A Comparison of the Relational and CODASYL Approaches to Data-Base Management

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Data definition, manipulation, protection, and independence, and system performance are important factors when studying and evaluating data-base management systems to be used in shared data-base environments. The relational and CODASYL Data Base Task Group approaches, which have been widely discussed and debated, are compared and contrasted from these points of view. The paper concludes with the observation that since data-base management systems are to serve the needs of widely diverse communities of users, no single approach to data-base management seems either desirable or likely to emerge as dominant in the near future.

Keywords and phrases: data base, data-base management, data definition, data independence, data manipulation, data model, data protection, data structures, hierarchical data bases, network data bases, performance, relational data bases, shared data bases

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INTRODUCTION

Other papers in this issue have discussed the concept and evolution of shared data bases and the development of data-base management systems (DBMS). A shared data base permits many different programmers and many different processes to access the same data at virtually the same time. The DBMS provides its users with the facilities to describe, manipulate, and maintain the information contained in the shared data base. With sharing, the protection of the data base, that is, the maintenance of the quality of the data and the security of the data base, becomes an important objective. Another important objective of the DBMS is to maintain resiliency with respect to change; so that when modifications are made necessary by the changing requirements of a given user, the remainder of the user community will not be adversely affected. Finally, the DBMS should perform all of these functions in an efficient manner.

Many experimental and commercial DBMSs have been developed and are in use in industry, education, and government. These systems have been based primarily upon either the hierarchical or the network approaches to data-base management. More

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