1	1	**All marks AO1 (understanding)** Two users (read and) edit a record/the same data simultaneously; **NE.** access/read unless later made clear the record/data is changed **NE.** edit the database simultaneously One user writes the record/data back/saves then the other user writes the record/data back/saves; One user's update is lost // only one user's update is the kept; **NE.** data is lost **A.** examples that map to the above points. **If no other marks awarded, award one mark for the use of the term "lost update problem".** **Refer examples relating to data being read whilst another transaction that is later rolled-back is in progress to team leaders.**	**3**
1	2	**All marks AO1 (knowledge)** **Mark against "Record locks" or "Timestamp ordering" mark scheme, depending upon which method the student has selected.** **Record locks:** When a transaction on a record starts / when a user starts to edit a record an (exclusive) lock is set on the record; **R.** database/data/file/table for record Other transactions/users cannot edit (**A.** access) the record/data until the lock is released/while the lock is in place/until the first edit is completed; **Timestamp ordering:** Timestamps are generated for each transaction // timestamps indicate the order that transactions occurred in; **A.** timestamps generated for edits/queries as BOD Database records timestamp of last read / last write transaction for each record / data item; **A.** just one of read/write Database server applies rules to determine if processing a transaction will result in loss of data integrity/inconsistency (and if so aborts the transaction); **A.** Examples of rules for this mark point: • If a transaction tries to write to a record/data item then the transaction should be aborted if the read/write timestamp on the record/data item is greater that the time at which the transaction started. • If a transaction tries to read a record/data item then the transaction should be aborted if the write timestamp on the record/data item is greater that the time at which the transaction started. **Max 2**	**2**