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Review on Comparison of Relational Database Model and other Database Models

Mamta

Assistant Professor, Department of Computer Science, Saraswati Mahila College at Palwal, Haryana, India

ABSTRACT: As we know that memory is that place in computer where we store the data into the form of blocks same as when we store the data on large amount then we use database systems. A database system is a software system that stores the data and also manages the data. It is a computer software system that interacts with the users and analyses the data. The data model defines how data is connected to each other and how they are processed and stored inside the system. In this paper we study about different-2 data models and relationship between these models.

KEYWORDS : Database-Models, Models, Structure, Database Relationship.

I. INTRODUCTION

A model is a representation of reality, 'real-world' things and happenings around us. A data-model represents the organisation itself. It should provide the basic concepts and notations that will allow designers and end users to accurately communicate with the database. Database modelling is the first step in the database design and object oriented programming. It explicitly determines the structure of data. It is sometimes referred to as structure. These are sometimes complemented by function model. The main aim of data models is to support the development of information systems by providing the definition and format of data. The purpose of a data-model is to make data more representable & understandable. The object based and record based data-models are used to describe data at the conceptual and external level, the physical data-model is used to describe data at the internal level.

II. LITERATURE SURVEY

The Database model is a type of data model that determines the logical structure of database or also defines in which manner the database is stored, organized, and manipulates the data. There are so many database models like hierarchical model, network model, relational model but the most popular example of database models is the relational model which uses a table-based structure. The Hierarchical Data-Model represents the "one-to-many" relationship. This is the oldest model for storing the information. This model is based on parent-child relationship. An organisation might store information about an employee number, salary and department. The organisation might also store information about an employee's children, such as name & date of birth. The hierarchy shows that the employee record is on the root level and children information is at the next branch level. If the employee has three children, then there would be three child segments associated with one employee segment. So it shows "1:M relationship". Hierarchical DBMS's were popular from the late 1960s, with the introduction of IBM's information management system (IMS).

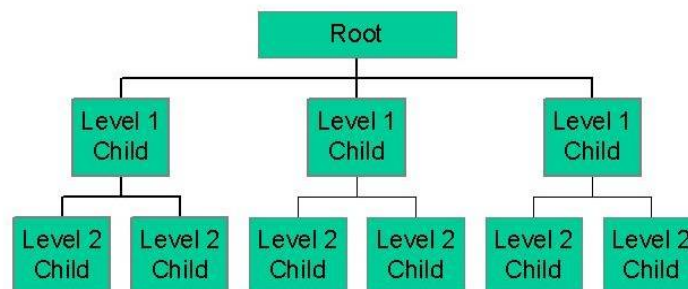
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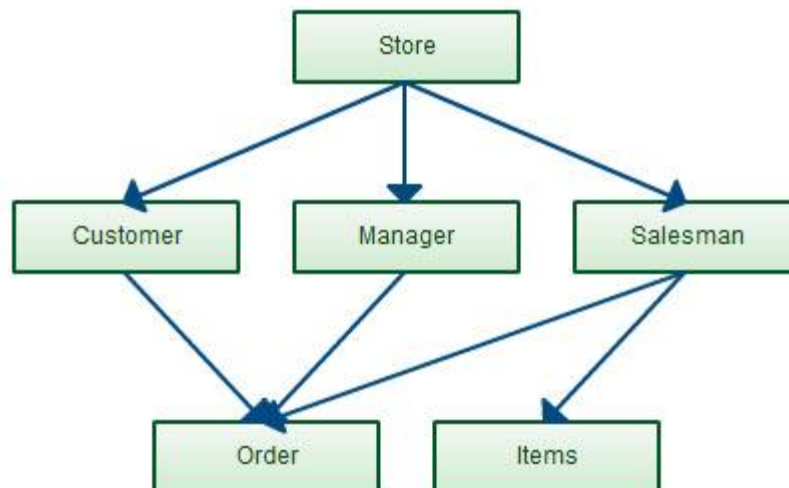
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Hierarchical database model



The Network Data-Model represents the “Many-to-many relationship as shown in fig. It consists of nodes and edges. The basic data-modelling construct in the Network- Model is the set construct. A set consist of an owner record. Type, a set name and a number record type. A number record type can have that role in more than one sets, hence the multi-parent concept is created. So this model is based on mathematical set theory.



NETWORK DATABASE MODEL

the Relational database model is based on the relational model developed by E.F.Codd. This model allows the creation of data structure, storage of data and retrieval operations and some integrity rules defines on data. It stored the data in the form of tables. A table is a collection of records and each record in a table consist some fields. Each values in the table are atomic.Each row has unique record.Column values are of the same kind.The sequence of columns is insignificant.Each column has a unique name.Some fields may be designated as key, this means some uniqueness is defined on fields of table. Join operations are also defined on tables that select related records in the two tables by matching values in those fields. The relational data-model is based on relation-algebra. The purpose of the relational model is to provide a declarative method for specifying data and queries users directly state what information the

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database contains and what information they want from it, and let the database management system software take care of describing data structures for storing the data and retrieval procedures for answering queries.

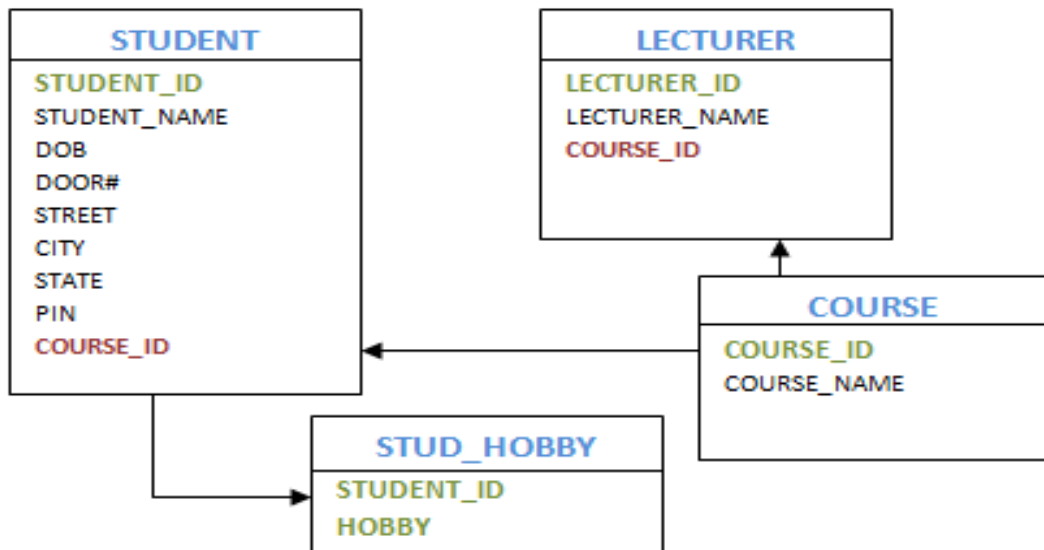


Fig1- of Relation model

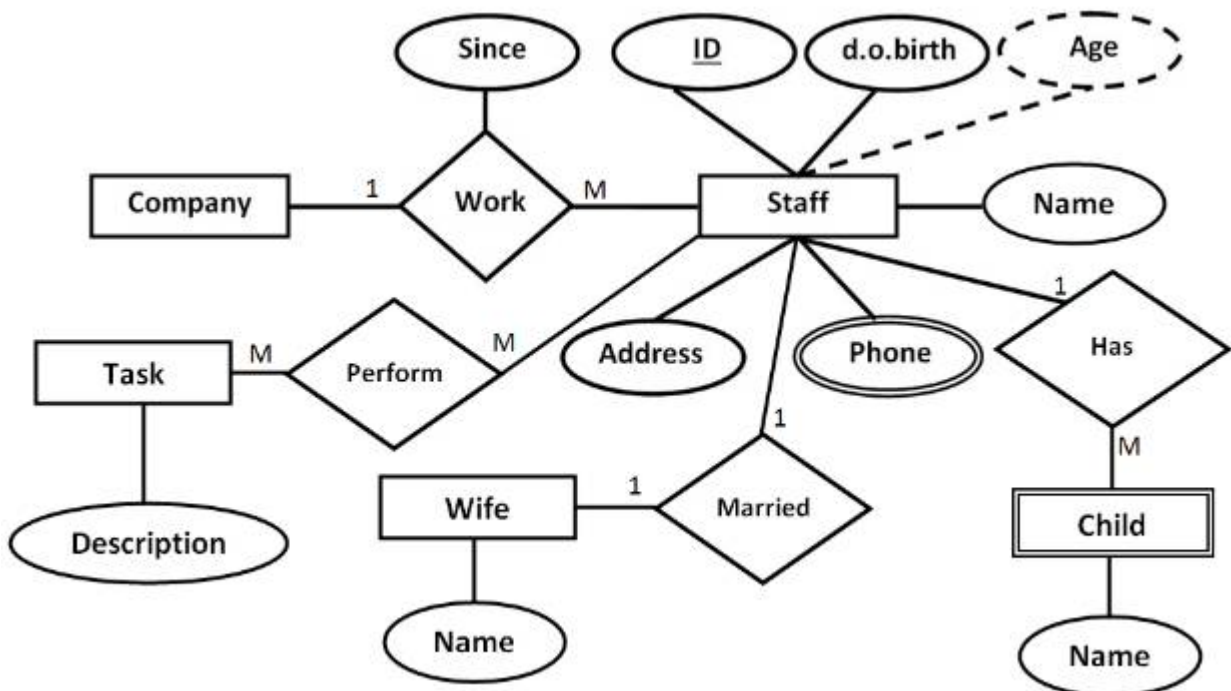


Fig2- of Relation model



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III. COMPARISON STUDY BETWEEN DIFFERENT DATA MODEL

Characterstics	Hierarichal model	Network model	Relational model
Data structure	One to many or one to one relationships. It is based on parent child relationship.	It allows many to many relationships. A record can have many parents as well as many childrens.	It allows one to one, one to many, many to many relationships. it is based on relational data structure
Data manipulation	Does not provide an independent stand alone query based. Retrieve algorithms are complex.	Use of CODASYL(conference on data system languages) Retrieve algorithms are complex	Relational databases are what brings many sources into a common query such as SQL. Retrieve algorithms are simple and quite
Data integrity	Cannot insert the information of a child who does not have any parents. Deletion of parents results in deletion of child also	Does not suffer from any insertion anomaly. Free from update anomalies. Free from delete anomalies.	Does not suffer from any insertion anomaly. Free from update anomalies. Free from delete anomalies.

IV. CONCLUSION

Advancement in computer technology created a need of data storage. Traditional database models fulfilled the requirement of data storage for few decades but global and social networking placed a new challenge in front of computer experts. This change of trend in technology directed the experts to develop such a system that is not only feasible to handle current data load, but it should be scalable for future emerging data requirements. New technologies emerged into the market and these technologies replaced traditional methods for handling big data storage. These modern database technologies proved several other benefits in the practical field such as fast computation, which is the basic requirement of modern networks with rapidly increasing number of users. At last we study about different data models and find out that relational model is best due to its some features like data integrity, data manipulations operations like insert, update, delete. There is not data inconsistency arise in the relational model.



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