Term Project, COP4710 (UCF)

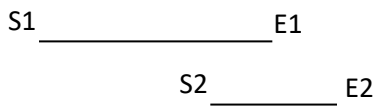
Enforcing no-overlapping-events Constraint

```
CREATE TABLE Locations(LocID        CHAR(10),
                       Desc         CHAR(30),
                       Longitude    REAL,
                       Latitude     REAL,
                       PRIMARY KEY  (LocID))
```

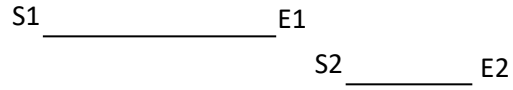
Approach 1: determining if event times are overlapped. The conditions can be verified in the app to reject overlapping events before its insertion to the Events relation, or checked in a CHECK or TRIGGER (example given below) to enforce the constraint.

a. Time overlap: *one event starts before the other ends*, i.e.,

$$(E1 - S2) > 0 \text{ AND } (E2 - S1) > 0$$



b. No time overlap: *one event ends by the time the other starts*, i.e.,



$$(E1 - S2) \leq 0 \text{ OR } (E2 - S1) \leq 0$$

```
CREATE TABLE Events (
        EID             Int,
        LocID           CHAR(10),
        Date            time,
        Start           time,
        End             time,
        Description     text,
        PRIMARY KEY     (EID),
        CHECK   ( NOT EXIST     (SELECT *
                                 FROM Events E
                                 WHERE (E.LocID = LocID) AND (E.Date = Date) AND
                                       ((End – E.Start) > 0) AND ((E.End – Start) > 0) )) )
```

Approach 2: All events are one hour long and start at the top of the hours.

```
CREATE TABLE Events (
        LocID           CHAR(10),
        Event_time      time,
        Description     text,
        PRIMARY KEY     (LocID, Event_time))
```

Constraint: 'Active' RSOs must have at least 5 members

Enforcing via a DB design, triggers:

/*New Student joining
CREATE TRIGGER *RSOStatusUpdateA*
AFTER INSERT ON *Students_RSOs* **/* Event**
REFERENCING NEW AS *NewMember*
WHEN ((SELECT COUNT(*)
FROM *Students_RSOs M*
WHERE *M.RSO_ID = NewMember.RSO_ID*) **>** *4*)
FOR EACH ROW /* Row-level trigger
UPDATE *RSOs* **/* Action**
SET *Status* **=** *'active'*
WHERE *RSO_ID* **=** *NewMember.RSO_ID*

/*Student Leaving
CREATE TRIGGER *RSOStatusUpdateP*
AFTER INSERT ON *Students_RSOs* **/* Event**
REFERENCING OLD AS *ExMember*
WHEN ((SELECT COUNT(*)
FROM *Students_RSOs M*
WHERE *M.RSO_ID = ExMember.RSO_ID*) **<** *5*)
FOR EACH ROW /* Row-level trigger
UPDATE *RSOs* **/* Action**
SET *Status* **=** *'inactive'*
WHERE *RSO_ID* **=** *ExMember.RSO_ID*

MySQL: /*New Student joining

```
DELIMITER $$

  CREATE TRIGGER RSOStatusUpdateA
            AFTER INSERT ON Students_RSOs  /* Event
  FOR EACH ROW BEGIN
   IF ((SELECT COUNT(*) FROM Students_RSOs M WHERE M.RSO_ID = NEW.RSO_ID) > 4)
            THEN
              UPDATE RSOs  /* Action
              SET Status = 'active'
              WHERE RSO_ID = NEW.RSO_ID
   END IF;
  END$$
DELIMITER ;
```

```
DELIMITER //
CREATE TRIGGER test1 AFTER INSERT ON users
   FOR EACH ROW
   BEGIN
     DECLARE m_cnt integer;
     SET @m_cnt = (SELECT COUNT(*) FROM users M WHERE M.sid = NEW.sid);
     IF (SELECT COUNT(*) FROM users M WHERE M.sid = NEW.sid) > 4  THEN
        UPDATE users
        SET phone = 123
        WHERE sid = NEW.sid;
     END IF;
   END//

DELIMITER //
CREATE TRIGGER test1 AFTER INSERT ON users
   FOR EACH ROW
   BEGIN
     IF (SELECT COUNT(*) FROM users M WHERE M.sid = NEW.sid) > 4  THEN
        UPDATE users
        SET phone = 123
        WHERE sid = NEW.sid;
     END IF;
   END//
```