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THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATION
Advanced Diploma

ADVANCED DATABASE MANAGEMENT SYSTEMS

26th April 2000 – 10:00a.m. – 1:00p.m.
Answer THREE questions out of FIVE. All questions carry equal marks.
Time: THREE hours

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

1. Explain the relative merits/demerits of the relational versus the object-oriented approach to database management systems. **(25 marks)**

2. *a)* Use examples to explain why, in concurrent transaction scheduling, the processing order of certain sequences of operations cannot be changed without risking the integrity of the outcome of the schedule. **(5 marks)**

b) Consider the following two schedules for two pairs of transactions (T0 and T1) and (T2 and T3). For each schedule state whether it is serialisable or not. Justify your answer using appropriate means.

i)

T0	T1
read(A)	
read(B)	
	read(B)
	read(A)
write(B)	
	write(A)

(4 marks)

ii)

T2	T3
read(A)	
write(A)	
	read(A)
	write(A)
read(B)	
write(B)	
	read(B)
	write(B)

(4 marks)

c) Explain how locking and timestamping can ensure concurrent transactions are serialisable. Describe any problems with either approach. **(12 marks)**

3. Describe the CORBA distributed architecture and explain how its features make interoperability possible. **(25 marks)**

4. Discuss the special problems posed by a requirement to communicate with a database across the World Wide Web. Where possible, describe solutions to these problems from your own experience of implementing this type of system. **(25 marks)**

5. Describe the new features introduced into the SQL language by the SQL/99 (formerly known as SQL3) standard. Discuss how each feature could be used to advantage. **(25 marks)**