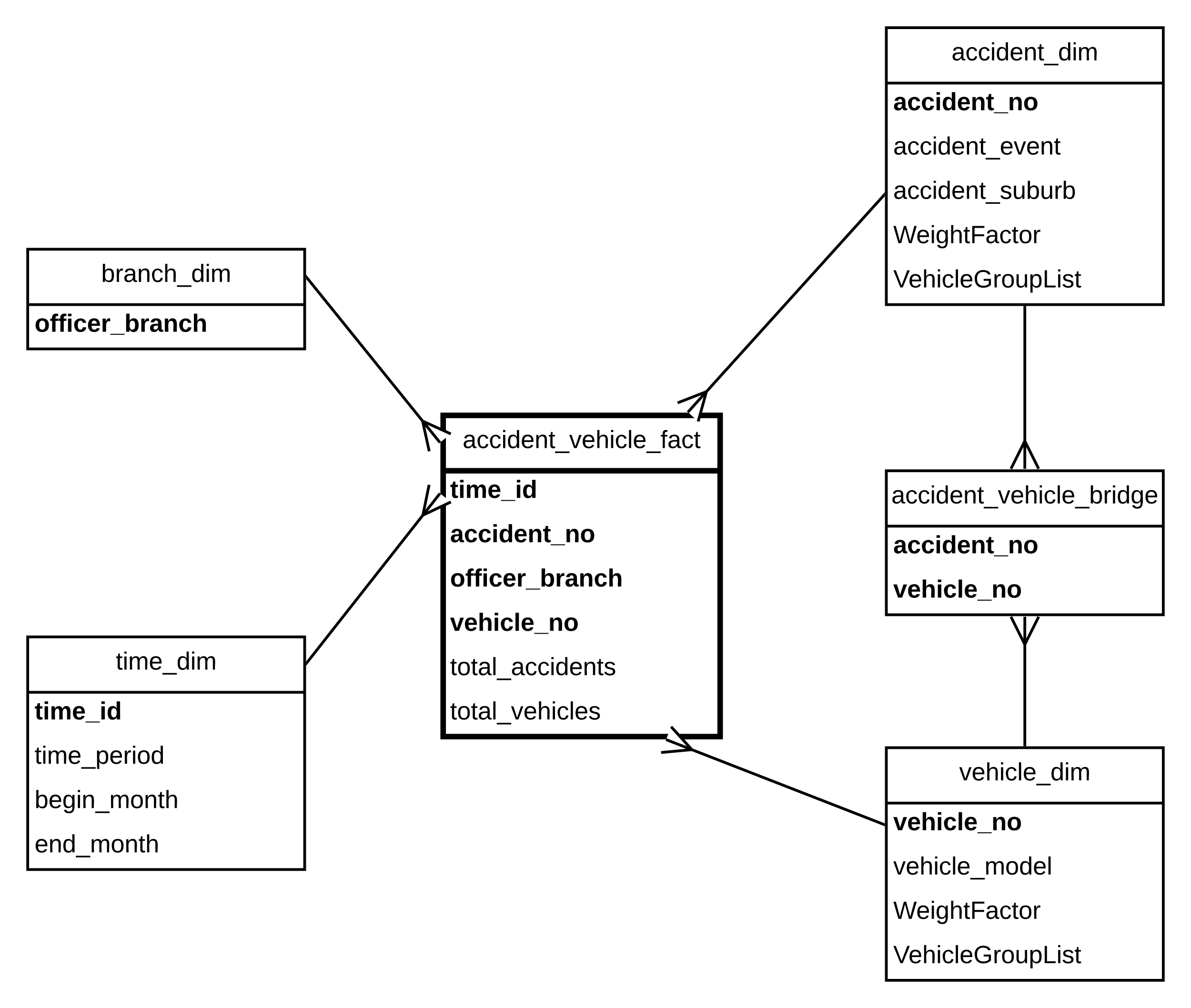
**FIT5195 S1 2020 – Take Home Test**

1. Task 1 The star schema diagram



2. Task 2 The Two-Column Table Methodology illustration

-- time dimension

|  |  |  |
| --- | --- | --- |
| time\_id | total\_accidents | total\_vehicles |
| 1 | 18 | 18 |
| 2 | 10 | 10 |

-- vehicle dimension

|  |  |  |
| --- | --- | --- |
| Vehicle\_no | total\_accidents | total\_vehicles |
| VC024 | 1 | 1 |
| VC021 | 1 | 1 |

-- accident dimension

|  |  |  |
| --- | --- | --- |
| Accident\_no | total\_accidents | total\_vehicles |
| A003 | 2 | 2 |
| A021 | 1 | 1 |

-- vehicle dimension

|  |  |  |
| --- | --- | --- |
| Vehicle\_no | total\_accidents | total\_vehicles |
| VC025 | 1 | 1 |
| VT013 | 1 | 1 |

3. Task 3 The SQL commands to create the dimension and fact tables, as well as the contents of these tables

-- time dimension table

drop table time\_dim cascade constraints purge;

create table time\_dim

(time\_id number,

time\_desc varchar2(10),

begin\_time date,

end\_time date);

-- Insert lighting periods into the table as (daytime: 06:00 - 17:59 and nighttime 18:00 - 5:59)

-- instead of lighting periods (daytime: 6AM - 5:59PM and nighttime 6PM - 5:59AM)

insert into time\_dim values (

1,

'daytime',

to\_date('10/04/2020 06:00', 'dd/mm/yyyy hh24:mi'),

to\_date('22/04/2020 17:59', 'dd/mm/yyyy hh24:mi')

);

insert into time\_dim values (

2,

'nighttime',

to\_date('10/04/2020 18:00', 'dd/mm/yyyy hh24:mi'),

to\_date('22/04/2020 05:59', 'dd/mm/yyyy hh24:mi')

);

select \* from time\_dim;

-- branch dimension table

drop table branch\_dim cascade constraints purge;

create table branch\_dim as

select distinct officer\_branch

from accident.police\_officer;

select \* from branch\_dim;

-- accident dimension table

drop table accident\_dim cascade constraints purge;

create table accident\_dim as

select a.accident\_no,

a.accident\_event,

a.accident\_suburb,

1.0/count(r.vehicle\_no) as WeightFactor,

listagg(r.vehicle\_no, '\_') Within Group (Order By r.vehicle\_no) As VehicleGroupList

from accident.accident a,

accident.accident\_record r

where a.accident\_no = r.accident\_no

group by a.accident\_no,

a.accident\_event,

a.accident\_suburb;

select \* from accident\_dim;

-- accident vehicle bridge table

drop table accident\_vehicle\_bridge cascade constraints purge;

create table accident\_vehicle\_bridge as

select \*

from accident.accident\_record;

select \* from accident\_vehicle\_bridge;

-- vehicle dimension table

drop table vehicle\_dim cascade constraints purge;

create table vehicle\_dim as

select v.vehicle\_no,

v.vehicle\_model,

1.0/count(r.accident\_no) as WeightFactor,

listagg(r.accident\_no, '\_') Within Group (Order By r.accident\_no) As AccidentGroupList

from accident.vehicle v,

accident.accident\_record r

where v.vehicle\_no = r.vehicle\_no

group by v.vehicle\_no,

v.vehicle\_model;

select \* from vehicle\_dim;

-- accident fact temporary table

drop table accident\_fact\_temp cascade constraints purge;

create table accident\_fact\_temp as

select ac.accident\_date\_time,

v.vehicle\_no,

ac.accident\_no,

p.officer\_branch,

count(ac.accident\_no) as total\_accidents,

count(v.vehicle\_no) as total\_vehicles

from accident.accident ac,

accident.vehicle v,

accident.police\_officer p,

accident.accident\_record r

where ac.accident\_no = r.accident\_no

and v.vehicle\_no = r.vehicle\_no

and ac.officer\_id = p.officer\_id

group by ac.accident\_date\_time,

v.vehicle\_no,

ac.accident\_no,

p.officer\_branch;

alter table accident\_fact\_temp add (

time\_id number

);

-- Insert lighting periods into the table as (daytime: 06:00 - 17:59 and nighttime 18:00 - 5:59)

-- instead of lighting periods (daytime: 6AM - 5:59PM and nighttime 6PM - 5:59AM)

update accident\_fact\_temp set time\_id =

(case

when to\_char(accident\_date\_time, 'hh24.mi') >= 06.00 and to\_char(accident\_date\_time, 'hh24.mi') <= 17.59 then 1

when to\_char(accident\_date\_time, 'hh24.mi') >= 18.00 and to\_char(accident\_date\_time, 'hh24.mi') <= 24.00 then 2

when to\_char(accident\_date\_time, 'hh24.mi') >= 00.00 and to\_char(accident\_date\_time, 'hh24.mi') <= 05.59 then 2

end);

select \* from accident\_fact\_temp;

-- accident vehicle fact table

drop tale accident\_vehicle\_fact cascade constraints purge;

create table accident\_vehicle\_fact as

select time\_id,

vehicle\_no,

accident\_no,

officer\_branch,

total\_accidents,

total\_vehicles

from accident\_fact\_temp;

select \* from accident\_vehicle\_fact;

4. Task 4 The SQL commands to answer the queries and the query results

-- a Show the total number of accidents happening by different locations and by different

-- lighting periods (daytime: 6AM - 5:59PM and nighttime 6PM - 5:59AM).

select t.time\_desc,

sum(f.total\_accidents) as total\_accidents

from accident\_vehicle\_fact f,

time\_dim t

where t.time\_id = f.time\_id

group by t.time\_desc;

-- b Show the total number of accidents by each vehicle model

select v.vehicle\_model,

sum(f.total\_accidents) as total\_accidents

from vehicle\_dim v,

accident\_vehicle\_fact f

where v.vehicle\_no = f.vehicle\_no

group by v.vehicle\_model;

-- c Show the number of vehicles involved in every accident event on different locations

select a.accident\_event,

a.accident\_suburb,

sum(total\_vehicles) as total\_vehicles

from accident\_dim a,

accident\_vehicle\_fact f

where a.accident\_no = f.accident\_no

group by a.accident\_event,

a.accident\_suburb;

-- d Show the number of accidents taken care of by different police officer branches.

select officer\_branch,

sum(total\_accidents) as total\_accidents

from accident\_vehicle\_fact

group by officer\_branch;

5. Task 5 The additional two questions with the SQL commands, query result, and your explanation

-- additional question 1

-- Show the number of accidents happening taken care of by

-- different police officer branches and by different lighting periods

select t.time\_desc,

f.officer\_branch,

sum(f.total\_accidents) as total\_accidents

from time\_dim t,

accident\_vehicle\_fact f

where t.time\_id = f.time\_id

group by t.time\_desc,

f.officer\_branch;

-- Explain:

-- Victorian Roads and Safety (VicR&S) want to know the number of accidents that officer branches

-- take care of at different periods because there are many accidents happening at day time and

-- they want to arrange the more exact number of police staff at this time

-- additional question 2

-- Show the number of accidents happening taken care of by

-- different police officer branches, by different lighting periods

-- and by each different vehicle models

select \* from accident\_vehicle\_fact;

select t.time\_desc,

f.officer\_branch,

v.vehicle\_model,

sum(f.total\_accidents) as total\_accidents

from time\_dim t,

accident\_vehicle\_fact f,

vehicle\_dim v

where t.time\_id = f.time\_id

and v.vehicle\_no = f.vehicle\_no

group by t.time\_desc,

f.officer\_branch,

v.vehicle\_model;

-- Explain:

-- Explain:

-- Victorian Roads and Safety (VicR&S) want to know the number of accidents that officer branches

-- take care of at different periods because there are many accidents happening at day time and

-- they want to arrange the more exact number of police staff at this time. Also, they want to know

-- which vehicle model is the main cause