a wider class of integrity constraints on both the database and view relations and studying the effect of restructuring capabilities of query languages for querying semi-structured data. Other challenge is to develop algorithms for selecting views to materialize in a data warehouse, web site, or environment in which data is spread over multiple devices.

**Conclusion:** The problem of answering queries using views raises a huge number of challenges, ranging from theoretical foundations to considerations of a more practical nature. While algorithms for answering queries using views are already being incorporated into commercial database systems these algorithms will have even more importance in data integration systems and data warehouse design.