1-04-2020 Computer Science (2nd Year)

Subject - 'DBMS'

Normalization:

Database normalization is a technique of organizing the data in the database. Normalization is a systematic approach of decomposing tables to eleminate data redundancy (Repetition) and undesirable characteristics like Insertion, Update and deletion anomalies. It is a multi steps process that puts data into tabular form, Removing duplicated data from the relation tables.

Normalization is used for mainly two purposes.

1) eleminating redundant (useless) data.
2) Ensuring data dependencies make sense i.e data is logically stored.

Problems without Normalization :-

If a table is not properly normalized and have data redundancy then it will not only eat up extra memory space but will also make it difficult to handle and update the database without facing data loss. Insertion, updation, and deletion. Anomalies

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are very frequent if database is not normalized. To understand these anomalies let us take an example of a STUDENT table.

Roll No	Name	Branch	HOD	office Telephone
401	AKon	CSE	Mr X	1234
402	BKon	CSE	Mr X	5678
403	CKon	CSE	Mr X	9123
404	DKon	CSE	Mr X	4598

In the above we have data of 4 Computer Sci. Student. As we can see, data for the fields Branch, Hod and office_Tel is repeated for the student who are in the same Branch. in the college, this is data Redundancy.

Insertion anomaly -

Suppose for a new admission, until and unless a student opts for a Branch, data of the student cannot be Inserted, or else we will have to set the Branch Information as NULL.

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also, If we have to Insert data of 100 student of same Branch, then the Branch Information will be repeated for all those 100 student

This scenarios is known as Insertion anomalies

updation anomalies

what if Mr x leaves the college ? or is no longer the HOD of computer science department ? in that case all the student records will have to be updated, and if by mistake we miss an record, it will lead to data Inconsistency, this is updation anomaly.

Deletion anomaly

In our student table, two different Information are kept together, student Information and Branch Information, Hence at the end of the academic year, If student record are deleted, we will also lose the Branch Information this is deletion anomaly.

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