Συστήματα Διαχείρισης Βάσεων Δεδομένων

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Δεύτερο Project

Ζήτημα 1ο

1. Από το περιβάλλον του Microsoft Sql Server Management Studio δημιουργούμε μια βάση δεδομένων με όνομα ACCIDENTSDW με τη χρήση της εντολής

   create database ACCIDENTSDW;

   Στη συνέχεια δημιουργούμε τον πίνακα accdate με τη χρήση της εντολής

   ```
   create table accdata(accident_id varchar(15),
                        severity_id int,
                        severity varchar(20),
                        road_surface_conditions_id int,
                        road_surface_conditions varchar(50),
                        accident_date date,
                        number_of_vehicles int,
                        vehicle_type_id int,
                        vehicle_type varchar(50),
                        driver_class_id int,
                        sex_of_driver varchar(6),
                        age_of_driver int,
                        sex_of_casualty varchar(6),
                        age_of_casualty int
                        );
   ```

   Και εισάγουμε τα στοιχεία στον πίνακα

   ```
   BULK INSERT accdata
   FROM 'C:\ACCDATA.TXT'
   WITH (FIRSTROW =2, FIELDTERMINATOR='|', ROWTERMINATOR =
   '\n');
   ```

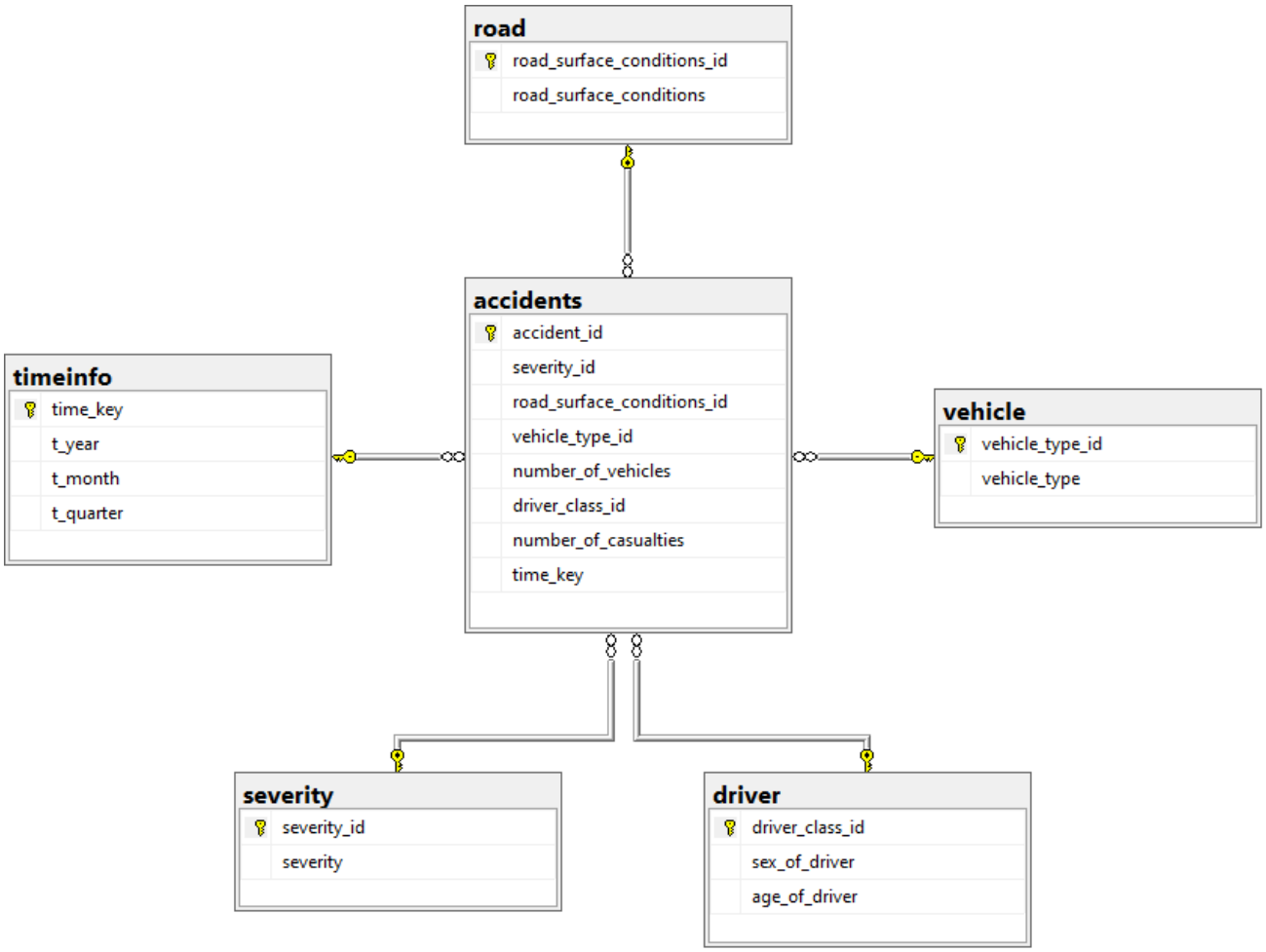
2.

```
create table severity(
      severity_id int  primary key,
      severity varchar(20)
);

create table road (
      road_surface_conditions_id int primary key,
      road_surface_conditions varchar(50)
);

create table vehicle (
      vehicle_type_id int primary key,
      vehicle_type varchar(50)
);

create table driver (
      driver_class_id int primary key,
      sex_of_driver varchar(6),
      age_of_driver int
);

create table timeinfo (
      time_key datetime primary key,
      t_year int,
      t_month int,
      t_quarter int
);


create table accidents
      (accident_id varchar(15),
      severity_id int,
      road_surface_conditions_id int,
      vehicle_type_id int,
      number_of_vehicles int,
      driver_class_id int,
      number_of_casualties int,
      time_key datetime,

      primary key (accident_id),
      foreign key (severity_id) references severity(severity_id),
      foreign key (road_surface_conditions_id) references
road(road_surface_conditions_id),
      foreign key (vehicle_type_id) references
vehicle(vehicle_type_id),
      foreign key (driver_class_id) references
driver(driver_class_id),
      foreign key (time_key) references timeinfo(time_key)
);
```

3.

```
insert into severity
      select distinct severity_id,severity
            from accdata ;

insert into road
      select distinct
road_surface_conditions_id,road_surface_conditions
            from accdata;

insert into vehicle
      select distinct vehicle_type_id, vehicle_type
            from accdata;

insert into driver
      select distinct driver_class_id, sex_of_driver,
      age_of_driver
            from accdata;

insert into timeinfo
      select distinct accident_date, datepart(year,
      accident_date), datepart(month, accident_date),
      datepart(quarter,accident_date)
            from accdata;

insert into accidents
      select accident_id, severity_id,
      road_surface_conditions_id, vehicle_type_id,
      number_of_vehicles,driver_class_id,
      count(sex_of_casualty), accident_date
      from accdata
      group by accident_id,severity_id,
      road_surface_conditions_id, vehicle_type_id,
      number_of_vehicles, driver_class_id, accident_date
```

4. Διάγραμμα:


road
road_surface_conditions_id
road_surface_conditions
accidents
accident_id
severity_id
road_surface_conditions_id
vehicle_type_id
number_of_vehicles
driver_class_id
number_of_casualties
time_key
timeinfo
time_key
t_year
t_month
t_quarter
vehicle
vehicle_type_id
vehicle_type
severity
severity_id
severity
driver
driver_class_id
sex_of_driver
age_of_driver

Ζήτημα 2ο

1.

```
select t_year, severity, count(accident_id) as
number_of_accidents
from accidents, severity, timeinfo
where timeinfo.time_key = accidents.time_key
      and accidents.severity_id = severity.severity_id
group by t_year, severity
      order by  t_year desc
```

2.

```
select driver.age_of_driver, driver.sex_of_driver,
count(accident_id) as fatal_accidents,
sum(number_of_casualties) as number_of_casualties
from accidents, driver
where accidents.severity_id = 1 and
accidents.driver_class_id = driver.driver_class_id
      group by  driver.age_of_driver, driver.sex_of_driver
```

3.

```
select road_surface_conditions, severity,
count(accident_id) as number_of_accidents
from accidents, road, severity
where road.road_surface_conditions_id =
accidents.road_surface_conditions_id
      and severity.severity_id = accidents.severity_id
group by road_surface_conditions, severity
```

4.

```
select t_year, vehicle_type, count(accident_id) as
number_of_accidents, sum(number_of_casualties) as
number_of_casualties
from accidents, timeinfo, vehicle
where accidents.vehicle_type_id = vehicle.vehicle_type_id
      and number_of_vehicles > 2
      and timeinfo.time_key = accidents.time_key
group by t_year, vehicle_type
order by t_year,vehicle_type
```

5.
```sql
select t_year, t_quarter, t_month, count(*) as
number_of_accidents,
sum(number_of_vehicles) as num_of_total_vehicles,
sum(number_of_casualties) as num_of_total_casualties
from accidents, timeinfo
where accidents.time_key = timeinfo.time_key
group by ROLLUP(t_year, t_quarter, t_month)
```

Ζήτημα 3ο

1.

```sql
select s.severity, r.road_surface_conditions,
v.vehicle_type, count(*) as number_of_accidents
from accidents a, severity s, road r, vehicle v
where a.severity_id = s.severity_id and
a.road_surface_conditions_id =
r.road_surface_conditions_id and a.vehicle_type_id =
v.vehicle_type_id
group by cube(s.severity, r.road_surface_conditions,
v.vehicle_type);
```