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PAGE NO.:

PEC Lab Assignment 2.

a) Identify Grains.

1. object location grain :- Each time an object is read by the RFID reader at a specific location

2. object movement Grain : Tracks the movement of an object from one location to another.

3. Inventory status grain : Represent the current status of an object.

4. product sales grain : Each sale transaction associated with an RFID - tagged product.

5. Time Based Tracking grain : tracks the presence of an object at a location at specific time intervals.

6. product lifecycle grain : Tracks an objects lifecycle from production to its current state.

b) Identify dimensions and its type.

1. location :

Attributes: location ID, location Name, type of location

eg. Warehouse.

Type :. Conformed dimension.

2. Time :

Attributes : Date, Day of Week, Month, year, time of day.

Type :- Role - playing Dimension

3. product :

Attributes : product ID, product Name, Category, producer, Date produced, price.

Type : Slowly Changing dimension.

4. RFID Tag :

Attributes : RFID, Associated product ID, Tag status

Type :- Degenerate Dimension.

C. Identify measures and facts and its types.

1. Number of objects tracked.

The total Count of objects tracked by RFID over a specific period or at a specific location.

Fact type :- Additive fact.

2. Time Spent at location.

The total duration an object spends at a specific location before moving to another.

Fact type :- Semi additive fact.

3. Movement frequency

The number of times an object moves between location.

fact type :- Additive fact.

4. product price

The price of a product associated with each RFID tag.

fact type :- Non additive fact :-

d) Identify Schema modelling & Justify your answer.

Schema modelling :- Star schema.

Justification :-

simplicity :- The star schema is simple and provides straightforward query access.

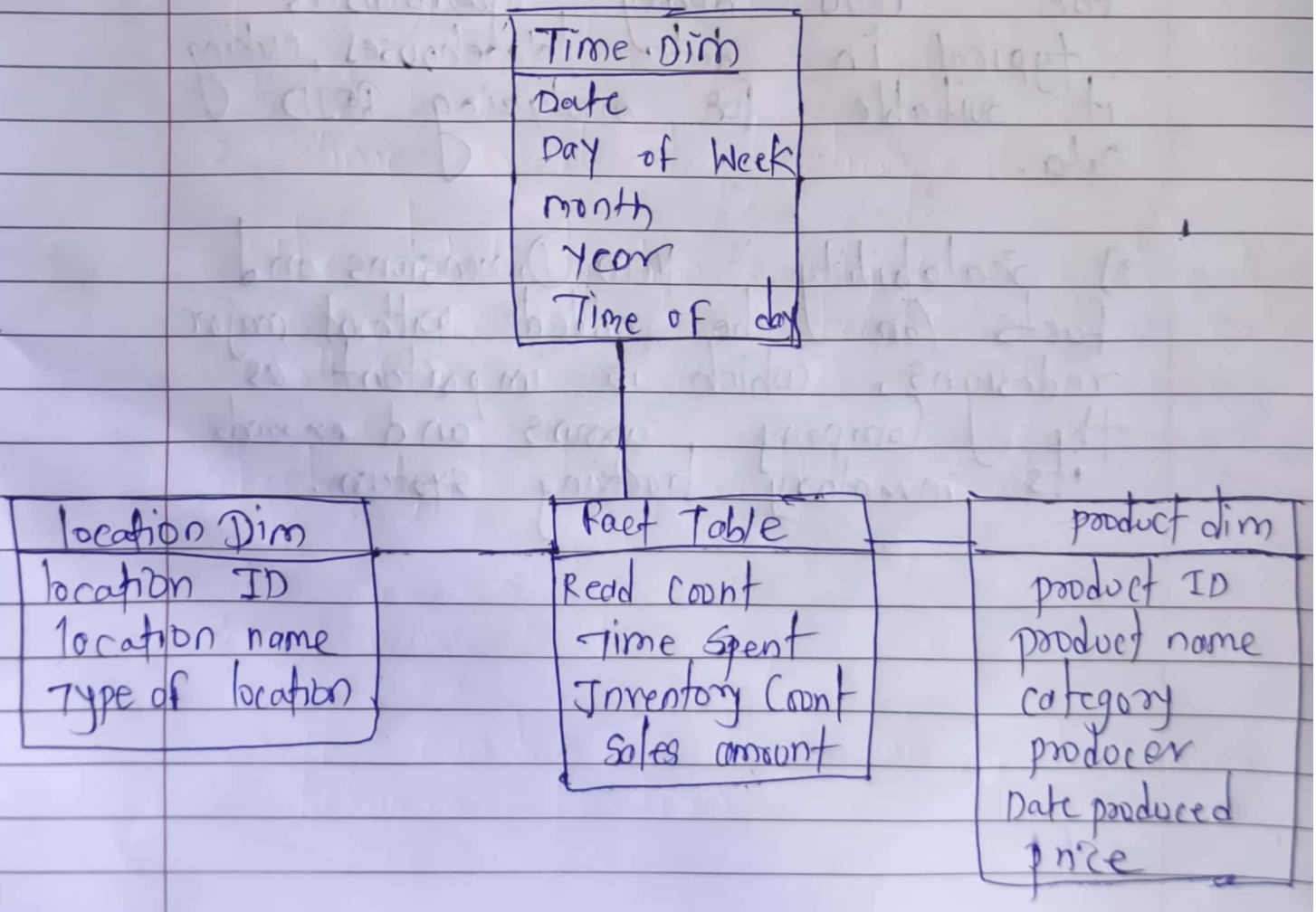
given that the warehouse will handle large amounts of transactional data, star schema is ideal for performance and ease of use.

performance :- star schemas are optimized for OLAP queries, which will facilitate the analysis of transactional RFID data, such as tracking objects movements, inventory control, and sales performance.

flexibility :- As the company scales, adding new dimensions or measures

e). Draw identified schema modelling.

* star schema.



PAGE NO.:

f) Write advantages and disadvantages

Advantages :-

1) Ease of use:

The star schemas simple structure makes it easy for users to navigate and query, especially in an OLAP environment.

2) Performance :-

Star schemas are highly performant for read heavy operations typical in data warehouses, making it suitable for analyzing RFID data.

3] Scalability :- New Dimensions and facts can be added without major redesigns, which is important as the company grows and expands its inventory tracking system.

Disadvantages :-

1) Data Redundancy :- The star schemas denormalized structure can lead to data redundancy, increasing storage requirements.

2) Lack of Flexibility :- While the star schema is great for straightforward queries.
It may not handle more complex queries as efficiently as a Snowflake schema.

3] Maintainance :-

Keeping data consistent and managing slowly changing dimensions can be challenging, particularly in a ~~dim~~ dynamic environment where product details or locations frequently change.