

## 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 $$
CREATE PROCEDURE getsOnRaceMessages(IN cod VARCHAR(3), OUT msg VARCHAR(200))
BEGIN
    CASE cod
    WHEN 'E01' THEN SET msg = 'Error en la presión de las ruedas';
    WHEN 'E02' THEN SET msg = 'Pinchazo';
    WHEN 'E03' THEN SET msg = 'Temperatura alta en el motor';
    WHEN 'E04' THEN SET msg = 'Frenos sobre-calentados';
    WHEN 'E54' THEN SET msg = 'Error presión del aceite';
    ELSE SET msg = 'Error de comando';
    END CASE;
END$$
DELIMITER ;
```

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

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

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

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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 ;
```

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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 drivers.añosEnActivo = añosEnActivo(id)
        WHERE driverId = id;

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

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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 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 = 1 OR NEW.statusId = 2 OR NEW.statusId = 3 THEN
 INSERT INTO crashes (driverId, description) VALUES (NEW.driverId, 'blah blah blah');
 END IF;
 END \$\$
 DELIMITER ;

10. TODO: Crea un trigger para impedir que en un mismo año un piloto esté en dos equipos de constructores diferentes.

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 ;
```

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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 numVictories DESC;
    END IF;
END$$
DELIMITER ;
```

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