

Clean Migration of Data from Relational database to Object-Oriented database using three step data migration algorithm.

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Abstract: Now a day's various information systems uses relational database management systems for effective dealing, storage, processing, integrating and retrieving of large amount of data. In spite of it, object-oriented programming has attain as much as possible acceptance in the programming community as a abridgement for developing typical applications that are easy to amplify and promote. This paper deals with development of an consolidate environment which relates a relational schema to an object-oriented schema without the requirement to manipulate the existing relational schema and providing a scenario for successfully transferring data from relational database to object- oriented database using data migration algorithm. The approach proposed in this paper is database migration. Basically, this approach comprises two tasks. In the first task, the relational database schema is reengineered. The schema is transformed into a well designed and intuitively understandable object oriented schema, which the new applications can acclimatize. Afterwards, the data successfully migrated into an object oriented database management system

Keywords: Data Migration Algorithm, Data Cleaning, Reengineering, RDBMS, ODBMS

INTRODUCTION

Since last decades there have been large amount of changes and extensive development in the area of the information technology. Every year there are new requests for even more Replacement

modernisation, their progress, development and assimilation of existing solutions. The changes made should not avoid databases and databases applications either.of existing solution by a new technology is not always possible for databases. Because of this in the world of information technology object-oriented database systems are only gradually and slowly acquiring their position.

A relational database management system is an entire suite of programs for both managing a relational database and communicating with that relational database engine. But relational database system can not successfully handle complex data structure and because of it fails rapidly during attempts to use them for advanced applications such as CAD, CAM and multimedia systems. The need for new generation of database applications is because of implementation of difficult operations over complex objects. object-oriented database systems would meet their requirements in a better way. Object-oriented database

systems (OODBMS) began to play an important role in the mid-eighties in information industry. Appropriate representation, modulation of real world entities and provision of richer data model are the key factors of object oriented database management system than relational database systems. Of course, as almost each system has its own drawbacks .The lack of interoperability between OODBMS and RDBMS is one of the fundamental shortcomings. Migration and coexistence of relational to object-oriented systems are defined by some techniques gradually. Until now the literature states that every migration process consists of two basic steps: schema transformation and data migration. The first step is to remap the existing relational schema to the equivalent object one. Data are migrated in the second step. The second one of migrating individual items of data between the relational and object oriented schema is different.

OVERVIEW OF OODBMS

The term object-oriented database is used to describe a database system that supports direct access to data from object-oriented programming languages without requiring a relational query language as the database interface. An OODBMS is the result of combining object oriented programming principles with database management principles. Object oriented programming concepts such as encapsulation, polymorphism and inheritance are enforced as well as database management concepts such as the Atomicity, Consistency, Isolation and Durability which lead to system integrity, support for an ad hoc query language and secondary storage management systems which allow for managing very large amounts of data.

ANALYSIS OF PROBLEM

Moving to an object oriented database might means throwing away all of the legacy data and applications. Several users of databases will not agree with such a definition. They aspire to run their existing databases and have access to the similar data from object-oriented program. Thus there is a need to execute a system which provides an acceptance of a given traditional database by confining these features as input and yields the agreeing object-oriented database as output. Finally, the successful migration of data from the conventional database

to the constructed object-oriented database is handled by using data migration algorithm.

The main objectives of suggested efforts are as follows:

1. Anatomizing the computerization of the relational to Object-Oriented schema mapping process.
2. Illuminate procedure for mapping an existing relational schema to an object-oriented schema.
3. To make an interactive system to validate proposed work.

RELATED WORK

Since the accession of object-oriented database systems, there have been several efforts to present transformations from this approach to the Extended Entity-Relationship model. Ramnathan c.(1997) had given the methods to clean relational schema such as eliminating orphan relation, 2NF relation, blob attributes etc. Also identifying classes, identifying aggregation, association and inheritance. F. Pallot (2001) specifies whole schema mapping and data mapping process but failed to discuss Schema cleaning so result in ill-designed database. Alhaji, R. (2003) defines extracting the Extended Entity-Relationship Model from legacy relational database and developed algorithms on legacy database in order to identify candidate keys of all relations in the relational schema. Mansaf Alam, Siri Krishan Wasan (2006) showed that how the data is more secure in object-oriented database than in relational database and also why do we migrate from RDBMS into OODBMS. S.S. Bhowmick, J. Kung, and R. Wagner (2008) proposes a procedure for mapping an RDB schema into an OMT schema by determining Primary Keys and foreign keys and relationships are identified using keys evaluation. Abdelsalam Maatuk, M. Akhtar Ali, Nick Rossiter (2009) proposes an approach for mapping existing Relational databases (RDBs) into Object-Relational databases (ORDBs) rather than migration. M.Ali, Nick Rossiter (2011) proposes a method based on an intermediate canonical data model, only schema translation is done. No data specific manipulation and fails to find out relationship. Dr. Leelavathi Rajmanickam (2013) proposes a formal definition of data migration process. The schema transformation process is subdivided into three sequential phases. In the first phase, the relational schema is transformed (automatically) into an SOT schema. Then redesigned finally transformed into an object oriented schema by using algebra but results in ill-designed database

PROPOSED WORK

The work consists of practical approach for migration of relational database schema to object oriented database schema. After mapping relational schema to object oriented schema, data is migrated to the object oriented database system using data migration algorithm. The data migration algorithm performs specified task in three step. The first one is associated with instance creation, in which the instances are created from relational schema. Then assignment of values to instances takes place. In last step cleaning up of data takes place for the removal of redundancy.

The data migration algorithm performs the operation in three step as shown in figure 1

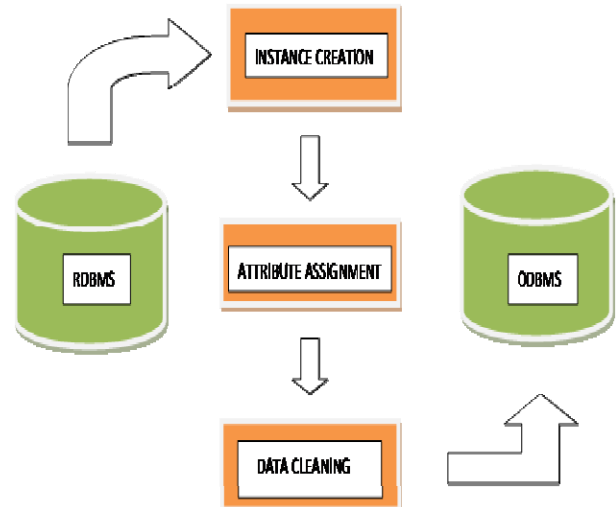


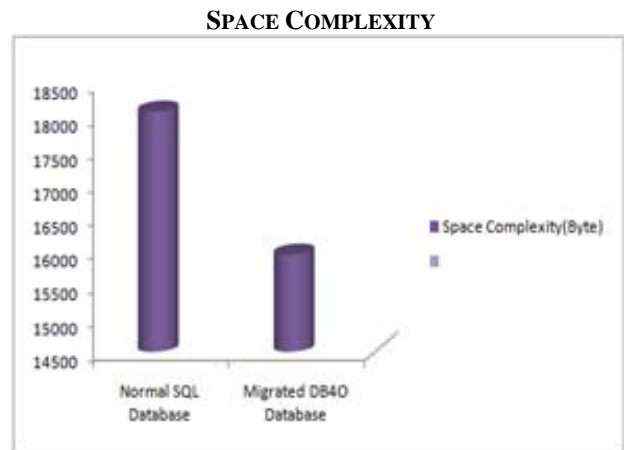
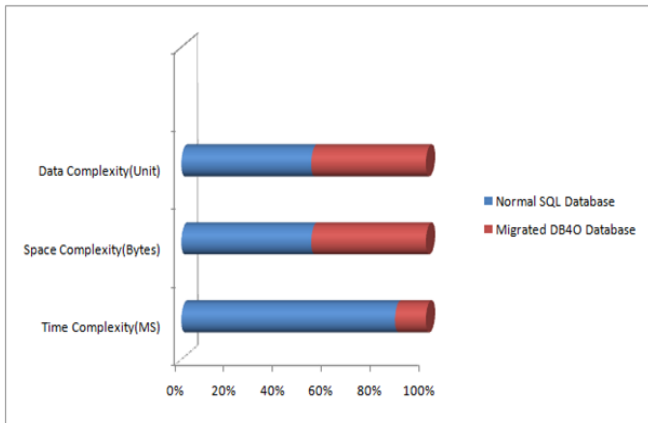
Figure 1. Data Migration Process

1. Instance Creation - Creation of instances from relational schema
2. Attribute Assignment- Assigning values to instances
3. Cleaning up of data- removing redundancy

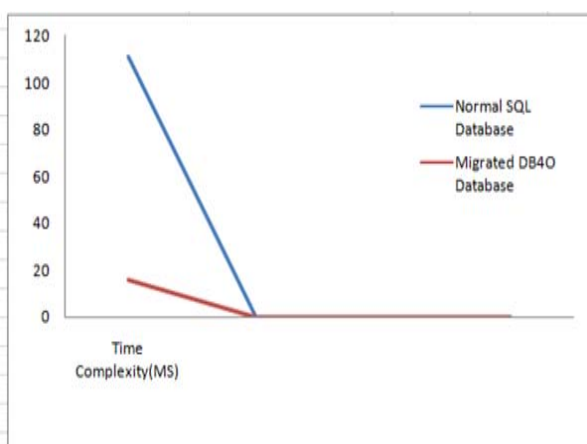
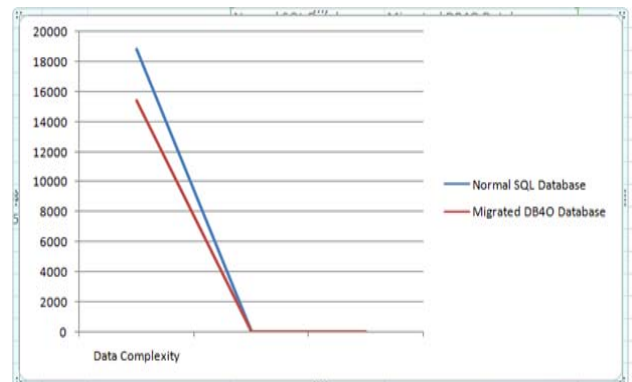
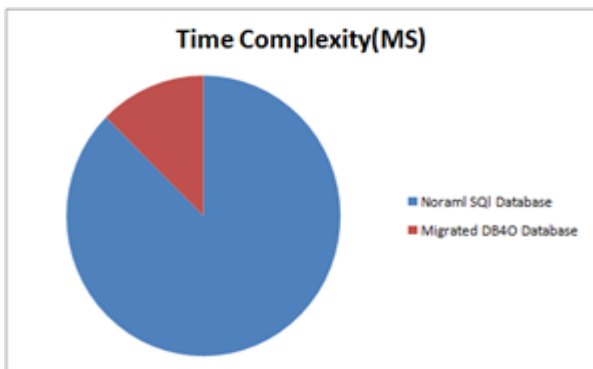
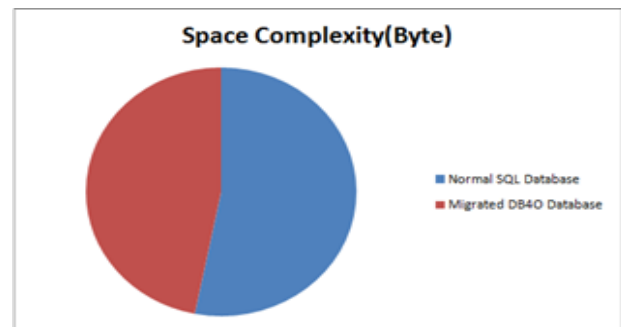
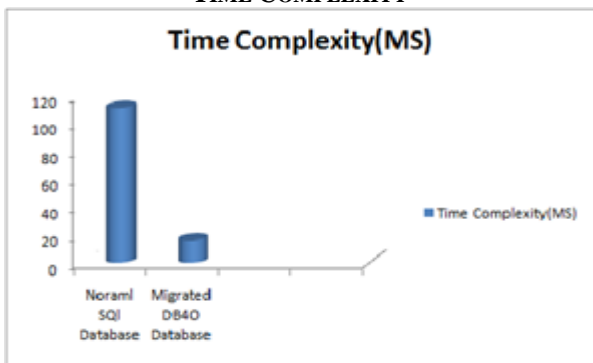
DATA MIGRATION ALGORITHM

Data Migration is done in three steps as follows:

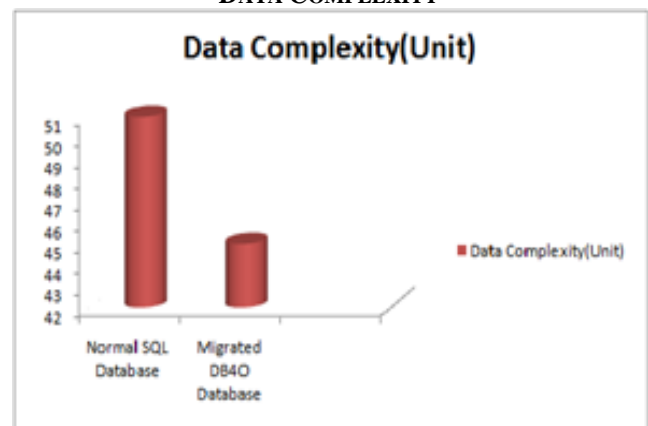
- Step 1: Read a given Relational Database.
- Step 2: Create an instances from given relational table. (Instance Creation)
- Step 3: Create classes from relational table.
- Step 4: Assign and Retrieve data properties. (Use Get() & Set() Method)
- Step 5: Assign the values from Relational table to Object Oriented Database. (Attribute Assignment)
(BW. Write(public void storeToDb4()))
- Step 6: Remove the duplications of Data from table as (Data Redundancy)
If(lastData.contains(current_data)==false)
{
 Data store to database;
}
Else
{
 Doesn't store data to database;
}
- Step 7: Display the output. (Use ToString() Method)
- Step 8: End

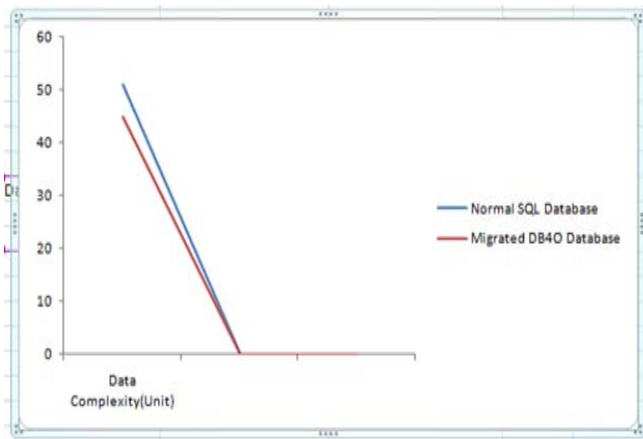
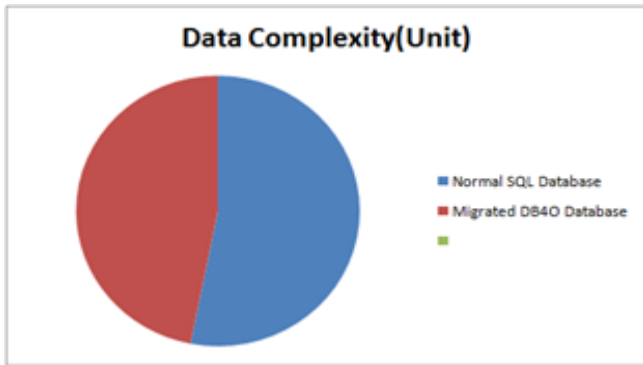


TIME COMPLEXITY



DATA COMPLEXITY





CONCLUSION

Existing approaches for data migration from relational database to object oriented database do not accomplish the full potential of the object-oriented paradigm so that the resulting object-oriented schema is not fully and successfully migrated. The migrated data may contain redundant data. Therefore, one of the goals of this approach is successfully migration of clean up data from relational to object oriented database. So for the implementation of migration process an intermediate step is proposed for the removal of data redundancy and then successful migration takes place.

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