

Assignment - 3

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Subject : DBMS

Assignment-3

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Question 1:-

ER Diagram question:- Traffic Flow management system

Scenario:-

You are tasked with designing an entity relationship diagram for a traffic flow management system (TFMS)

Task 1 :- entity identification and attributes

Roads Intersection Traffic signals Traffic data

Road ID(PR) Intersection ID (PR) Signal ID(PR) Traffic data ID(PR)

Road name Intersection name Intersection ID(PR) Road ID(PR)

Length(m) Latitude Signal status

Speed limit(km) Longitude Timer Timestamp

Task 2:- Relationship modeling:-

Relationship:-

Roads to Intersections

* One road can connect to multiple intersections.

* An intersection can be connected by multiple roads.

* Intersection to traffic signals:-

one intersection can have multiple traffic data entities.

* Cardinality and optionality:-

Roads to intersection:-

* one road can connect to zero or more intersections.

* One intersection can connect to one or more roads.

Intersection to traffic signals:-

* one road can have zero or more traffic signals.

* one traffic signal must be associated with one intersection.

Roads to traffic data:-

* one road can have zero or more traffic data entities.

* One traffic data entity must be associated with one road.

Task 2:- Justification and normalization:-

Scalability:-

* The design allows for easy addition of new roads, intersections, traffic signals, and traffic data entities with

out modifying the structure.

Real time data processing:-

* Real-time traffic data integration is facilitated by the traffic data.

Efficient traffic management:-

* The clear separation of entities, Deliverables:-

ER Diagram:- Provided above in plain text format listed in

task 1

Entity Definition:- Listed in task 1

Relationship Descriptions

Justification Document.

Task 3:- ER Diagram Design.

Roads
PK Road ID
Road Name
Length
Speed Limit

Traffic Signal
PK Signal ID
FK Intersection ID
Signal Status
Times

Intersections
Intersection ID
Intersection Name
Latitude
Longitude

Traffic Date
PK Traffic Date ID
PK Road ID
Time Stamp
Speed
Longitude Level

Question 2:-

Question 1:- TOP 3 Departments with highest average salary.

SQL Query

WITH avg_salaries AS (SELECT dept_id, avg_salary FROM employees GROUP BY dept_id)

SELECT dept_id, dept_name, avg_salaries.avg_salary FROM employees JOIN avg_salaries ON employees.dept_id = avg_salaries.dept_id ORDER BY avg_salary DESC

FROM Department

LEFT JOIN employees ON employees.dept_id = Department.dept_id

GROUP BY

dept_id, dept_name, avg_salary

SELECT

Department ID, Department Name, avg_salary

SELECT

Department ID, Department Name, avg_salary

SELECT

Department ID, Department Name, avg_salary

FROM

avg_salaries

ORDER BY

avg_salaries.avg_salary DESC

Question 2:- Retrieve hierarchial category path

SQL Query

WITH RECURSIVE category_path AS

(SELECT category_id, category_name, '' AS path FROM categories WHERE category_id = 1)

OR SELECT category_id, category_name, path FROM category_path

com
Categories c.
WHERE

c-Parent category ID IS NULL
UNION ALL

SELECT

c.category ID,
c.category name,
c-Parent category ID,

(AS CP_Path '11') c-Category name AS VARCHAR (255) AS Path
FROM

category

INNER JOIN category Path c ON c-Parent category ID= CP_Path
category ID.

SELECT

category ID,
category name,
Path.

FROM
category Path;

Final query:-

* select 'category ID', 'category name', and the hierarchical

'Path'. from the 'category Path' etc.

* This query efficiently traverses the given hierarchical

Category structure and builds the fuel for each

category.

3) Total distinct customers by month

SELECT

Date-Format (orderdate, ('-Y-')-Y.M).

AS month name 1.

Count distinct customers ID) AS

customer count

FROM

orders

WHERE

Order date >= date : 2006 (orderdate ('-Y-')-Y.M).

group by
month name.

4. Finding closest location:-

SELECT

location ID,
location name,
latitude

(637 * AS (Radius (87.774) * cos.

(Radius (latitude)) AS (Radius (-192.1144))
Radius (longitude) IS IN (Radius (latitude))

AS distance.

5) Optimizing query for order table.

select * from orders.

where order date > 1 date sub (orderdate ('-Y-')-Y.M)

order by

order date base,

Question-3:

Task 1:- Handling Division operation.

DECLARE

divided number = 100;

divisor number;

result number;

BEGIN

divisor = divisor;

BEGIN

result = divided/divisor;

DBMS_OUTPUT-put-line (Result);

EXCEPTION.

is not allowed;

END;

END;

Task 2:- Updating rows with for all

DECLARE

emp-id number variable

DBMS-sql number variable

salary-line DBMS-sql number variable

DBMS-sql number variable (1000, 2000, 3000);

BEGIN

for all in emp-ids first-emp-ids - last

update employees.

set salary = salary * (salary-in(1))

where employees (emp-id < 1);

END;

Task 3:- Implementing Nested Table Procedure.

Task 3:-

Create type emp-table-type is

table of employees % row type;

Create (1) replace procedure.

get-department - employee (

0-department - id in number.

0-employee - out emp-table-type)

BEGIN

select *

bulk collect into employees.

from employees

where department id;

0-department - id;

Task 4:-

DECLARE

emp-cursor is REF cursor;

emp-ref emp-cursor;

emp-id.

employees employee (0, 1, 2, 3, 4);

first name.

employees first name, type;

salary? There is old number = 5000;

sql-stmt varchar (2500);

BEGIN

sql-stmt = 'select employee id, first name, last name

from employees

where salary > 50000';