**FIT 5195 ASSIGNMENT 1 CASE STUDY 2**

**TASK 1**

**The Star Schema representation of the *Accident Records* Case Study**

**A screenshot of a cell phone

Description automatically generated**

**TASK 2**

**TWO COLUMN METHODOLOGY FOR CASE STUDY II**

|  |  |  |
| --- | --- | --- |
| **LocationDIM**  **(***By Location Codes)* | **Total Number of Accidents** | **Total**  **Number of Vehicles** |
| CD1 | 35 | 58 |
| CD2 | 21 | 36 |
| MC1 | 75 | 144 |
| **…** | **…** | **…** |

|  |  |  |
| --- | --- | --- |
| **LightingPeriodDIM** | **Total Number of Accidents** | **Total**  **Number of Vehicles** |
| DayTime | 435 | 797 |
| NightTime | 372 | 620 |

|  |  |  |
| --- | --- | --- |
| **PolOffrBranchDIM** | **Total Number of Accidents** | **Total**  **Number of Vehicles** |
| Box Hill | 25 | 46 |
| Ringwood | 11 | 20 |
| … | … | … |

***Note: VehicleDIM is connected to the Fact Table through Bridging as it cannot be validated satisfactorily through this method directly.***

SO, from these tables above containing rough but acceptable data, we can conclude that all the dimensions and the ultimate fact table are acceptable. Hence, the *Accident Records* Star Schema is **valid** as it has been **validated** by the *Two Column Methodology*(The actual data may substantially differ).

**TASK 3**

*(Initial Retreival of Operational Database Tables From Accident Account)*

SELECT \* FROM ACCIDENT.ACCIDENT;

SELECT \* FROM ACCIDENT.OWNERS;

SELECT \* FROM ACCIDENT.DRIVER;

SELECT \* FROM ACCIDENT.VEHICLE;

SELECT \* FROM ACCIDENT.VEHICLE\_DRIVER;

SELECT \* FROM ACCIDENT.LICENCE;

SELECT \* FROM ACCIDENT.ACCIDENT\_RECORD;

SELECT \* FROM ACCIDENT.POLICE\_OFFICER;

--DESC ACCIDENT.ACCIDENT;

--DESC ACCIDENT.VEHICLE;

--CREATION OF ALL THE DIMENSIONS

CREATE TABLE ACCIDENTDIM AS SELECT A.ACCIDENT\_NO, A.ACCIDENT\_EVENT,

1/COUNT(AR.VEHICLE\_NO) AS WEIGHTFACTOR,

LISTAGG(AR.VEHICLE\_NO, ',') WITHIN GROUP (ORDER BY AR.VEHICLE\_NO) AS VEHICLEGROUPLIST

FROM ACCIDENT.ACCIDENT A, ACCIDENT.ACCIDENT\_RECORD AR

WHERE A.ACCIDENT\_NO = AR.ACCIDENT\_NO

GROUP BY A.ACCIDENT\_NO, A.ACCIDENT\_EVENT;

SELECT \* FROM ACCIDENTDIM;

--DROP TABLE ACCIDENTDIM;

CREATE TABLE LOCATIONDIM AS SELECT DISTINCT ACCIDENT\_LOCATION\_CODE, ACCIDENT\_SUBURB FROM ACCIDENT.ACCIDENT;

SELECT \* FROM LOCATIONDIM;

CREATE TABLE LIGHTINGPERIODDIM AS SELECT DISTINCT TO\_CHAR(ACCIDENT\_DATE\_TIME, 'HH24:MI') AS ACCIDENT\_TIME FROM ACCIDENT.ACCIDENT;

ALTER TABLE LIGHTINGPERIODDIM ADD

LIGHTING\_PERIOD\_TYPE VARCHAR(15);

UPDATE LIGHTINGPERIODDIM SET

LIGHTING\_PERIOD\_TYPE = 'DAYTIME'

WHERE ACCIDENT\_TIME >= '06:00' AND ACCIDENT\_TIME <= '17:59';

UPDATE LIGHTINGPERIODDIM SET

LIGHTING\_PERIOD\_TYPE = 'NIGHTTIME'

WHERE ACCIDENT\_TIME >= '18:00' OR ACCIDENT\_TIME <= '05:59';

SELECT \* FROM LIGHTINGPERIODDIM;

CREATE TABLE VEHICLEDIM AS SELECT VEHICLE\_NO, VEHICLE\_MODEL, VEHICLE\_YEAR

FROM ACCIDENT.VEHICLE

GROUP BY VEHICLE\_NO, VEHICLE\_MODEL, VEHICLE\_YEAR;

SELECT \* FROM VEHICLEDIM;

CREATE TABLE ACCIDENTVEHICLEBRIDGE AS SELECT \* FROM ACCIDENT.ACCIDENT\_RECORD;

SELECT \* FROM ACCIDENTVEHICLEBRIDGE;

CREATE TABLE POLOFFRBRANCHDIM AS SELECT DISTINCT OFFICER\_BRANCH FROM ACCIDENT.POLICE\_OFFICER;

SELECT \* FROM POLOFFRBRANCHDIM;

--THE TEMP FACT TABLE

CREATE TABLE TEMP\_FACT\_AR AS SELECT A.ACCIDENT\_LOCATION\_CODE, A.ACCIDENT\_NO,

TO\_CHAR(A.ACCIDENT\_DATE\_TIME, 'HH24:MI') AS ACCIDENT\_TIME, P.OFFICER\_BRANCH

FROM ACCIDENT.ACCIDENT A, ACCIDENT.ACCIDENT\_RECORD AR, ACCIDENT.POLICE\_OFFICER P

WHERE A. ACCIDENT\_NO = AR.ACCIDENT\_NO

AND P.OFFICER\_ID = A.OFFICER\_ID

GROUP BY A.ACCIDENT\_LOCATION\_CODE, A.ACCIDENT\_NO, TO\_CHAR(A.ACCIDENT\_DATE\_TIME, 'HH24:MI'), P.OFFICER\_BRANCH;

ALTER TABLE TEMP\_FACT\_AR ADD

LIGHTING\_PERIOD\_TYPE VARCHAR(15);

UPDATE TEMP\_FACT\_AR SET

LIGHTING\_PERIOD\_TYPE = 'DAYTIME'

WHERE ACCIDENT\_TIME >= '06:00' AND ACCIDENT\_TIME <= '17:59';

UPDATE TEMP\_FACT\_AR SET

LIGHTING\_PERIOD\_TYPE = 'NIGHTTIME'

WHERE ACCIDENT\_TIME >= '18:00' OR ACCIDENT\_TIME <= '05:59';

SELECT \* FROM TEMP\_FACT\_AR;

--DROP TABLE TEMP\_FACT\_AR;

--THE FACT TABLE

CREATE TABLE ACCIDENTRECORDFACT AS SELECT A.ACCIDENT\_LOCATION\_CODE AS "LOCATION CODE",

A.ACCIDENT\_NO AS "ACCIDENT NUMBER", T.LIGHTING\_PERIOD\_TYPE AS "LIGHTING PERIOD TYPE",

P.OFFICER\_BRANCH AS "OFFICER BRANCH",

COUNT(AR.ACCIDENT\_NO) AS "TOTAL ACCIDENTS",

COUNT(AR.VEHICLE\_NO) AS "TOTAL VEHICLES"

FROM ACCIDENT.ACCIDENT A, ACCIDENT.ACCIDENT\_RECORD AR, TEMP\_FACT\_AR T, ACCIDENT.POLICE\_OFFICER P

WHERE A.ACCIDENT\_NO = AR.ACCIDENT\_NO AND AR.ACCIDENT\_NO = T.ACCIDENT\_NO AND

P.OFFICER\_ID = A.OFFICER\_ID

GROUP BY A.ACCIDENT\_LOCATION\_CODE, A. ACCIDENT\_NO, T.LIGHTING\_PERIOD\_TYPE, P.OFFICER\_BRANCH;

SELECT \* FROM ACCIDENTRECORDFACT;

--DROP TABLE ACCIDENTRECORDFACT;

**TASK 4**

--Q1)

SELECT SUM("TOTAL ACCIDENTS") AS "TOTAL ACCIDENTS", "LOCATION CODE", "LIGHTING PERIOD TYPE" FROM ACCIDENTRECORDFACT

GROUP BY "LOCATION CODE", "LIGHTING PERIOD TYPE" ORDER BY "TOTAL ACCIDENTS" DESC;

--Q2)

SELECT VEHICLE\_MODEL, SUM("TOTAL ACCIDENTS") AS "TOTAL ACCIDENTS" FROM ACCIDENTRECORDFACT A, ACCIDENTVEHICLEBRIDGE AV, VEHICLEDIM V

WHERE A."ACCIDENT NUMBER" = AV.ACCIDENT\_NO AND AV.VEHICLE\_NO = V.VEHICLE\_NO

GROUP BY VEHICLE\_MODEL ORDER BY "TOTAL ACCIDENTS" DESC;

--Q3)

SELECT "LOCATION CODE", ACCIDENT\_EVENT AS "ACCIDENT EVENT", SUM("TOTAL VEHICLES") AS "NUMBER OF VEHICLES INVOLVED"

FROM ACCIDENTRECORDFACT AR, ACCIDENTDIM A WHERE AR."ACCIDENT NUMBER" = A.ACCIDENT\_NO

GROUP BY "LOCATION CODE", ACCIDENT\_EVENT ORDER BY "NUMBER OF VEHICLES INVOLVED" DESC;

--Q4)

SELECT "OFFICER BRANCH", SUM("TOTAL ACCIDENTS") AS "TOTAL ACCIDENTS" FROM ACCIDENTRECORDFACT A

GROUP BY "OFFICER BRANCH" ORDER BY "TOTAL ACCIDENTS";

**TASK 5**

**QUESTION 1:**  Show the number of vehicles involved in different lighting periods?

🡪This can be pertinent to get a clear picture of when exactly does more vehicles invariably get involved in road mishaps day or night?! With the help of this information, the concerned authority can beef up their vigilance and safety & security arrangements accordingly!

**The requisite SQL script:**

SELECT "LIGHTING PERIOD TYPE", SUM("TOTAL VEHICLES") AS "NUMBER OF VEHICLES INVOLVED" FROM ACCIDENTRECORDFACT

GROUP BY "LIGHTING PERIOD TYPE" ORDER BY "NUMBER OF VEHICLES INVOLVED" DESC;

**QUESTION 2:** What type of accidents generally happen the most during night time?

* This information can be critical for improving the current scenario during the night-time or late evenings. Firstly, they can analyze the data and then work over it meticulously and vigorously in order to ensure that they rectify the prevailing situation by preventing the most commonly occurring accidents first followed by other accident types as well which may not be high right now but might as well be later.

**The requisite SQL script:**

SELECT A.ACCIDENT\_EVENT AS "ACCIDENT EVENT", SUM("TOTAL ACCIDENTS") AS "NUMBER OF ACCIDENTS DURING NIGHTTIME"

FROM ACCIDENTRECORDFACT AR, ACCIDENTDIM A WHERE AR."ACCIDENT NUMBER" = A.ACCIDENT\_NO AND "LIGHTING PERIOD TYPE" = 'NIGHTTIME'

GROUP BY ACCIDENT\_EVENT ORDER BY "NUMBER OF ACCIDENTS DURING NIGHTTIME" DESC;