

1994 Paper 9 Question 9

Database Topics

The Relational Model of Data and its associated Data Manipulation Languages contained no provision for handling sets of tuples. Discuss the extent to which the SQL `GROUP BY` clause overcomes this weakness. [4 marks]

The Nested Relational Model attacks the problem by extending the Data Definition Language that specifies a relational schema. Describe the extension, and explain with the aid of examples how it enables both sets and compound values to be represented. [7 marks]

Explain how aggregates are handled in the Functional Data Model and the Data Language DAPLEX. [6 marks]

In what way can the purging of duplicates cause problems when evaluating functions defined over sets? How does DAPLEX allow the programmer to retain duplicates when they are needed? [3 marks]