Chapter 3 Triggers

```
CREATE TABLE Teaching(
ProfId INTEGER,
CrsCode CHAR(6),
Semester CHAR(6),
PRIMARY KEY (CrsCode,Semester)
FOREIGN KEY ProfId REFERENCES Professor(Id)
ON DELETE NO ACTION
ON UPDATE CASCADE
FOREIGN KEY CrsCode REFERENCES Course(CrsCode)
ON DELETE SET NULL
ON UPDATE CASCADE)
```

```
CREATE TRIGGER CrsChange
AFTER UPDATE OF CrsCode, Semester ON Transcript
WHEN (Grade IS NOT NULL)
ROLLBACK
```

Triggers (Chapter 7)

ON <event> WHEN <cond> DO <action>

Activation

Triggering event requested

Consideration

After activation, when cond evaluated

immed.
e.g. nuclear power plant (real-time monitoring)

deferred
e.g. student registration system (student trying to register for a course)

Execution

If consideration deferred, then so is execution; if consideration immed, then two options: deferred or immed.

after- before- or instead-of-trigger

last two strange, but OK, since event scheduled for execution by DBMS

after-trigger
extension of application logic (AOP) e.g. limit raises to 5%

before-trigger
can't modify DB; maintain integrity constraints; e.g. rollback course reg. txn if room capacity exceeded

instead-of-trigger
e.g. maintain Works_In view when tuple deleted by setting P.DeptId to NULL

before- vs. after-trigger: depends on when cond. evaluated WRT execution of event

Trigger granularity
row- vs. statement-level

e.g. for each row inserted in Transcript, make sure room capacity not exceeded for course in question

e.g. after DELETE, UPDATE stmt of CrsCode, Sem on Transcript, delete all tuples in view IdleTeaching from the Teaching table