

Computers and Information

How computers went from being huge calculating machines to being information processors

Outline

- Computers: not just mathematical machines
- Computers as a way to store Information
 - Digitally, that is the information is represented by numbers.
- Computers as Information Processors
 - A program can change the information
- Computer Networks

Storing Information

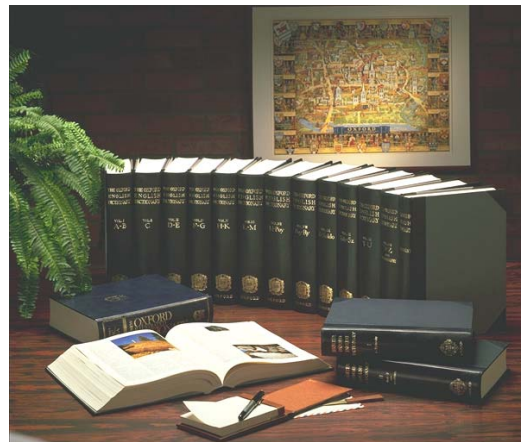
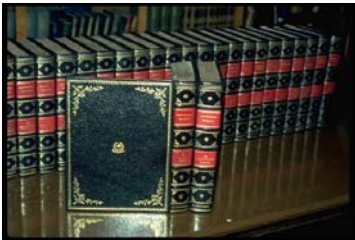
- Numbers are all very well, but computers wouldn't be as popular if they could only handle numbers.
- Some bright spark realised that you could use a number to represent a letter (for example, the number 61 represents the letter 'A'). This was the ASCII code.
- Now computers can store documents!

Numbers represent Information

- Organised information stored on a computer was called a database and was used by banks, airline systems, police forces, the CAO etc.
- Computers could quickly search for an item of information.

Lots of Information

- Encyclopedia Britannica, all 30 volumes can fit on one CD ROM



Many kinds of Information

- Next people realised that pictures could be represented by numbers and therefore stored on a computer.
- And sounds.
- And movies.
- And multimedia documents.
- This makes them ideal for encyclopedias.

So far we have

- Computers can perform computations
 - Fast.
 - Without getting bored.
- Computers can store information
 - Lots of information.
 - Many different types: images, sound, video.
 - And they can quickly search for information.

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Processing Information

- Once information is stored on a computer, a program can change (or edit) it in some way.
- A word processor allows you to create and change a document.
- Similarly images can be changed.
- And sounds (add echo, reverse, change tone).
- And movies, sound and effects.

Processing Information

- Information Processing is what computers spend most of their time doing.
- Taking some information and transforming it in some way.
- A computer programmer would write a program that would manipulate the numbers representing the information.
- The program can then be used to transform the information.

Computer Networks

- Email
- Web
 - Shopping
 - Banking
 - Search engines: e.g. www.google.com
- Online chat
- Mobile phones

Current uses of Computers

- Solve mathematical problems.
- Store and present information.
- Process information.
- Play chess (and other games).
- DNA sequencing.
- In machinery; computers are in
 - every modern car engine (and most brake systems)
 - every digital camera and ...
 - planes, boats, factories, video recorders, microwave ovens, medical equipment ...