# Worksheet 6 Transaction processing

# Task 1

1. When you place an order over the phone for one or more items, such as a book or clothing, to be delivered to your home, the sales person at the other end of the phone will type details of your order into a database.

(a) Using an example of an item that you are ordering, list the data that will need to be entered.

A book

You might need to enter the book name, author, customername (yourname), order date

orderID, customerID, bookID

(b) List ways in which the data entry can be made as quick and easy as possible

Magnetic ink character recognition

Optical mark recognition

Optical character recognition

2. What methods of data capture would be suitable for entering data from a market research survey conducted in the street?

Quick response codes (QR code), to send people to a links o they can complete the survey

3. Processing a transaction often involves several different operations. List the operations that a computer system belonging to a cinema will need to complete to sell a cinema ticket online.

Ask for credit card details

Customer name/details

Place in the cinema that is being ordered

**Task 2**

4. If you use Cloud storage such as Dropbox, you can specify that certain files can be shared with other named users. You could use it, for example, to work with a friend on a joint project saved in ProjectX.docx..

Suppose you open ProjectX.docx, and start editing it. While you are doing this, your friend Jo also opens it, makes a few corrections to the joint project and saves it. When you save your version, what happens? Are some of the corrections lost?

Your corrections are lost because the other user just saved it so their corrections are saved, but because your corrections were not made by them before they saved it.

5. **ACID** stands for Atomicity, Consistency, Durability, Isolation.

(i) Explain the purpose of this set of properties.

Atomicity ensures that the data in the database or record is atomic. Meaning it cannot be broken down any further. Consistency maintains integrity of data so that you cant have data integrity or referential integrity issues. Like if you have one database with some data and another that references this data. It makes sure that the referenced database doesn’t have the referenced record deleted since then the other database would be referencing something non existent. Durability makes sure that a transaction is either completely complete or not complete at all. So in a power outage the user’s transaction details are saved and no records are updated until the transaction is actually complete.

(ii) How does ACID ensure that for example a cinema seat is recorded as sold and payment is not taken, owing to a power failure in the middle of the transaction?

Consistency ensures that the seat is only recorded as sold, after the and durability makes sure even in the event of a power outage, the data in transaction is saved so that when the customer comes back, none of the fields in the database have been changed yet. Only when they completely finish the transaction, will the seat status be changed to sold.

(iii) What is meant by referential integrity? Give an example.

6. Explain how record locking can cause deadlock.

Since record locking locks the record when one user accesses it, so no one else can make edits at the same time. If two users for example, open and access the database at the same time, they will both open the database before it is locked. Once updates and edits are made, since record is already locked, the update will wait and only update once the record is unlocked, but this is the same for the other user, so both computers are waiting for record to be unlocked which requires either update to be established. Since neither update is going through we have a dead lock because the record will remain locked and neither computer will be able to push the update.

7. Name and briefly describe two serialisation techniques which ensure that transactions do not overlap in time and ensure that updates are not lost.

Time stamp ordering, where a time is saved whenever the database is accessed, then once updates are made and about to be committed, the database access time is checked. If the time the user accessed the database matches with where the current time stamp is, the update is made, if it doesn’t match, meaning someone else also accessed the database but at a later time. The computer waits until they finish the update and applies same process to them. Once all the updates from more recent accessed users are made, then the current user’s updates are pushed through.