IT 775
Database Technology

SQL-DML

Update Operations

UPDATE OPERATIONS

Insert operation

Used for entering new data in the relation

Delete operation

Used for removing data from the relation

Modify operation

Used for changing the existing data in the relation

UPDATE OPERATIONS

Example of an insert operation
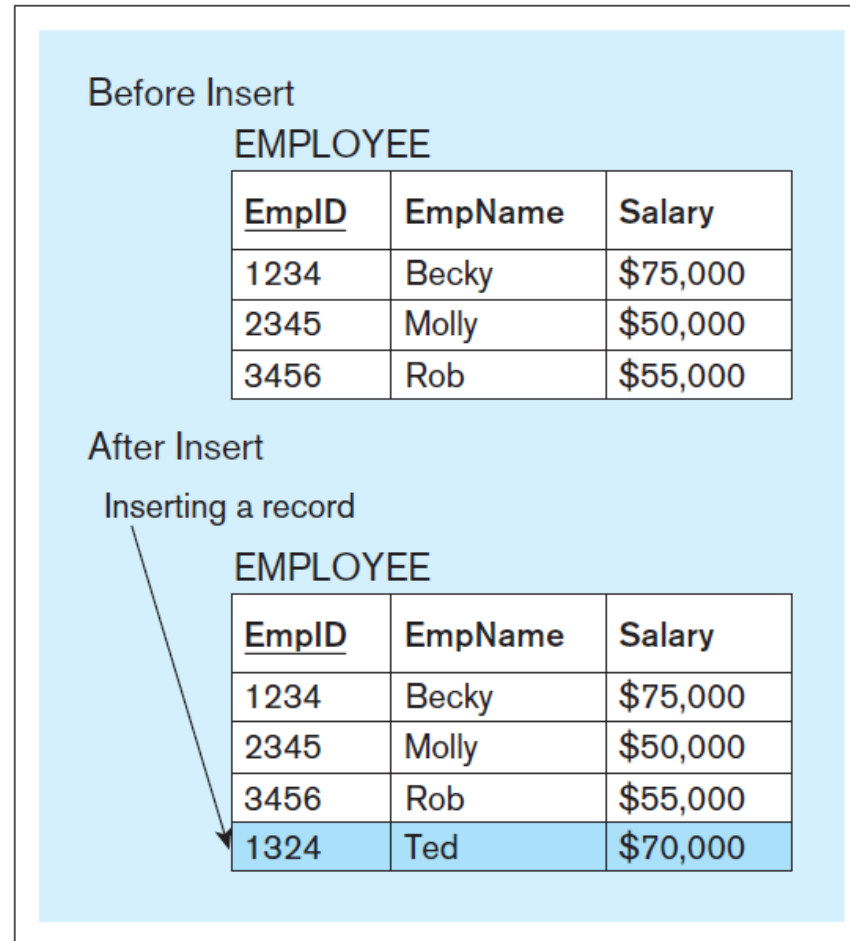
Before Insert

EMPLOYEE

EmpID	EmpName	Salary
1234	Becky	$75,000
2345	Molly	$50,000
3456	Rob	$55,000

After Insert

Inserting a record

EMPLOYEE

EmpID	EmpName	Salary
1234	Becky	$75,000
2345	Molly	$50,000
3456	Rob	$55,000
1324	Ted	$70,000

UPDATE OPERATIONS

Example of a delete operation

Before Delete

EMPLOYEE

EmpID	EmpName	Salary
1234	Becky	$75,000
2345	Molly	$50,000
3456	Rob	$55,000

Deleting a record

After Delete

EMPLOYEE

EmpID	EmpName	Salary
1234	Becky	$75,000
3456	Rob	$55,000

UPDATE OPERATIONS
Example of a modification operation

Before Modification

EMPLOYEE

EmpID	EmpName	Salary
1234	Becky	$75,000
2345	Molly	$50,000
3456	Rob	$55,000

Modifying a record

After Modification

EMPLOYEE

EmpID	EmpName	Salary
1234	Becky	$75,000
2345	Molly	$60,000
3456	Rob	$55,000

UPDATE OPERATIONS

Update operation terminology note: in practice there are two different uses of the term "update operation":

A) Update operation as a *collective term for insert, delete and modify operations*

B) Update operation as a *synonym for the modify operation*

In this class we will use the term update operation as defined in A)

Adding Data to Table

INSERT INTO table VALUES (…);

UPDATE table SET attr=# WHERE conditional;

Add gpa to each student in the student table

CREATE TABLE studentX AS SELECT student.snbr,sname,AVG(grade) AS gpa FROM student LEFT JOIN transcript ON student.snbr=transcript.snbr GROUP BY student.snbr;

DROP TABLE student;

ALTER TABLE studentX RENAME TO student;

UPDATE ANOMALIES

Update anomalies - anomalies in relations that contain redundant (unnecessarily repeating) data, caused by update operations

Insertion anomaly - occurs when inserting data about one real-world entity requires inserting data about another real-world entity

Deletion anomaly - occurs when deletion of data about a real-world entity forces deletion of data about another real-world entity

Modification anomaly - occurs when, in order to modify one real-world value, the same modification has to be made multiple times

Example relation AD CAMPAIGN MIX

AD CAMPAIGN MIX

AdCampaignID	AdCampaignName	StartDate	Duration	Campaign MgrID	Campaign MgrName	ModeID	Media	Range	BudgetPctg
111	SummerFun13	6.6.2013	12 days	CM100	Roberta	1	TV	Local	50%
111	SummerFun13	6.6.2013	12 days	CM100	Roberta	2	TV	National	50%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	1	TV	Local	60%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	3	Radio	Local	30%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	5	Print	Local	10%
333	FallBall13	6.9.2013	12 days	CM102	John	3	Radio	Local	80%
333	FallBall13	6.9.2013	12 days	CM102	John	4	Radio	National	20%
444	AutmnStyle13	6.9.2013	5 days	CM103	Nancy	6	Print	National	100%
555	AutmnColors13	6.9.2013	3 days	CM100	Roberta	3	Radio	Local	100%

Example relation AD CAMPAIGN MIX (contains redundant data)

AD CAMPAIGN MIX

AdCampaignID	AdCampaignName	StartDate	Duration	Campaign MgrID	Campaign MgrName	ModelID	Media	Range	BudgetPctg
111	SummerFun13	6.6.2013	12 days	CM100	Roberta	1	TV	Local	50%
111	SummerFun13	6.6.2013	12 days	CM100	Roberta	2	TV	National	50%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	1	TV	Local	60%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	3	Radio	Local	30%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	5	Print	Local	10%
333	FallBall13	6.9.2013	12 days	CM102	John	3	Radio	Local	80%
333	FallBall13	6.9.2013	12 days	CM102	John	4	Radio	National	20%
444	AutmnStyle13	6.9.2013	5 days	CM103	Nancy	6	Print	National	100%
555	AutmnColors13	6.9.2013	3 days	CM100	Roberta	3	Radio	Local	100%

The media and range values for campaign mode 1 repeated twice

The name of the campaign manager CM100 repeated three times

The name, start date, and duration of the campaign 222 repeated three times

Examples of update anomalies in the relation AD CAMPAIGN MIX

AD CAMPAIGN MIX

AdCampaignID	AdCampaignName	StartDate	Duration	Campaign MgrID	Campaign MgrName	ModeID	Media	Range	BudgetPctg
111	SummerFun13	6.6.2013	12 days	CM100	Roberta	1	TV	Local	50%
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222	SummerZing13	6.8.2013	30 days	CM101	Sue	1	TV	Local	60%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	3	Radio	Local	30%
222	SummerZing13	6.8.2013	30 days	CM101	Sue	5	Print	Local	10%
333	FallBall13	6.9.2013	12 days	CM102	John	3	Radio	Local	80%
333	FallBall13	6.9.2013	12 days	CM102	John	4	Radio	National	20%
444	AutmnStyle13	6.9.2013	5 days	CM103	Nancy	6	Print	National	100%
555	AutmnColors13	6.9.2013	3 days	CM100	Roberta	3	Radio	Local	100%
????	????	????	????	????	????	7	Internet	National	????

Modification Anomaly Example:
To change the duration of the campaign 222 from 30 to 45 days, three records have to be modified

Deletion Anomaly Example:
Cannot delete campaign 444 without also deleting all the data about campaign manager CM103 and campaign mode 6

Insertion Anomaly Example:
Cannot insert new campaign mode 7 without inserting an actual campaign using the new mode 7