

# Συστήματα Διαχείρισης και Ανάλυσης Δεδομένων

## 2º Project

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### Ζήτημα Πρώτο ( 35 μονάδες)

```
1) create table accdata (
    accident_id varchar(15),
    severity_id integer,
    severity varchar(10),
    road_surface_conditions_id integer,
    road_surface_conditions varchar(50),
    accident_date datetime,
    number_of_vehicles integer,
    vehicle_type_id integer,
    vehicle_type varchar(50),
    driver_class_id integer,
    sex_of_driver varchar(6),
    age_of_driver integer,
    sex_of_casualty varchar(6),
    age_of_casualty integer
)

bulk insert accdata
FROM 'C:\Users\penas\Desktop\Working on\sdada_project2\ACCDATA.txt'
WITH (FIRSTROW =2, FIELDTERMINATOR='|', ROWTERMINATOR = '\n');
```

### 2,3)

```
/* Dimension Table 1 */
create table Severity(
    severity_id integer primary key,
    severity varchar(10)
)

/* Inserting in 1st Dim */
insert into severity(severity_id, severity)
select distinct severity_id, severity
from accdata
```

```
/* Dimension Table 2 */
create table Road_Surface(
    road_surface_conditions_id integer primary key,
    road_surface_conditions varchar(50)
)
```

```
/* Inserting in 2nd Dim */
insert into Road_Surface(road_surface_conditions_id, road_surface_conditions)
select distinct road_surface_conditions_id, road_surface_conditions
from accdata
```

```
/* Dimension Table 3 */
Create table Accident_Date(
    accident_date datetime primary key,
    acc_year int,
    acc_month int,
    acc_day int,
    acc_quarter int
)
```

```
/* Inserting in 3rd Dim */
insert into Road_Surface(road_surface_conditions_id, road_surface_conditions)
select distinct road_surface_conditions_id, road_surface_conditions
from accdata
set datefirst 1;
insert into accident_Date
select distinct accident_date, datepart(year, accident_date),
    datepart(month, accident_date), datepart(day, accident_date),
    datepart(quarter, accident_date)
from accdata
```

```
/* Dimension Table 4 */
create table Vehicle(
    vehicle_type_id integer primary key,
    vehicle_type varchar(50)
)
```

```
/* Inserting in 4th Dim */
insert into Vehicle(vehicle_type_id, vehicle_type)
select distinct vehicle_type_id, vehicle_type
from accdata
```

```

/* Dimension Table 5 */
create table Driver(
    driver_class_id integer primary key,
    sex_of_driver varchar(6),
    age_of_driver integer,
)

/* Inserting in 5th Dim */
insert into driver(driver_class_id, sex_of_driver, age_of_driver)
select distinct driver_class_id, sex_of_driver, age_of_driver
from accdata

/* Fact Table */
Create table Accident (
    accident_id varchar(15) primary key,
    severity_id int foreign key references Severity(severity_id),
    road_surface_conditions_id int foreign key references
Road_Surface(road_surface_conditions_id),
    accident_date datetime foreign key references Accident_Date(accident_date),
    vehicle_type_id int foreign key references Vehicle(vehicle_type_id),
    driver_class_id int foreign key references Driver(driver_class_id),
    number_of_casualties int,
    number_of_vehicles int
);

/* Inserting in Fact */
insert into Accident
select distinct accident_id,severity_id,road_surface_conditions_id,
    accident_date, vehicle_type_id, driver_class_id,
    COUNT(age_of_casualty) as number_of_casualties, number_of_vehicles
from accdata

group by accident_id,severity_id,road_surface_conditions_id,
    accident_date, vehicle_type_id, driver_class_id, number_of_vehicles

```

4)



## Ζήτημα Δεύτερο ( 35 μονάδες)

```
/* Ερώτημα 2.1 */
select acc_year, count(accident_id) as Number_of_Accidents, severity
from Accident_Date, Accident, Severity
where Accident.severity_id = Severity.severity_id and Accident.accident_date =
Accident_Date.accident_date
group by acc_year, severity
order by acc_year DESC

/* Ερώτημα 2.2 */
select count(accident_id) as Number_of_Accidents, age_of_driver as Age_of_Driver,
sex_of_driver as Sex_of_Driver, sum(number_of_casualties) as Number_of_Casualties
from Accident, Driver, Severity
where Accident.driver_class_id = Driver.driver_class_id and Accident.severity_id =
Severity.severity_id
and severity = 'Fatal'
group by age_of_driver, sex_of_driver
order by age_of_driver ASC

/* Ερώτημα 2.3 */
select count(accident_id) as Number_of_Accidents, road_surface_conditions, severity
from Accident, Road_Surface, Severity
where Accident.road_surface_conditions_id = Road_Surface.road_surface_conditions_id
and Accident.severity_id = Severity.severity_id
group by road_surface_conditions, severity
```

```

/* Ερώτημα 2.4 */
select count(accident_id) as Number_of_Accidents, sum(number_of_casualties) as
Total_Number_of_Casualties, acc_year, vehicle_type
from Accident, Accident_Date, Vehicle
where Accident.accident_date = Accident_Date.accident_date and
Accident.vehicle_type_id = Vehicle.vehicle_type_id and number_of_vehicles > 2
group by number_of_casualties, acc_year, vehicle_type
order by acc_year ASC

```

```

/* Ερώτημα 2.5 */

select acc_year, acc_quarter, acc_month,
count(accident_id) as Number_of_Accidents, sum(number_of_vehicles) as
Number_of_Vehicles, sum(number_of_casualties) as Number_of_Casualties
from Accident, Accident_Date
where Accident.accident_date = Accident_Date.accident_date
group by rollup(Accident_Date.acc_year, Accident_Date.acc_quarter,
Accident_Date.acc_month)

```

## Ζήτημα Τρίτο( 30 μονάδες)

```

/* Ερώτημα 3.1 */
select count(accident_id) as Number_of_Accidents, severity, road_surface_conditions,
vehicle_type
from Accident, Severity, Road_Surface, Vehicle
where Accident.severity_id= Severity.severity_id and
Accident.road_surface_conditions_id = Road_Surface.road_surface_conditions_id
and Accident.vehicle_type_id = Vehicle.vehicle_type_id
group by cube(severity, road_surface_conditions, vehicle_type)

```

```

/* Ερώτημα 3.2 */

select count(accident_id) as Number_of_Accidents, severity, road_surface_conditions,
vehicle_type
from Accident, Severity, Road_Surface, Vehicle
where Accident.severity_id= Severity.severity_id and
Accident.road_surface_conditions_id = Road_Surface.road_surface_conditions_id
and Accident.vehicle_type_id = Vehicle.vehicle_type_id
group by severity, road_surface_conditions, vehicle_type

```

UNION(

```

select count(accident_id) as Number_of_Accidents, NULL, road_surface_conditions,
vehicle_type
from Accident, Severity, Road_Surface, Vehicle
where Accident.road_surface_conditions_id = Road_Surface.road_surface_conditions_id
and Accident.vehicle_type_id = Vehicle.vehicle_type_id
group by road_surface_conditions, vehicle_type)

```

UNION(

```

select count(accident_id) as Number_of_Accidents, severity, NULL, vehicle_type
from Accident, Severity, Road_Surface, Vehicle
where Accident.severity_id= Severity.severity_id and Accident.vehicle_type_id =
Vehicle.vehicle_type_id
group by severity, vehicle_type)

```

```

UNION(

select count(accident_id) as Number_of_Accidents, severity, road_surface_conditions,
NULL
from Accident, Severity, Road_Surface, Vehicle
where Accident.severity_id= Severity.severity_id and
Accident.road_surface_conditions_id = Road_Surface.road_surface_conditions_id
group by severity, road_surface_conditions)

UNION(

select count(accident_id) as Number_of_Accidents, NULL, NULL, vehicle_type
from Accident, Severity, Road_Surface, Vehicle
where Accident.vehicle_type_id = Vehicle.vehicle_type_id
group by vehicle_type)

UNION(

select count(accident_id) as Number_of_Accidents, severity, NULL, NULL
from Accident, Severity, Road_Surface, Vehicle
where Accident.severity_id= Severity.severity_id
group by severity)

UNION(

select count(accident_id) as Number_of_Accidents, NULL, road_surface_conditions, NULL
from Accident, Severity, Road_Surface, Vehicle
where Accident.road_surface_conditions_id = Road_Surface.road_surface_conditions_id
group by road_surface_conditions)

UNION(

select count(accident_id) as Number_of_Accidents, NULL, NULL, NULL
from Accident)

```