Technologies for Information Systems

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Available Time 2h

Surname _____

Name _____

Student ID_____**Signature**_____

Warehousing&Co. is a large warehousing company with thousands of warehouses around the world. In order to increase the income of the company and to have a complete control over the decisional process, the CEO decided to buy a datawarehouse solution from you. He wants to monitor the following aspects:

- Warehouse usage: the quantity of the products staged into each warehouse.
- Delivery status: the products shipped to a certain warehouse.
- Distribution status: the products distributed from a given warehouse.

In order to solve the problem, you can use the transactional database schema of Warehousing&Co.

TRANSACTIONAL DATABASE

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PRODUCT (p-id, description, fulfillment-strategy, vendor)
VENDOR (v-id, business-name, address, phone)
WAREHOUSE (w-id, address, ZIP, phone, staging-cost-pu)
DISTRIBUTOR (d-id, business-name, address, phone)
DISTRIBUTION-ORDER (distributor, product, warehouse, date, price-pu, qty)
VENDING-ORDER (vendor, product, warehouse, date, cost-pu, qty)
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Note: *pu* means *per unit*.
primary keys are underlined.
assume that it is not possible to have two orders in the same day for the same triple (distributor, product, warehouse) *or* (vendor, product, warehouse).
fullfillment-strategy can be: make_to_stock, make_to_order, assemble_to_order, etc.

1. Perform the reverse engineering of the given relational schema
2. Produce the attribute tree with the suitable pruning and grafting phases
3. Discover the relevant facts and, for each of them produce:
   - The conceptual schema (fact schema).
   - The logical schema (star or snowflake schemas) justifying the chosen model.
   - Show the SQL statements to build the dimensions and the hierarchies.
4. Show the SQL statements that answer the following queries
   - Quantity stored in each warehouse per week, month and trimester.
   - Average of distributed quantities and average income w.r.t. the product, the year and the warehouse in this specified order.
   - Create the cube BAD-PRODUCTS, containing those products that realized an average income per month that is less than the 20% of their cost. We want to analyze them in each possible combination (vendor, distributor, warehouse, time)