

Update Operations on Relations

Operations

- Types of relational DMLs:
 - relational algebra (ISBL)
 - tuple calculus (SQL)
 - domain calculus (QBE)
- a relational DML with the same “retrieval power” as the relational algebra is said to be **relationally complete**
- all relational DMLs have syntax for:
 - change (insert, delete, update)
 - queries (retrieval)

Update Operationa

INSERT a tuple.

DELETE a tuple.

MODIFY a tuple.

- Integrity constraints should not be violated by the update operations.
- Several update operations may have to be grouped together
- Updates may *propagate* to cause other updates automatically. This may be necessary to maintain integrity constraints

- In case of integrity violation, several actions can be taken:
 - cancel the operation that causes the violation (REJECT option)
 - perform the operation but inform the user of the violation
 - trigger additional updates so the violation is corrected (CASCADE option, SET NULL option)
 - execute a user-specified error-correction routine

FLT-SCHEDULE

<u>flt#</u>	airline	dtime	from-airportcode	atime	to-airportcode	miles	price
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- constructs for insertion are very primitive:

INSERT INTO FLT-SCHEDULE

VALUES (“DL212”, “DELTA”, 11-15-00,
“ATL”, 13-05-00, ”CHI”, 650, 00351.00);

INSERT INTO FLT-SCHEDULE

VALUES(FLT#:“DL212”,AIRLINE:“DELTA”);

FLT-SCHEDULE

<u>flt#</u>	airline	dtime	from-airportcode	atime	to-airportcode	miles	price
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FLT-WEEKDAY

<u>flt#</u>	<u>weekday</u>
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FLT-INSTANCE

<u>flt#</u>	<u>date</u>	<u>plane#</u>	<u>#avail-seats</u>
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- “insert into FLT-INSTANCE all flights scheduled for Thursday, 9/10/98”

INSERT INTO FLT-INSTANCE(flt#, date)

(SELECT S.flt#, 1998-09-10

FROM FLT-SCHEDULE S, FLT-WEEKDAY D

WHERE S.flt#=D.flt# **AND** weekday=“TH”);

FLT-WEEKDAY

<u>flt#</u>	<u>weekday</u>
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- constructs for deletion:
- “delete flights scheduled for Thursdays”

```
DELETE  
FROM FLT-WEEKDAY  
WHERE weekday=“TH”;
```

FLT-WEEKDAY

<u>flt#</u>	<u>weekday</u>
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- constructs for update:
- “update flights scheduled for Thursdays to Fridays”

```
UPDATE FLT-WEEKDAY  
SET      weekday=“FR”  
WHERE weekday=“TH”;
```