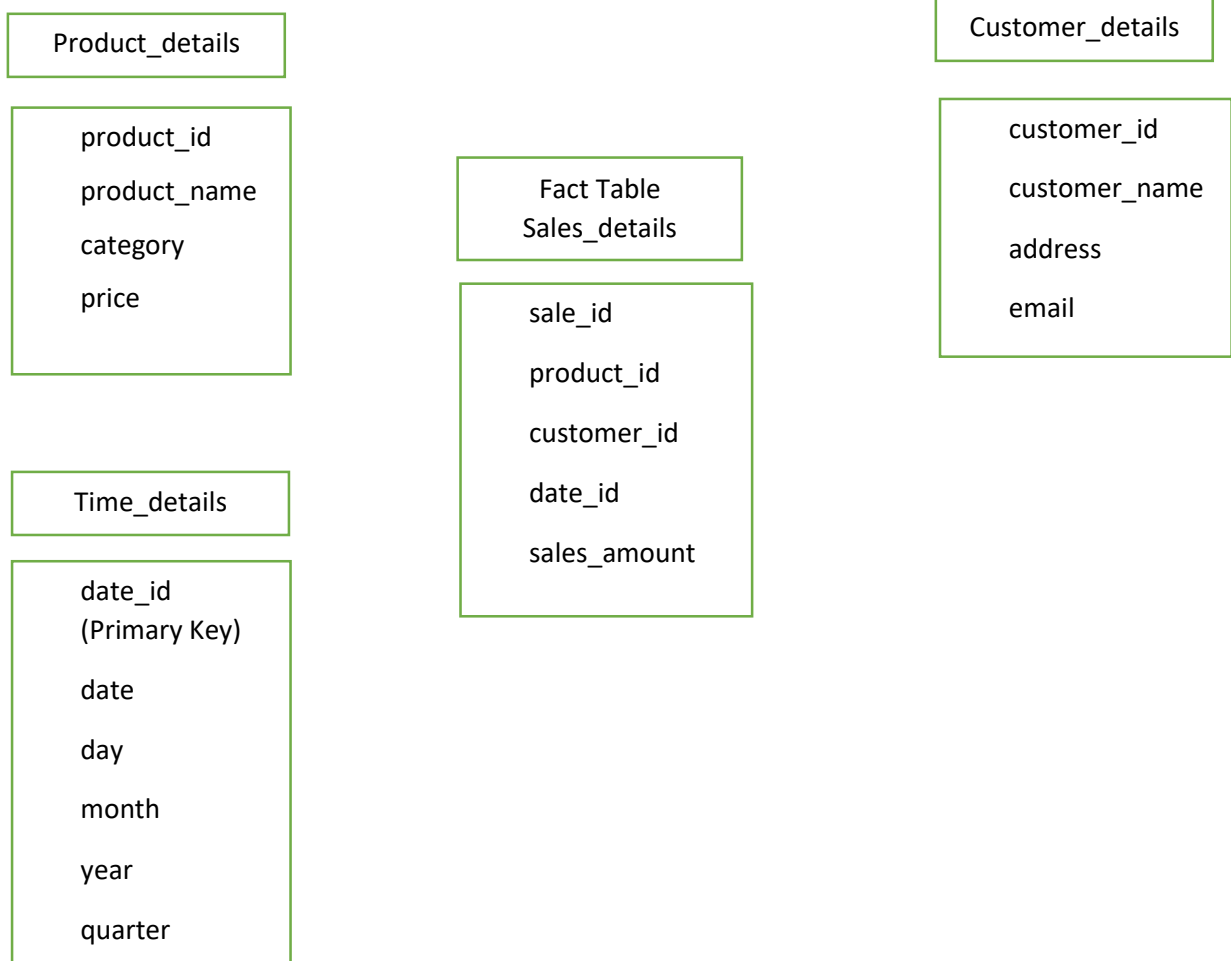


Assignment 8

Q1. TOPIC: Data Warehousing Fundamentals

1. Design a data warehouse schema for a retail company that includes dimension tables for products, customers, and time. Implement the schema using a relational database management system (RDBMS) of your choice.
2. Create a fact table that captures sales data, including product ID, customer ID, date, and sales amount. Populate the fact table with sample data.
3. Write SQL queries to retrieve sales data from the data warehouse, including aggregations and filtering based on different dimensions.



```
INSERT INTO sales (sale_id, product_id, customer_id, date, amount)
```

```
VALUES
```

```
(1, 1, 1, '2023-07-01', 100.00),
```

```
(2, 2, 2, '2023-07-01', 150.00),
```

```
(3, 1, 3, '2023-07-02', 80.00),
```

```
(4, 3, 4, '2023-07-02', 200.00),
```

```
(5, 2, 5, '2023-07-03', 120.00);
```

- Retrieve total sales amount for each product:

```
SELECT p.product_name, SUM(s.sales_amount) AS total_sales
```

```
FROM sales_fact_table s
```

```
JOIN product_dimension_table p ON s.product_id = p.product_id
```

```
GROUP BY p.product_name;
```

- Retrieve sales amount for a specific customer and date range:

```
SELECT t.month, t.year, SUM(s.sales_amount) AS total_sales
```

```
FROM sales_fact_table s
```

```
JOIN time_dimension_table t ON s.date_id = t.date_id
```

```
GROUP BY t.month, t.year;
```

TOPIC: Dimensional Modeling and Schemas

1. Design a star schema for a university database, including a fact table for student enrollments and dimension tables for students, courses, and time. Implement the schema using a database of your choice.

2. Write SQL queries to retrieve data from the star schema, including aggregations and joins between the fact table and dimension tables.

Student_Detail

student_id
student_name
Student_age
Email
Class
major

Enrollment_details

enrollment_id
student_id
course_id
date_id
grade

Course_Detail

course_id
course_name
department
Credit_hours

Time_Detail

date_id
date
day_of_week
month
year

- Retrieve Data from fact table and student dimension table

```
Select * from student_detail;  
Select * from enrollment_detail;
```

- Join between fact table and student dimension table:

```
Select s.student_name, c.course_id, c.enrollment_id from student_detail s inner join c  
enrollment_detail on s.student_id=c.student_id;
```