

## Triggers

The following relations are given (primary keys are underlined, optional attributes are denoted with \*):

ATHLETE(AthleteCode, TeamName)

ATHLETE\_ARRIVAL(AthleteCode, Time)

TEAM\_ARRIVAL(TeamName, NumberArrivedAthletes)

RANKING(AthleteCode, Position, Time)

Write triggers to *update* TEAM\_ARRIVAL and RANKING tables when a new row is inserted in the ATHLETE\_ARRIVAL table.

- For the update of the TEAM\_ARRIVAL table, consider also the case of a team not yet inserted in the table.
- For the update of RANKING table, consider that the Time field can assume the same value for two different athletes.

## *Draft solution*

```
CREATE OR REPLACE TRIGGER UPDATE_RANKING
AFTER INSERT ON ATHLETE_ARRIVAL
FOR EACH ROW
DECLARE
    APos NUMBER;
    X NUMBER;
    ATime NUMBER;
    Draw BOOLEAN;
BEGIN
    -- verify if the ranking is empty and compute the position for the new athlete
    SELECT MAX(Time), MAX(Position) INTO ATime, X
    FROM RANKING
    WHERE Time <= :NEW.Time;

    IF (X IS NULL) THEN
        --- ranking empty or athlete in the first position without any other athlete with the same time
        APos := 1;
        Draw := FALSE;
    ELSE
        --- verify if there is another athlete with the same time
        IF (ATime < :NEW.Time) THEN
            APos := X + 1;
            Draw := FALSE;
        ELSE
            APos := X;
            Draw := TRUE;
        END IF;
    END IF;

    INSERT INTO RANKING (Position, AthleteCode, Time)
    VALUES (APos, :NEW.AthleteCode, :NEW.Time);

    IF (Draw = FALSE) THEN
        UPDATE RANKING SET Position=Position+1
        WHERE Time > :NEW.Time;
    END IF;
END;
```

```
CREATE OR REPLACE TRIGGER UPDATE_TEAM_ARRIVAL
AFTER INSERT ON ATHLETE_ARRIVAL
FOR EACH ROW
DECLARE
    Team VARCHAR(10);
    X NUMBER;
BEGIN
    ---read the team of the new athlete
    SELECT TeamName INTO Team
    FROM ATHLETE
    WHERE AthleteCode = :NEW.AthleteCode;

    ---check if the new athlete is the first athlete for the team
    SELECT COUNT(*) INTO X
    FROM TEAM_ARRIVAL
    WHERE TeamName = Team;

    IF (X=0) THEN
        ---the new athlete is the first athlete for the team
        INSERT INTO TEAM_ARRIVAL (TeamName, NumberArrivedAthletes)
        VALUES (Team,1);
    ELSE
        UPDATE TEAM_ARRIVAL
        SET NumberArrivedAthletes = NumberArrivedAthletes + 1
        WHERE TeamName= Team;
    END IF;
END;
```