Problem Solving Assignemnt-3

1. Suppose that a data warehouse consists of the three dimensions' time, doctor, and patient, and the two measures count and charge, where charge is the fee that a doctor charges a patient for a visit.

a). Draw a schema diagram for the above data warehouse using one of the schemas. [star, snowflake, fact constellation]

b). Starting with the base cuboid [day, doctor, patient], what specific OLAP operations should be performed in order to list the total fee collected by each doctor in 2021?

2. Suppose that a data warehouse for SOA-University consists of the following four dimensions:

student, course, semester, and instructor, and two measures count and avg_grade. When at the lowest conceptual level (e.g., for a given student, course, semester, and instructor combination), the avg_grade measure stores the actual course grade of the student. At higher conceptual levels, avg_grade stores the average grade for the given combination.

a). Draw a snowflake schema diagram for the data warehouse

b). Starting with the base cuboid [student, course, semester, instructor], what specific OLAP operations (e.g., roll-up from semester to year) should one perform in order to list the average grade of CS courses for each BigUniversity student

3. Suppose that a data warehouse consists of the four dimensions, date, spectator, location, and game, and the two measures, count and charge, where charge is the fare that a spectator pays when watching a game on a given date. Spectators may be students, adults, or seniors, with each category having its own charge rate. Draw a star schema diagram for the data warehouse.

4. Design a data warehouse for a regional weather bureau. The weather bureau has about 1,000 probes, which are scattered throughout various land and ocean locations in the region to collect basic weather data, including air pressure, temperature, and precipitation at each hour. All data are sent to the central station, which has collected such data for over 10 years.