

## Carreras de Formula 1

Soluciones a los procedimientos, funciones y triggers:

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```
1. DELIMITER $$
CREATE PROCEDURE `getRacesInAYear`(IN `year` INT)
BEGIN
    SELECT races.name, COUNT(DISTINCT results.constructorId) AS numConstructors
    FROM results
        INNER JOIN races ON races.raceId = results.raceId
    WHERE races.year = year
    GROUP BY races.raceId;
END$$
DELIMITER ;
```

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```
2. DELIMITER $$
CREATE PROCEDURE getsOnRaceMessages(IN cod VARCHAR(3), OUT msg VARCHAR(200))
BEGIN
    CASE cod
    WHEN 'E01' THEN SET msg = 'Error en la presión de las ruedas';
    WHEN 'E02' THEN SET msg = 'Pinchazo';
    WHEN 'E03' THEN SET msg = 'Temperatura alta en el motor';
    WHEN 'E04' THEN SET msg = 'Frenos sobre-calentados';
    WHEN 'E05' THEN SET msg = 'Error presión del aceite';
    ELSE SET msg = 'Error de comando';
    END CASE;
END$$
DELIMITER ;
```

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```
3. DELIMITER $$
CREATE PROCEDURE getDriversByNationality (IN nat VARCHAR(250))
BEGIN
    SELECT *
    FROM drivers
    WHERE nationality = nat;
END$$
DELIMITER ;
```

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```
4. DELIMITER $$
CREATE FUNCTION puntosCampeon (year INTEGER)
RETURNS DECIMAL(10,2)
DETERMINISTIC
BEGIN
    DECLARE points DECIMAL(10,2);

    SELECT MAX(T.totalPoints) INTO points
    FROM (SELECT SUM(results.points) AS totalPoints
        FROM results
            INNER JOIN races ON races.raceId = results.raceId
        WHERE races.year = year
        GROUP BY results.driverId) AS T;

    RETURN (points);
END$$
DELIMITER ;
```

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```
5. DELIMITER $$
CREATE FUNCTION mediaPuntosConstructor (constructor VARCHAR(200))
RETURNS DECIMAL(10,2)
DETERMINISTIC
BEGIN
    DECLARE points DECIMAL(10,2);

    SELECT AVG(T.totalPoints) INTO points
    FROM (SELECT SUM(results.points) AS totalPoints
        FROM results
            INNER JOIN races ON races.raceId = results.raceId
```

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```

        INNER JOIN constructors ON constructors.constructorId = results.constructorId
        WHERE constructors.name = constructor
        GROUP BY races.year) AS T;

    RETURN (points);
END$$
DELIMITER ;

```

6. DELIMITER \$\$

```

CREATE FUNCTION añosEnActivo (id INTEGER)
RETURNS INTEGER
DETERMINISTIC
BEGIN
    DECLARE años INTEGER;

    SELECT COUNT(DISTINCT races.year) INTO años
    FROM results
        INNER JOIN races ON races.raceId = results.raceId
    WHERE results.driverId = id;

    RETURN (años);
END$$
DELIMITER ;

```

7. ALTER TABLE drivers ADD COLUMN añosEnActivo INTEGER NULL;

```

DELIMITER $$
CREATE PROCEDURE actualizarAñosEnActivo ()
BEGIN
    DECLARE done INTEGER DEFAULT FALSE;
    DECLARE id INTEGER;

    DECLARE cur CURSOR FOR SELECT driverId FROM drivers;
    DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = TRUE;
    OPEN cur;
    read_loop: LOOP
        FETCH cur INTO id;

        UPDATE drivers
            SET añosEnActivo = añosEnActivo(id)
            WHERE driverId = id;

        IF done THEN
            LEAVE read_loop;
        END IF;
    END LOOP;
    CLOSE cur;
END$$
DELIMITER ;

```

8. -----TABLA results -----

```

DELIMITER $$
CREATE TRIGGER noMasDeDosPilotos
BEFORE INSERT ON results
FOR EACH ROW
BEGIN
    DECLARE numResults INTEGER;
    DECLARE numDrivers INTEGER;

    SELECT COUNT(*) INTO numResults
    FROM results
    WHERE constructorId = NEW.constructorId
        AND driverId = NEW.driverId;

    IF numResults = 0 THEN
        SELECT COUNT(DISTINCT driverId) INTO numDrivers
        FROM results
        WHERE constructorId = NEW.constructorId;

        IF numDrivers > 1 THEN
            SIGNAL SQLSTATE '03000'
            SET MESSAGE_TEXT = 'Error: no puede haber equipos con más de dos pilotos';
        END IF;
    END IF;
END$$

```

```

        END IF;
    END $$
DELIMITER ;

-----TABLA qualifying -----
DELIMITER $$
CREATE TRIGGER noMasDeDosPilotos
BEFORE INSERT ON qualifying
FOR EACH ROW
BEGIN
    DECLARE numResults INTEGER;
    DECLARE numDrivers INTEGER;

    SELECT COUNT(*) INTO numResults
    FROM qualifying
    WHERE constructorId = NEW.constructorId
        AND driverId = NEW.driverId;

    IF numResults = 0 THEN
        SELECT COUNT(DISTINCT driverId) INTO numDrivers
        FROM qualifying
        WHERE constructorId = NEW.constructorId;

        IF numDrivers > 1 THEN
            SIGNAL SQLSTATE '03000'
            SET MESSAGE_TEXT = 'Error: no puede haber equipos con más de dos pilotos';
        END IF;
    END IF;
END $$
DELIMITER ;

```

9. CREATE TABLE crashes (
- ```

    crashId INTEGER UNIQUE NOT NULL AUTO_INCREMENT,
    driverId INT NOT NULL,
    description VARCHAR(250) DEFAULT NULL,
    PRIMARY KEY (crashId),
    CONSTRAINT
        FOREIGN KEY (driverId)
        REFERENCES drivers (driverId)
)

DELIMITER $$
CREATE TRIGGER registrarAccidentes
AFTER INSERT ON results
FOR EACH ROW
BEGIN
    IF NEW.statusId = 3 OR NEW.statusId = 4 THEN
        INSERT INTO crashes (driverId, description) VALUES (NEW.driverId, 'blah blah blah');
    END IF;
END $$
DELIMITER ;

```

10. -- Para la solución se asume que "estar" en un equipo es participar en una carrera (tabla results)

```

DELIMITER $$
CREATE TRIGGER no_more_than_one_teams_in_a_year
BEFORE INSERT ON results
FOR EACH ROW
BEGIN
    DECLARE y YEAR;
    DECLARE num_races INTEGER;
    DECLARE num_races_with_constructor INTEGER;

    SELECT year INTO y FROM races WHERE raceId = NEW.raceId;

    SELECT COUNT(*), COUNT(constructorId = NEW.constructorId) INTO num_races,
    ↪ num_races_with_constructor
    FROM results
        INNER JOIN races ON races.raceId = results.raceId
    WHERE races.year = y
        AND driverId = NEW.driverId;

    IF num_races > 0 AND num_races_with_constructor = 0 THEN
        SIGNAL SQLSTATE '03000'
        SET MESSAGE_TEXT = 'Error: no se puede competir con un equipo con el que no hayas competido
        ↪ en ese año';
    END IF;
END $$
DELIMITER ;

```

```

    END IF;
END $$
DELIMITER ;

DELIMITER $$
CREATE TRIGGER no_more_than_two_teams_in_a_year
BEFORE UPDATE ON results
FOR EACH ROW
BEGIN
    DECLARE y YEAR;
    DELCARE num_races INTEGER;
    DELCARE num_races_with_constructor INTEGER;

    IF NEW.raceId <> OLD.raceId OR NEW.driverId <> OLD.driverId OR NEW.constructorId <>
    OLD.constructorId THEN
        SELECT year INTO y FROM races WHERE raceId = NEW.raceId;

        SELECT COUNT(*), COUNT(constructorId = NEW.constructorId) INTO num_races,
        num_races_with_constructor
        FROM results
        INNER JOIN races ON races.raceId = results.raceId
        WHERE races.year = y
        AND driverId = NEW.driverId;

        IF num_races > 0 AND num_races_with_constructor = 0 THEN
            SIGNAL SQLSTATE '03000'
            SET MESSAGE_TEXT = 'Error: no se puede competir con un equipo con el que no hayas
            competido en ese año';
        END IF;
    END IF;
END $$
DELIMITER ;

```

11. DROP PROCEDURE pilots\_win\_home\_constructor\_year;

```

DELIMITER $$
CREATE PROCEDURE pilots_win_home_constructor_year(IN year_win INTEGER)
BEGIN
    SELECT DISTINCT drivers.forename, drivers.surname, circuits.name
    FROM drivers INNER JOIN results ON drivers.driverId = results.driverId INNER JOIN races ON
    results.raceId=races.raceId INNER JOIN constructors ON
    results.constructorId=constructors.constructorId INNER JOIN circuits ON
    circuits.circuitId=races.circuitId
    WHERE results.positionOrder=1 AND races.year=year_win AND
    drivers.nationality=constructors.nationality;
END $$
DELIMITER ;

```

12. DELIMITER //

```

CREATE PROCEDURE allPodiumPositions(IN anyo INTEGER)
BEGIN
    SELECT forename, surname
    FROM drivers D
    WHERE driverId IN(SELECT driverId
        FROM results JOIN races ON results.raceId=races.raceId
        WHERE positionOrder=1
        AND year=anyo)
    AND driverId IN(SELECT driverId
        FROM results JOIN races ON results.raceId=races.raceId
        WHERE positionOrder=2
        AND year=anyo)
    AND driverId IN(SELECT driverId
        FROM results JOIN races ON results.raceId=races.raceId
        WHERE positionOrder=3
        AND year=anyo);
END//
DELIMITER ;

```

13. DELIMITER \$\$  
CREATE FUNCTION diffPoints (driver1 INTEGER, driver2 INTEGER)  
RETURNS DOUBLE  
DETERMINISTIC  
BEGIN

```
DECLARE points1 DOUBLE;
DECLARE points2 DOUBLE;

SELECT SUM(points) INTO points1
FROM results
WHERE driverId = driver1;

SELECT SUM(points) INTO points2
FROM results
WHERE driverId = driver2;

RETURN (points1 - points2);
END $$
DELIMITER ;
```

---

14. CREATE TABLE sponsors(  
    sponsorId INTEGER UNIQUE NOT NULL,  
    name VARCHAR(50) NOT NULL,  
    type VARCHAR(20),  
    amount INTEGER NOT NULL,  
    raceId INTEGER,  
    PRIMARY KEY(sponsorId),  
    CONSTRAINT  
    FOREIGN KEY(raceId)  
    REFERENCES formula1.races(raceId))
- DELIMITER //
- CREATE TRIGGER check\_spon1 BEFORE INSERT ON sponsors  
FOR EACH ROW  
BEGIN  
IF NEW.amount>5000000 THEN SET NEW.type='Oficial';  
ELSE SET NEW.type='Co-oficial';  
END IF;  
END//
- DELIMITER //
- CREATE TRIGGER check\_spon2 BEFORE UPDATE ON sponsors  
FOR EACH ROW  
BEGIN  
IF NEW.amount>5000000 THEN SET NEW.type='Oficial';  
ELSE SET NEW.type='Co-oficial';  
END IF;  
END//
- DELIMITER ;
- 

15. DELIMITER //
- CREATE PROCEDURE `getsConstructoresYPilotos` (año year)  
BEGIN  
    SELECT constructors.name, drivers.surname, SUM(results.points)  
    FROM constructors JOIN results ON constructors.constructorId = results.constructorId  
        JOIN races ON results.raceId = races.raceId  
        JOIN drivers ON results.driverId = drivers.driverId  
    WHERE races.`year`= año  
    GROUP BY constructors.name, drivers.surname;  
END//
- DELIMITER ;
- 

16. DELIMITER \$\$
- CREATE PROCEDURE getNumberOfVictories (IN type VARCHAR(20))  
BEGIN  
    IF type = 'nationality' THEN  
        SELECT drivers.nationality, COUNT(\*) AS numVictories  
        FROM results  
            INNER JOIN drivers ON drivers.driverId = results.driverId  
        WHERE results.positionOrder = 1  
        GROUP BY drivers.nationality  
        ORDER BY numVictories DESC;  
    ELSE  
        SELECT constructors.name, COUNT(\*) AS numVictories  
        FROM results  
            INNER JOIN constructors ON constructors.constructorId = results.constructorId  
        WHERE results.positionOrder = 1  
        GROUP BY constructors.name
-

```
ORDER BY numVictorias DESC;  
END IF;  
END $$  
DELIMITER ;
```

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