

Data Warehousing and Business Intelligence (DS3003)

Sessional-I Exam

Total Time (Hrs.): 1
Total Marks: 25
Total Questions: 3

Date: September 23rd 2024

Course Instructor(s)

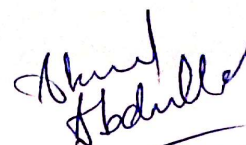
M. Ishaq Raza

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Roll No

BDS-SA

Section



Student Signature

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Note: Please ensure that you attempt all questions and their respective parts in the given order.

Consider the following case study for the next two questions:

Bill Date Dim: Bill Date, Bill Day Desc, Bill Month ID, Bill Month Desc, Bill Year ID, Bill Year Desc

Customer Dim: Customer Code, Customer Desc, City ID, City Desc, Country ID, Country Desc

Sales Rep Dim: Sales Rep No, Sales Rep Desc, Channel ID, Channel Desc

Rate Plan Dim: Rate Plan Id, Rate Plan Desc, Rate Plan Type Code, Rate Plan Type Desc

Billing Fact: Bill Date, Customer Code, Sales Rep No, Rate Plan Id, No of Calls, No of Total Minutes, Taxes, Regulatory Charge

Assume: 10,000 customers, 200 cities, 5 countries, 40 sales rep, 4 channels, 30 rate plans, 3 rate plan types, and 3 years billing history.

CLO # 2: Demonstrate an understanding of the fundamental concepts of the Star and the Snowflake Schema; learn how to design the schema of a DW based on these two models.

Q. No 1: Draw the appropriate star schema that includes a base fact table, a one-way aggregate fact table (along Customer Country), and a two-way aggregate fact table (along Bill Month and Customer Country). Show the primary keys, foreign keys and all the relationships between the dimensions and fact tables. Note: Draw only one diagram that includes base fact table as well as aggregate fact tables. [10]

CLO # 2: Demonstrate an understanding of the fundamental concepts of the Star and the Snowflake Schema; learn how to design the schema of a DW based on these two models.

Q. No 2: Estimate the size (in number of rows) of the above customer dimension table, sales rep dimension table, billing base fact table, and both the aggregate fact tables. [5]

CLO # 2: Demonstrate an understanding of the fundamental concepts of the Star and the Snowflake Schema; learn how to design the schema of a DW based on these two models.

Q. No 3: Briefly answer the following questions. [10]

- a. Pick any one architecture for building a data warehouse and list the advantages and disadvantages of that architecture.
- b. What are the different types of OLAP? Which type of OLAP can handle large amounts of data? Justify your answer.
- c. How does a snowflake schema differ from a star schema? Name two advantages of the snowflake schema.
- d. Differentiate between pre-join denormalization and column-replication denormalization techniques. Explain with an example.
- e. When would you use partitioned cubes in multidimensional online analytical processing (MOLAP)?