Quick Computing Theory Notes (Part 5)

Database Management (in a Nutshell)

# 1 Introduction

## 1.1 Database vs File Systems

As database systems are **data-oriented**, while file systems are **program-oriented**, database systems normally have many advantages over file systems.

### Advantages

1. Data independence

In a database, the data is held is such a way that **changes to the database structure** do not affect any of the programs that access the data.

This is in contrast to the non-database approach, where a minor change in file structure may require a **considerable reprogramming effort**.

1. Consistency of data

Since data is **held only once**, there is no danger of an item being updated on one system but not another. A change in information **will only be recorded once**, and all references to that information will **take into account the changes made**.

1. Control over redundancy

In a non-database system, the same information may be **held on several different files**, **wasting disk space** and **consumes time** when updating such information.

This **redundancy is minimised** if a database system is used.

1. Greater security and integrity of data

In a database system, it **only gives authorised users access** to the data, with individual users being allowed to access only the **subset of data** that they need for their jobs to be done.