

a) One advantage of the computerised system at UMC is that data can be stored, organised, modified, added, deleted and accessed easily, reducing ^{the} time, money and space required by the organisation. A computerised system allows data to be stored in a much smaller physical space than a paper-based system, and also allows multiple backups of patient information in case the system fails. New patients can be added easily, records can be searched or sorted virtually instantly, and access to the data can be from any computer terminal. A paper-based system does not allow most of these features.

One disadvantage is the security of the information. A computerised system can be hacked into and confidential data can be stolen especially if ~~internet~~ ^{internet} access is available. or maliciously modified. A paper-based system is also easier to keep private and in one place. The main reasons they are often used are privacy, security and price issues.

b) A large, direct access storage device is required for UMC. A large amount of data needs to be stored, especially if high-quality images are to be used. However, a storage device such as magnetic tape cannot be used for the main database, as instant retrieval of desired information must be possible. A direct ^{access} storage device such as a hard drive or magnetized disk allows large amounts of data to be stored and accessed quickly. Backup procedures, however, can use magnetic tapes. When images need to be displayed in this system, they should be retrieved from the database. Although the database management system used for UMC is most likely to be a relational database system, a subset or miniaturized system of hypermedia could also be used in the display of images - eg. when viewing the record of a patient a doctor can click on text on the screen to then view an image of an x-ray, ultrasound, etc. This method of displaying information means that the textual information is retrieved from the main database, and images are only retrieved if requested ~~to~~ by the doctor. This speeds up the retrieval process and also allows all appropriate images to be displayed.

c) The receptionist at UMC has a limited view of each database record, and the doctor is given a full view of all the details. The reasons for this are that the receptionist only requires a restricted view because he/she only needs information regarding names, non-medical details such as address, and appointment - details. If more information was included that was not required, the receptionist would have to mentally sort through the data to find the desired relevant information. Additionally, the doctor has a full database view because he needs all the information to assist with treatment of the patient. Also, there is an issue of privacy. Doctors must legally keep medical information regarding patients confidential. As the receptionist is not qualified in treating patients or analysing medical problems, he/she does not gain access to the ^{medical} data. Furthermore, the receptionist's view of the database shows many ~~one~~ records at once, while the doctor can view only one. This is because the receptionist deals with more than one person at a time, and the doctor does not.