
Cambridge Nationals R001

Revision help (LO2)

Sensors

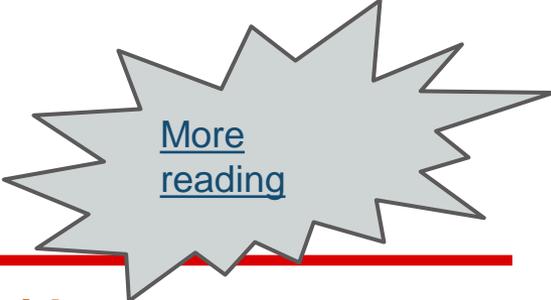
A **sensor** (also called **detector**) measures a physical quantity and converts it into a signal which can be read by an electronic device.

There are many types of sensors that measure different things such as heat, smoke or humidity.



Sensor	Measures
Heat	Temperature
Infra-red	Infra-red radiation i.e. Body heat
PH balance	Acid/alkali
Sound	Levels of sound
touch	Detects if one object bumps into another
Smoke	Level of smoke
Humidity	Water vapour in the air

Data



[More reading](#)

Data is words, numbers, dates, images, sounds etc without context.

This is a list of data items:

- 42
- rabbits
- 16:00
- 76
- apples
- 09743245530
- £40
- seaside

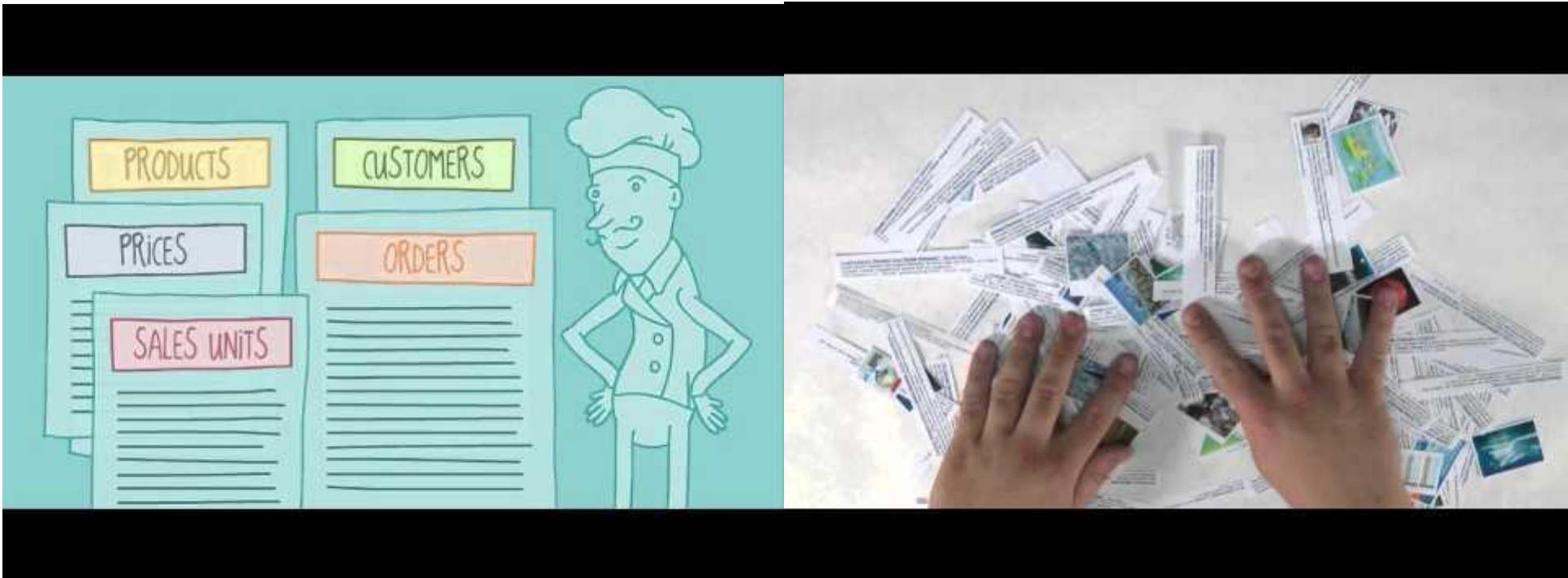
Data items need to be part of a structure, such as a sentence, in order to give them meaning.

Therefore **DATA** is unstructured and has little meaning until it is processed and it becomes **INFORMATION**

Database

[More reading](#)

A database is a collection of information that is stored in an organised way. For example a doctor's surgery has information about people's names, addresses, illnesses etc.



Forms & Data Capture

Forms are a good way of collecting data. Often you may find people in the street doing surveys to collect data about various things.

Forms are a good way of structuring data that needs to be collected. The guy on the right has a clip board with a form that he is collecting data from someone that he is interviewing.



Some websites use online forms to ask people questions to collect data.

A screenshot of a web-based survey form. The title is "XXX Twitter Survey". The text says "Hey Peeps. We're here to find out our...". There are two questions, both asking "1. We are able to answer your queries on Twitter within a day." and "2. We are able to answer your queries on Twitter within a day." Each question has a 5-point Likert scale with radio buttons labeled "Strongly Disagree", "1", "2", "3", "4", "5", and "Strongly Agree". A "Submit" button is at the bottom. At the very bottom, it says "Powered by Google Docs" and has links for "Report Abuse", "Terms of Service", and "Additional Terms".

Data can be captured by a human and also a computer. A computer can use sensors to measure things such as temperature, humidity, motion and much more.

Data Capture methods

Anything that is used to collect data to be stored or processed is called data collection.

There are many examples:

Collecting information through a survey in the street on paper



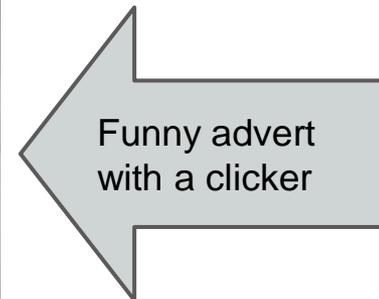
Data Capture methods

Click counters can be used to count how many people have walked through a department store or how many people have boarded a ride.

Its an easy way to check the total number of something later (like making a tally).



Fruit	Votes
Apple	
Banana	
Peach	
Pear	



Data Transfer Methods

NFC is a technology that will probably get quite popular in the near future. It is a way to transfer information to and from mobile devices. It can be a way to send photos, contact details, maps or locations, information of attractions, payment of goods/services and much more.

When this video was made NFC did not yet allow phones to share information. Now it is possible.



Data Capture methods

Extra Reading

Barcode scanners at the checkout are also collecting information about what you're abo



Barcodes can also be scanned in by your phone. There are apps to help you find the best prices of items and barcodes can represent information that you phone can decipher

Data Capture methods

- *Bar Code*
 - *Magnetic Stripe*
 - *Optical Mark Reading (OMR)*
 - *Magnetic Ink Character Recognition (MICR)*
 - *Digitising/Scanning*
 - *On-line Data Capture*
 - *Paper-based forms*
 - *Radio*
Frequency Identification Device (RFID)
 - *Field Communication (NFC)*
-

File Formats & Extensions

Different types of files are opened by different kinds of software. For example, sound files are opened by media players such as iTunes, Windows Media player or Winamp.

Some software have their own file types. These are known as **proprietary** file formats.

Open source file formats can be opened by any software that supports them.

Type of file	Common format	Type of file	Common format
Word Processor file	.doc	Adobe Acrobat	.pdf
Presentation File	.ppt	Notepad	.txt
Sound file	.mp3 / .wav	Image Files	.jpg / .bmp / .gif
Video file	.mp4 / .mov	Webpages	.html
Publisher	.pub	Compressed Files	.zip / .rar

Data validation

[More reading](#)

Validation is used to make sure that information being entered into a computer is correct and valid information

For example if you are on a website that asks you to enter your phone number, the form may tell you there is an error if you submit a number with letters.

This could also be used for email addresses, postcodes and to make sure passwords match.

Full Name:

Big Joe

Email Address:

bigjoe@domain

⚠ This field should be an e-mail address in the format "user@example.com"

Username:

joe

Password:

.....

Confirm Password:

.....

⚠ Passwords do not match

Register

[Use an existing account](#)

Data Validation Methods

What is data validation

- Making sure that correct and valid data collected

Types Of Validation Methods

- Range Check
- Data Type Check
- Check Digit
- Length Check
- Lookup Field
- Presence Check

How is verification Done?

- Double entry of data and checking by re-reading
-

Using secure passwords

It is important for us to have secure passwords so that others cannot access private information or accounts that belong to us.

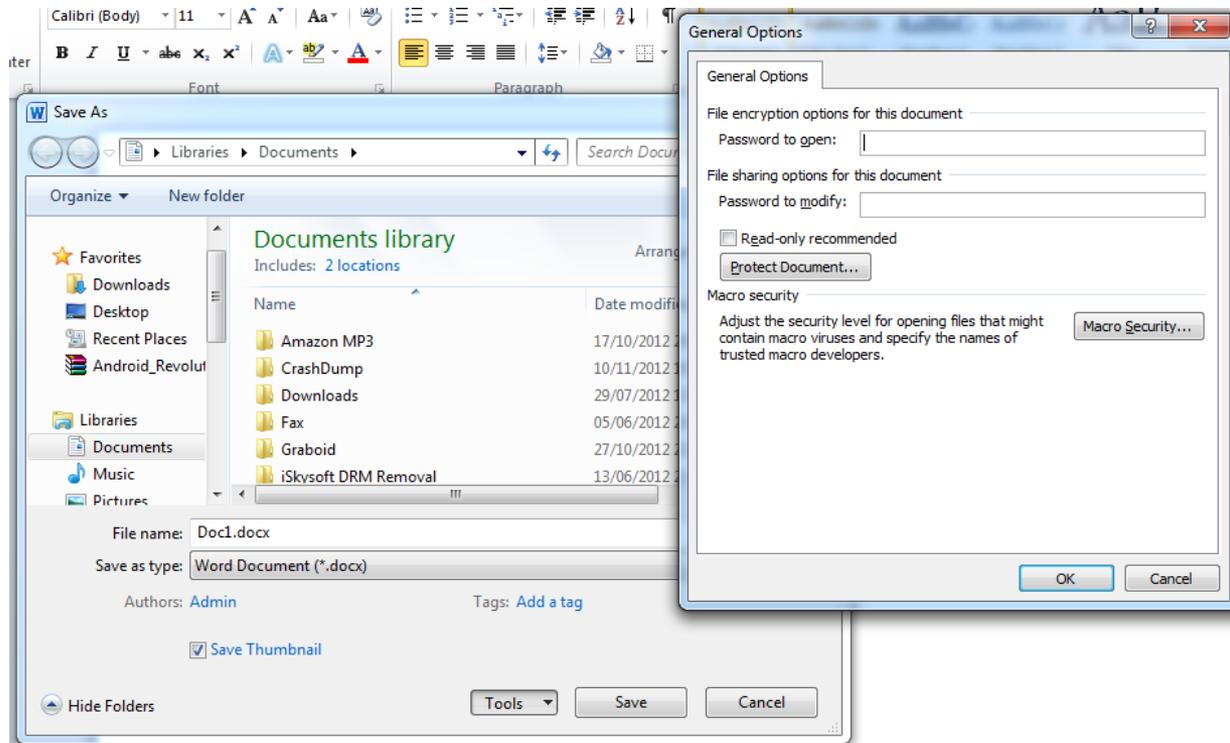


Good Password Rules

- Use something no one would guess
- Use a mix of letters, numbers and symbols and upper case
- Change regularly
- Don't tell anyone
- Memorise it don't write it down
- Be careful no one watching you when you enter it
- Avoid using something people would guess like your name

Password Protecting Documents

- File save as
Tools>General
Options
- Password to
Open
- Password to
Modify ie read
only



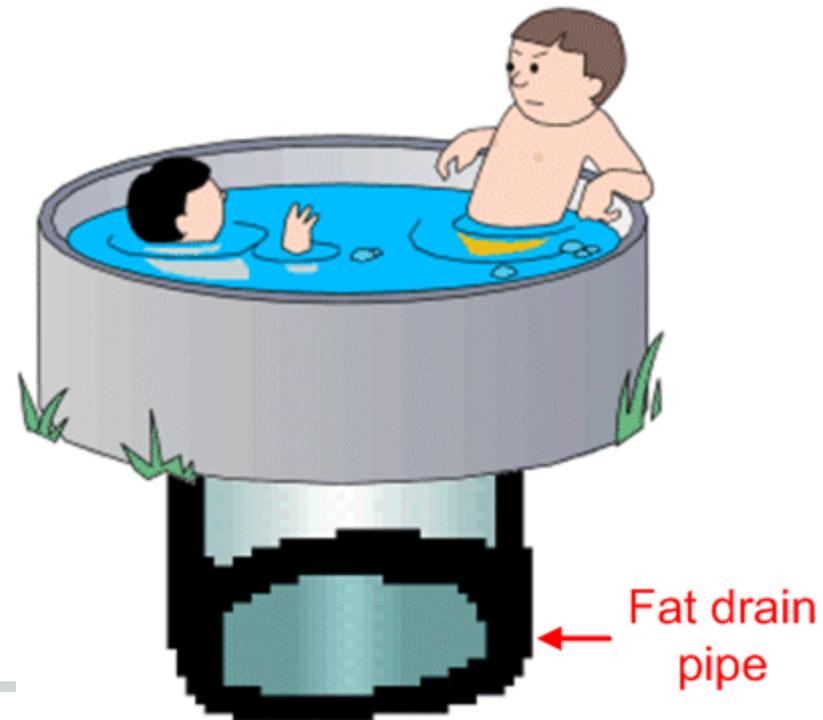
Bandwidth

[Click on this link to see how bandwidth affects downloading](#)

The term **bandwidth** refers to the speed at which information is passed over a network like the internet.

The higher the bandwidth the more information can be passed through a network at once.

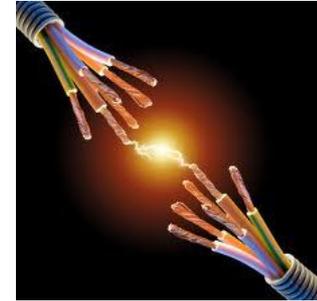
Imagine it like water running through a drainpipe. The image on the right will empty out faster.



Internet Types and Speed

1. 56Kbps Dial Up (Slow)

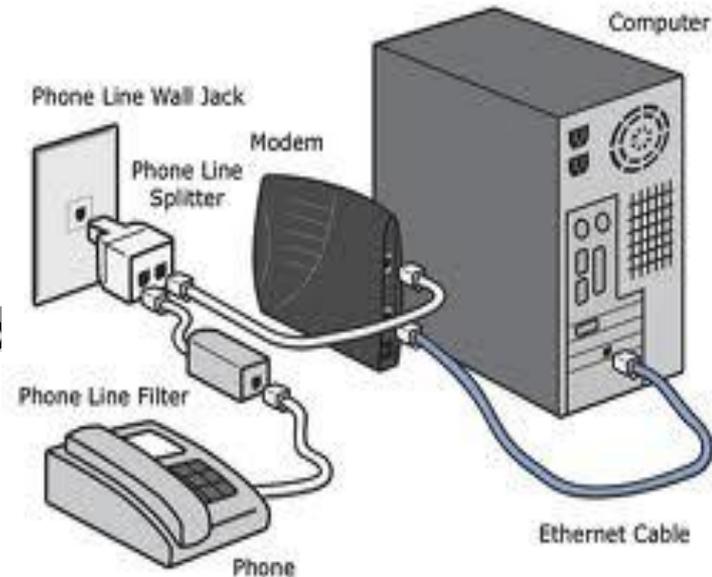
Analogue signal comes down phone line,
Very slow and not used much now



2. ISDN (256Kbps Medium)

3. DSL Broadband (20Mbps Fast)

Digital Signals that come down your
phone line, much faster and widely used
now



Internet Types and Speed

4. Fibre Optic Broadband (40Mbps Super fast)
- Digital Signal converted to light and passed down “Glass cable”



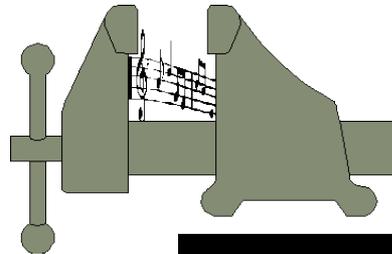
5. Mobile Broadband using 3G/4G signal 5Mbps and getting faster with new 4G



What is music compression?

There are many methods of compressing sound. Compression is when a sound file is taken and it is attempted to squeeze it into a smaller file.

This usually involves losing some of the sound levels that may be difficult to hear.



The more sound is compressed, the more it becomes clear that the sound is getting worse.

Listen to this video with earphones on

www.xeport.com

Song: You Are Number One

Bit Rate: 48kbps CBR

Data backup & restore



Backing up information on a computer system is important if losing the information would be something that is irreplaceable or costly.

Backing up information is simply keeping a 2nd or 3rd copy of data from a computer somewhere else. It can then be restored in the event of a disaster

Data can be lost due to a lot of reasons. Here are some examples below:

- Natural disasters like flooding
- fires
- theft of a computer system
- accidental deletion

[Extra reading](#)
