

Distributed Database Management Systems

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Fundamental References

- M.T. Özsu and P. Valduriez. *Principles of Distributed Database Systems*. Prentice-Hall, 1999.
- M.T. Özsu and P. Valduriez. "Distributed and Parallel Database Systems", In *Handbook of Computer Science and Engineering*, A. Tucker (ed.), CRC Press, 1997, pages 1093–1111 (Chapter 48).
- M.T. Özsu and P. Valduriez. "Distributed Database Systems: Where Are We Now?" *Computer*, August 1991, 24(8).
- M. T. Özsu. "The Push/Pull Effect - Can Distributed Database Technology Meet The Challenges of New Applications?" *Database Programming & Design*, April 1997.

Other References

- General:
 - ➔ S. Ceri and G. Pelagatti. *Distributed Databases - Principles and Systems*. McGraw Hill, 1984.
 - ➔ D.A. Bell and J.B. Grimson. *Distributed Database Systems*. Addison-Wesley, 1992.
- Distributed Query Processing:
 - ➔ J.C. Freytag, D. Maier, and G. Vossen. *Query Processing for Advanced Database Systems*. Morgan-Kaufmann, 1994.
 - ➔ W. Kim, D.S. Reiner and D.S. Batory. *Query Processing in Database Systems*. Springer-Verlag, 1985.
 - ➔ G. Graefe. "Query Evaluation Techniques for Large Databases", *ACM Computing Surveys*, 25(2): 73-170, June 1993.
 - ➔ P. Mishra and M. H. Eich. "Join Processing in Relational Databases", *ACM Computing Surveys*, 24(1): 63-113, March 1992.
 - ➔ M. Jarke and J. Koch. "Query Optimization in Database Systems", *Computing Surveys*, June 1984, 16(2): 227-269.

Other References

■ Transaction Management:

- ➔ P.A. Bernstein; V. Hadzilacos and N. Goodman. *Concurrency Control and Recovery in Database Systems*. Addison-Wesley, 1987.
- ➔ J. Gray and A. Reuter. *Transaction Processing - Concepts and Techniques*. Morgan Kaufmann, 1993.
- ➔ A.K. Elmagarmid. *Transaction Models for Advanced Database Applications*. Morgan Kaufmann, 1992.
- ➔ P.A. Bernstein. "Transaction Processing Monitors," *Communications of ACM*, November 1990, 33(11): 75 – 86.
- ➔ B.K. Bhargava (ed.). *Concurrency Control and Reliability in Distributed Systems*. Van Nostrand Reinhold; 1987.
- ➔ C.H. Papadimitriou. *The Theory of Concurrency Control*. Computer Science Press, 1986.
- ➔ S.K. Shrivastava (ed.) *Reliable Computer Systems*. Springer-Verlag, 1985.

Other References

■ Open Systems and Interoperability:

- ➔ A. Umar. *Distributed Computing – A Practical Synthesis*. Prentice-Hall, 1993.
- ➔ S. Khoshafian, A. Chan, A. Wong and H.K.T. Wong. *A Guide to Developing Client/Server SQL Applications*. Morgan Kaufmann, 1992.
- ➔ G. Nutt. *Open Systems*. Prentice-Hall, 1992.
- ➔ A.K. Elmagarmid and C. Pu (guest eds.). *ACM Computing Surveys*, Special Issue on Heterogeneous Databases, September 1990, 22(3).
- ➔ S. Ram (guest editor). *Computer*, Special Issue on Heterogeneous Distributed Database Systems, December 1991, 24(12).

Other References

■ Parallel Database Servers:

- ➔ P. Valduriez (ed). *Data Management and Parallel Processing*. Chapman and Hall, 1992.
- ➔ P. Valduriez. "Parallel Database Systems: Open Problems and New Issues," *Parallel and Distributed Databases*, April 1993, 1(2): 137–165.
- ➔ D. DeWitt and J. Gray. Parallel Database Systems: The Future of High-Performance Database Systems. *Communications of ACM*, June 1992, 35(6), 1992.

Other References

■ Distributed Object Management:

- ➔ E. Bertino and L. Martino. *Object-Oriented Database Systems*. Addison-Wesley, 1993.
- ➔ A. Kemper and G. Moerkotte. *Object-Oriented Database Management*. Prentice-Hall, 1994.
- ➔ A. Dogac, M.T. Özsu, A. Biliris, T. Sellis (ed.). *Advances in Object-Oriented Database Systems*. Springer-Verlag, 1994.
- ➔ M.T. Özsu, U. Dayal and P. Valduriez (eds.). *Distributed Object Management*. Morgan Kaufman, 1994.
- ➔ W. Kim (ed). *Modern Database Management – Object-Oriented and Multidatabase Technologies*. Addison-Wesley/ACM Press, 1994.
- ➔ S. Zdonik and D. Maier (eds.). *Readings in Object-Oriented Database Systems*. Morgan Kaufmann, 1990.
- ➔ R.G.G. Cattell. *Object Data Management*, 2nd edition. Addison-Wesley, 1994.