# Homework 6 Transaction processing

1. a. State a method of data capture that would be suitable for each of the following applications: [3]

|  |  |
| --- | --- |
| Application | Data capture method |
| Multiple choice exam answers | Optical mark recognition |
| Number plates recorded by speed camera | Optical character recognition |
| Bank clerk entering cheque details | Magnetic ink character recognition |

(b) (i) What is meant by Electronic Data Interchange (EDI)? [2]

A method of transferring data without human intervention between one computer and another that uses standardises message formatting

(i) Name an application for which this would be a suitable method of data exchange. [1]

Examboards sending exam results of students to a school.

2. (a) Describe briefly a potential problem that could arise in a multi-user database. [2]

Data and corrections that are added and made to a database by some users can be lost when the database is updated. Because if one use makes some changes and saves it before another user, who saves it right after, the other user’s changed might be lost because to update a database, it is copied to one user who is currently saving it, and changes are added to it, then put back, if multiple people do this, some people edits will be using an older copied version hence some previous people’s changes will be lost.

(b) What does ACID stand for in the context of databases? [2]

Atomity

Consistency

Isolation

Durability

(c) Explain briefly what ACID is, and its purpose. [3]

ACID is a set of properties of a database that are followed to ensure transactions are either completely complete, or not complete at all so people cant do half half like for example, getting the ticket to a seat in a cinema but not paying for it. The properties of ACID help ensure a database is in 3rd normal form so that the database is always as accurate and correct as possible.

3. Explain what is meant by **redundancy** in the context of computer systems and why it is essential for some organisations. [2]

Redundancy is having back ups for databases and systems so that if the main database or system shuts down, a second one, or more are immediately ready to immediately continue operations. This is essential for organisations like banks where a database shutting down even for a second is unacceptable because it could cause huge data loss, therefore many backups elsewhere are needed in case the main system fails.

4. Name and briefly describe a serialisation technique which ensures that transactions do not overlap in time and ensures that updates are not lost.

Timestamp ordering. When a user opens the databases to access it and make changes, a timestamp is placed indicating when the database is accessed. Once they finish making changes, and save it, the time they opened the database is compared with where the current timestamp is. If they match the changes are saved. This is so that if someone else also accesses the database while the user is editing it, but at a slightly later time from when the first person accessed it, if the second person makes changes and saves, the timestamp changes so their changes are made first to make sure no data is lost, then the first person’s changes are implemented so that the newest copy of the database is being used to add changes to, then copied back in. [3]

[Total 18 Marks]