



1.3.2 Transaction Processing

1. Transactions with a database should be ACID.

a) Describe what the A in ACID stands for and explain what it means in the context of ACID transactions.

[2 marks]

- **Atomic**
- **A transaction can only fully complete or not complete / cannot partially complete**

b) Describe what is meant by a transaction being durable.

[2 marks]

- **Once a transaction is completed it can not be lost**
- **... in case of power / system failure**

c) Give **one** way that durability can be achieved for a completed transaction.

[1 mark]

- **Completed transactions should be stored in secondary memory / not in RAM**

2. The I in ACID stands for isolation.

a) Explain what isolation means in the context of ACID transactions.

[1 mark]

- **Transactions do not interfere with each other**

b) Explain how record locking can be used to ensure that the ACID principle of isolation is achieved when carrying out multiple transactions.

[3 marks]

- **The outcome of concurrent transactions is the same as if transactions were completed sequentially**
- **Record locking allows one user to modify a record at one time**
- **So data that is being used elsewhere cannot be modified**

c) Give **one** disadvantage of using record locking.

[1 mark]

- **Can cause delays as users wait for access**

