

- 5.5 Show how to enforce the constraint “an instructor cannot teach two different sections in a semester in the same time slot.” using a trigger (remember that the constraint can be violated by changes to the *teaches* relation as well as to the *section* relation).

①往 section 中插入后触发触发器 section\_insert\_check:

```
create trigger section_insert_check after insert on section
referencing new row as nrow
for each row
  when exists(select ID as nid
              from nrow natural join section
              where nid in(select id
                           from teaches natural join section
                           where nrow.semester = semester
                           and nrow.year = year
                           and nrow.time_slot_id = time_slot_id))
  begin atomic
    rollback
  end
```

②往 section 中更新后触发触发器 section\_update\_check:

```
create trigger section_update_check after update on section
referencing new row as nrow
for each row
  when exists(select ID as nid
              from nrow natural join section
              where nid in(select id
                           from teaches natural join section
                           where nrow.semester = semester
                           and nrow.year = year
                           and nrow.time_slot_id = time_slot_id))
  begin atomic
    rollback
  end
```

③往 teaches 中插入后触发触发器 teaches\_insert\_check:

```
create trigger teaches_insert_check after insert on teaches
referencing new row as nrow
for each row
  when exists (select time_slot_id as n_time_id
               from nrow natural join section
```

```

                                where n_time_id in (select time_slot_id
                                                    from teaches natural join section
on
                                                    where ID = nrow.ID)

        begin atomic
            rollback
        end

```

④往 teaches 中更新后触发触发器 teaches\_update\_check:

```

create trigger teaches_update_check after update on teaches
referencing new row as nrow
for each row
    when exists (select time_slot_id as n_time_id
                from nrow natural join section
                where n_time_id in (select time_slot_id
                                    from teaches natural join section
on
                                    where ID = nrow.ID)

        begin atomic
            rollback
        end

```