

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 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;
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;
```