



Online Analytical Process in Education System

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Abstract:

Education is a new direction in a mission on we have improve the knowledge for higher studies and change the education environment using OLAP with data mining technology, in which supports the system for decision support system . there paper presents a model for education decision support system .this process provides the information the staffs and managers .online analytical process a model for education decision support system which combine on OLAP and data mining .The association rule generation for student performance analysis using Apriori algorithm. It can be achieved by using the data mining techniques .which can be applied to predict the performance of the students and to impart the quality education in the educational intuitions .When it provides a knowledge rich environment that can be achieved by using OLAP and data mining.

I. INTRODUCTION

OLAP technology refers to set of data analysis techniques to view data from different sources in different dimensions interactively for decision support system. It is a set of techniques the help of managers to make better decisions. Online analytical key features are: subject oriented, intergrated, time variant, on volatile.

SUBJECT ORIENTED

Data warehouse can be used for analysis in a particular segment of business. For example for company in retail business, subject of analysis can be just the sales department

INTEGRATED

Data warehouse incorporates data from different source A and source B can be different ways of identifying the same product. But when the data are summarized in the data warehouse.

TIME VARIANT

Data warehouse historical data. For example form the data warehouse we can fetch data 3,6or 12months old or older .this is in contrast to transaction system where exclusively current data are kept, so the transaction system will keep only the most recent address of the buyer, while the data warehouse will keep address associated with the customer.

NONVOLATILE

Once the data are loaded in the data warehouse they will never be changed. Data warehouse can be loaded only with new data, while the existing data remain in their original form.

II. MULTIDIMENSIONAL ANALYSIS MODEL

Define the visual structure of visual reporting module for displaying the results of multidimensional analysis. For example where a student exam result database is presented this database contains three dimensions namely result, student name and subject. When they several exams compared over a

period of time. This ability to present data in such a top-level view to multidimensional systems .

subject				
name	Operatin g system	visual basic	multime dia	exam center
priya	70	72	60	KCSAM
Ganga	80	99	70	KNC
Ram	70	80	90	MIT
Preethi	79	60	98	VIT
athi	97	69	82	PIT
ajay	85	65	95	RIT

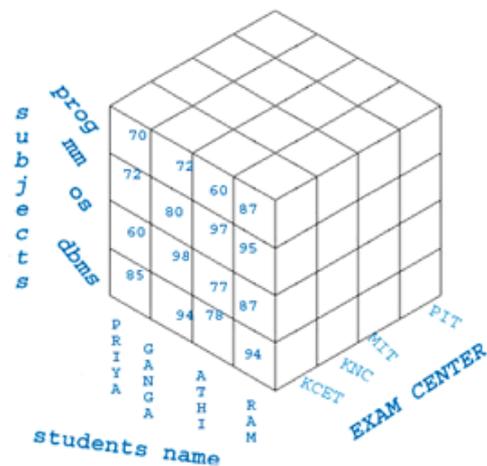


Figure.1. Multidimensional analysis model

III. MULTIDIMENSIONAL DATABASE ADVANTAGES

Ease of maintenance

Multidimensional database are very easy to maintain because data is stored in the same way as it is viewed the attributes so no additional computational as required for queries of the database.

Increased performance

Multidimensional data achieve performance levels that are well is excess of that relational system performing. Similar data storage requirements.

MULTIDIMENSIONAL DATA MODEL

There are three schemas in multidimensional data model:

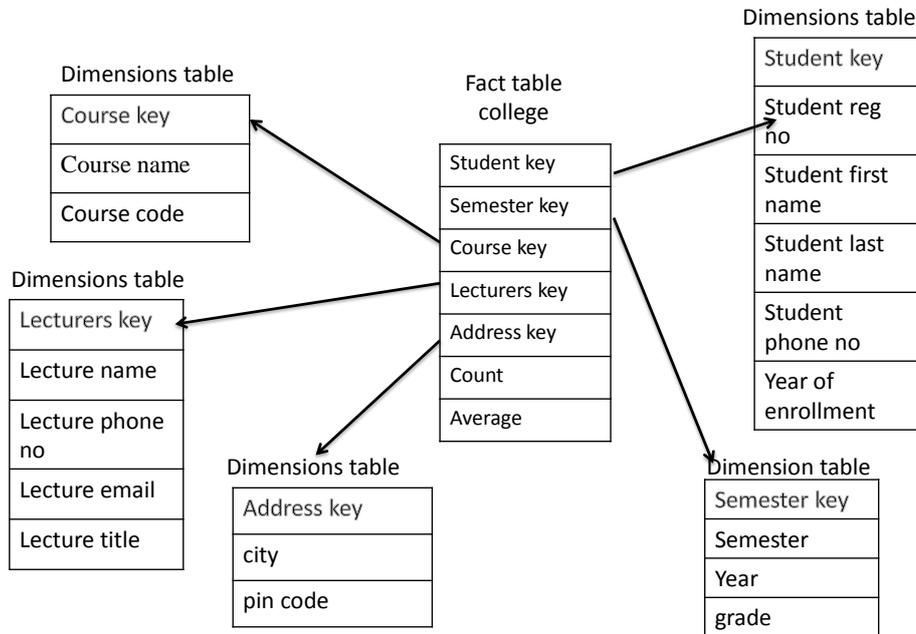
1. Star schema
2. Snowflake
3. Fact constellation

STAR SCHEMA

The star schema is simplest data warehouse schema. It is a entity relationship representation. It is an denormalized data

structure called the star schema .Star schema developed by Ralph Kimball. In which contain a star schema large central table is called fact table with no redundancy the fact table that contains keys for each of the dimension and with two measures: count, average. The star schema model of a data ware house of an central automation of examination system category of many to colleges, department, courses, subject groups, mark at various levels which will us to build a decision support database.

Star schema



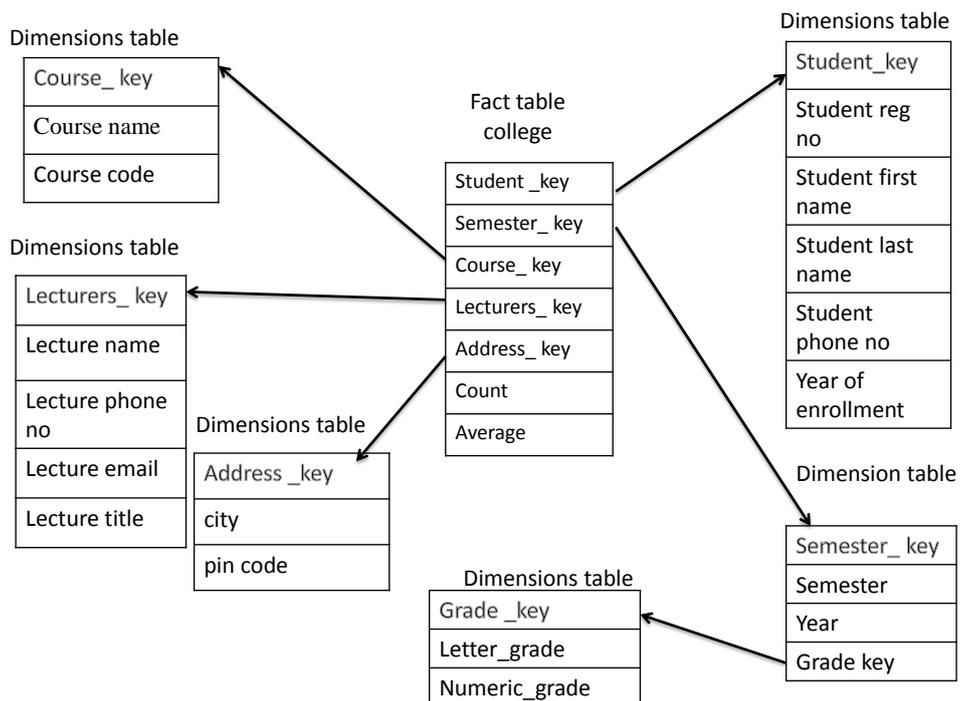
SNOWFLAKE SCHEMA

Snowflake schema is a variant of the star schema model .where snowflake schemas normalized dimensions to eliminate redundancy. the dimension data has been grouped into multiple tables instead of one large table.

ADVANTAGES

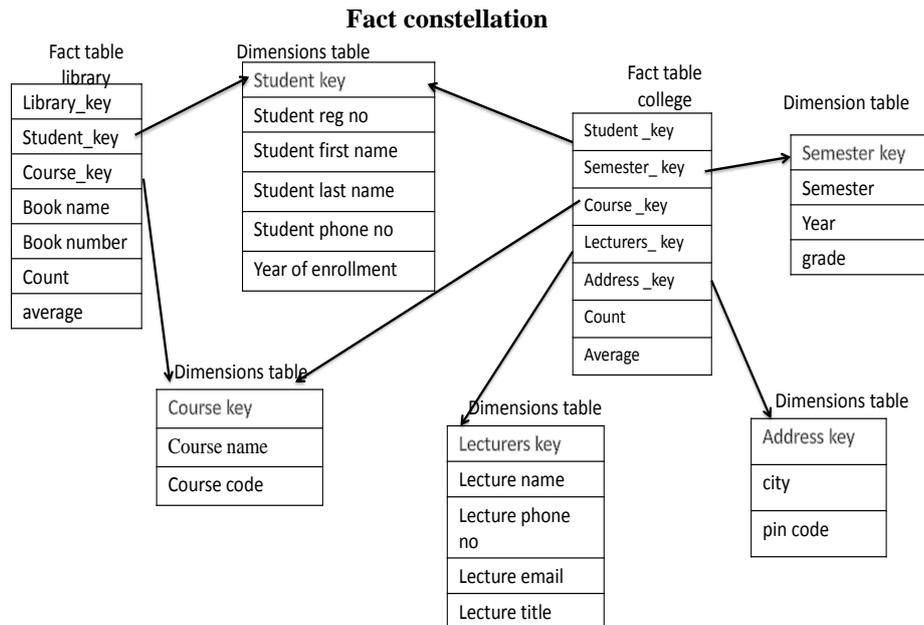
- Save memory space.
- Increases no of dimensions tables and requires more foreign key.
- Such a table is easy to maintain

Snowflake schema



FACT CONSTELLATION: The fact constellation is an multiple fact table to share an dimension table. this schema is

kind of viewed from the collection of stars and hence is called galaxy schema or a fact constellation.



ONLINE ANALYTICAL PROCESS TYPES

The various tools can be used for storage information processing .the OLAP used three different types of the process. Relational Online Analytical Process [ROLAP] Multidimensional Online Analytical Process [MOLAP] Hybrid Online Analytical Process [HOLAP]

RELATIONAL ONLINE ANALYTICAL PROCESS

These systems establish a frame work to store and retrieve relational data base based on the ROLAP system in the frame work.

ADVANTAGES

- The process can be handle large amounts of data.
- The data size limitation of ROLAP technology.

DISADVANTAGES

Performance can be slow because each ROLAP report is essentially a SQL query (or multiple SQL queries) in the relational database, the query time can be long if can be data size is large.

MULTIDIMENSIONAL ONLINE ANALYTICAL PROCESS

MOLAP stores the data in an optimized multidimensional storage .the MOLAP is very fast query response time because data is mostly pre-calculated .such MOLAP tools generally utilize pre-calculated data set referred to as data cube .once the updating data can take a long time depending on the degree of pre-computation.

ADVANTAGES

Smaller on disk size of data compared to data stored in relational database due to compression techniques.

It is very compact for low dimensions data set.

HYBRID ONLINE ANALYTICAL PROCESS

The HOLAP technology combination of ROLAP and MOLAP.HOLAP can be though the virtual database. When the database used to higher levels of the database an implemented by MOLAP and the lower levels of the database as ROLAP.

ASSOCIATION RULE GENERATION

Association rules mining is one of the data mining technic .which is expected to be very useful in application. Association rules are required to assure a minimum support and minimum confidence at the same time .association rule generation

consists of two steps: First, minimum support is applied to the given set of item .second, using minimum confidence and frequent item sets rules are formed.

An association rule is composed of two item sets:

1. Antecedent or left hand side.
2. Consequent or right hand side

In association rules find the oc-occurances among item sets through finding large item set.

The apriori algorithm is an efficient algorithm for find all frequent item set. The apriori algorithm implements level wise search using frequent item property.

APRIORI ALGORITHM

Ck: Candidate item set of size k

Lk: frequent item set of size k

Join Step: Ck is generated by joining Lk-1 with itself

Prune Step: Any (k-1)-item set that is not frequent cannot be a subset of a frequent k-item set

Algorithm:

L1 = {frequent items};

For (k = 1; Lk! =∅; k++) do begin

Ck+1 = candidates generated from Lk;

For each transaction t in database do increment the count of all candidates in Ck+1 that are contained in t

Lk+1 = candidates in Ck+1 with min_support

End

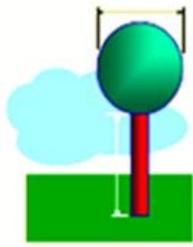
Return L = ∪k Lk;

It is an influential algorithm uses a level wise search, where k item sets are used to explore item set to min frequent set .the item set from transactional database.

IMPLEMENTATION: In an educational institution the overall performance of the student in determined by internal assessment as well as external assessment. the internal assessment is made on the bases of a student’s assignment maks, class tests, lab work, attendance, previous semester grade and his/her involvement in extracurricular activities. While at the same time external assessment of a student based on marks stored in final exam. The proposed model helps to predict the students about poor, average and good based on class performance from generated the rules.

Association rule visualization

size of ball equates to total support



Height equals to the confidence

Advantages:

Uses large item set property

Easily parallelized

Easy to implement

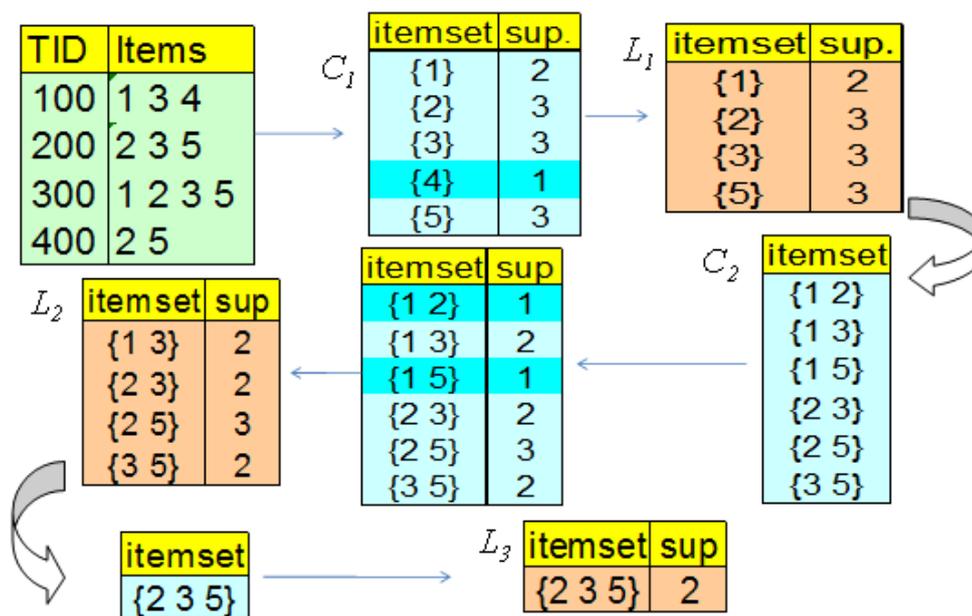
Disadvantages

Assumes transaction database is memory resident.

Requires many database

The Apriori Algorithm — Example

Min support = 50%



IV. CONCLUSION

The extracted rules helps to predict the performance of the students and it identify the average, below average and good students. The performance report of the student also helps to improve the result of the student.

FUTURE ENHANCEMENT

Improved Apriori algorithm with a main motive of reducing time and number of scans required to identify the frequent item set and association rules among education data using bottom up approach. DSS based on ERP are the proposed followed by how intelligent DSS in conjunction with ERP helps to overcome the drawbacks, if ERP is used alone in higher education institutes.

V. REFERENCES

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