AIT NOTES

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# TERM 1 WEEKS 1-2

## ELEMENTS OF DESIGN

LINE

* any actual or implied line in an image
* Lines can be used to create various principles

Consider the following examples:

Leading Lines – can be used to draw the eye to specific locations on the image

Implied Line – can be created using the aligning edges of shapes

SHAPE

* Shapes used within the image
* may be regular or irregular

SPACE

* The arrangement of the elements in an image and their visual-relationship with one another and the boundary of the image
* Are the elements all crowded to one side? Are they aligned? Is there a use of negative space?

TEXTURE

* The use of detailed images showing texture within an image to generate a feeling of roughness (or smoothness as the case may be)

COLOUR

* The use of colour within an image
* In IT terms, we can consider various colour identification schemes
	+ RGB: red, green, blue
	+ CMYK: cyan, magenta, yellow, key (black)
	+ HSV: hue, saturation, value

3D FORM

* The use of 3D CAD elements within a computer generated image to generate a more authentic and realistic feel

TONE

* Often called contrast, this describes the variation between the dark and light areas of an image

## PRINCIPLES OF DESIGN

BALANCE

* The arrangement of elements in an image can be used to distribute the visual weight of the image, clustering of elements in one area will make that area heavy
* Often balance us confused with symmetry, however balance can be achieved without symmetry.

EMPHASIS

* Principle where various elements are combined to make a certain part of the image stand out visually
* Tone or contrast, size, proportion and the use of colour are common ways of generating emphasis

DOMINANCE

* The use of elements to make a part of an image overpower other parts of the image
* Dominance is commonly used in pictographs by using size to differentiate different values

UNITY

* The tendency of an image to look consistent
* The use of elements that mesh with each other using repetition of a shape, colour, use of space and/or size
* A unified image looks like it fits and is usually considered to be conservative.
* Designers often use deliberate removal of unity to create post-apocalyptic, grungy or distressed looks

PATTERN

* The arrangement of a variety of elements to create a repeating pattern of colour, shape, line texture etc.

MOVEMENT

* The use of elements of design to represent movement in an image
* One example is the use of leading lines to draw the eye to a certain point on an image, the addition of speed lines to an image to suggest that something is moving quickly is another example.

## RELATIONSHIP BETWEEN ELEMENTS AND PRINCIPLES OF DESIGN

ELEMENTS: things you put on a page = physical additions

PRINCIPLES: abstract concepts that are constructed using elements of design

The parts or components within a design that can be individually defined. Together the elements of design constructs the principles of design. They provide the basic structure for the product and are responsible for communicating the design intentions. The placement of the elements of design can alter the message communicated

## TYPOGRAPHY

TYPEFACE

* The actual shape of letters used to create text
* Many people confuse the term font for typeface
* Font includes typeface, colour, size, bold/italic options etc.

TEXT SIZE

* Text size is measured in points
* When digital products are created, the text size is often related to the resolution of the image, rather than the perceived visual size
* This must be taken into account during construction

ALIGNMENT

* identifies the position of text on a line, good alignment can make a text easier and more pleasant to read

TEXT FORMAT

* refers to the various visual adjustments that may be made to text in a design
* includes typeface, text size, text, colour, text spacing, text alignment, bold, italic, underscore, subscript, superscript – basically any options that is available in the font/character editing menu

TEXT SPACING

* The use of the element space in relation to text elements
* includes space between letters (kerning and tracing) space between lines (leading)

## COMPOSITIONAL RULES

READING GRAVITY

* refers to the tendency of Western writing to cause the reader’s eye to scan from the top left corner of the page to the bottom right corner.
* According to this compositional rule, the most important information should be placed upon this diagonal, starting with the most important information at the top left, moving towards the least important on the bottom right.
* The top right and bottom left corners are considered to be “dead areas” and should not be used to hold important content (according to this rule)

RULE OF THIRDS

* The rule of thirds developed from photographic composition.
* According to this rule, the image should be divided into thirds, both horizontally and vertically
* Important information should be placed upon the lines separating these thirds.
* Areas where two third-lines cross are considered to be especially powerful.

FORM OF CONTENT

* In design the two terms form and content relate to the two main aspects of a design

Form – the form is also known as the style or the appearance, it describes the way a design looks. Assessing form involves consideration of Elements and Principles along with any other design considerations

Content – is the actual copy that is included in the design. What does the design contain? Content is the information without consideration of any stylistic elements.

Form of content is a concept that considers the form in which the content is displayed in a design. Is the form appropriate to the content? Does the form detract from any aspect of the content?

* Whatever you have, presented appropriately

GRID AND ALIGNMENT

* describes the practice of mapping designs with reference to a strict, invisible grid structure
* This technique is used to generate formal, businesslike designs with a high degree of structure.
* Alignment refers to the practice of lining things up in a design. Obviously gridding a design will involve alignment, but alignment allows for a varying level of structure to be used in a design

# TERM 1 WEEKS 3-4

Purpose of data organisation

Purpose: the reason that a document exists. The purpose of the document identifies what it is intended to achieve

* Data organisation is essential in ICT work, as it offers several advantages to ICT professionals.
	+ Allows for files to be found quickly
	+ Reduces the likelihood of duplication
	+ reduces wasted storage space
	+ Reduces the resultant stress on computer systems

Common file formats for graphics and audio:

## VECTOR GRAPHICS

* points and lines storage (doesn’t work well with large variations of colour

COMPUTER GRAPHICS METAFILE (.cgm)

graphics

* In HTML, graphics are added using the .cgm tag
* This tag identifies the location of the source image file using a URL and specifies any post-processing which is required (for example resizing)

.cgm

computer graphics metafile (.cgm) is a file used for storage of 2D vector art. It is considered to be a metafile because it has abilities to utilise several different encoding schemes to store a wide variety of content. It is considered an older file format, used mainly in engineering applications.

SCALABLE VECTOR GRAPHIC (.svg)

scalable vector graphic (.svg) is a vector graphic storage format which stores 2D objects using an XML based file structure. SVG files are supported by a wide variety of web browsers, support animation and complex elements and would be considered a modern, open file format. It would compare favourably to closed formats such as .ai (Autodesk Illustrator) and .dxf (Autodesk Drawing exchange Format)

## RASTER GRAPHICS

* Pixels storage (it pixelates)

BITMAP IMAGE FILE (.bmp)

* bitmap (.bmp) image file is one of very few raster formats that survive from the earlies generations of image file format
* Originating as a file format for Microsoft Operating Systems the term bitmap describes the method used to store the information
* The image is described as a grid of pixels and each pixel is described using a number to represent the colour
* Bitmap has developed over the year to allow for a great deal of variation within the format, however the basic format remains the same.

Colour depth:

* Variable, .bmp began utilising an indexed colour format, however as computers developed it was extended to include a variety of colour depth schemes
* It is typically used with a 24 bit colour depth.

Compression:

* Traditionally .bmp is uncompressed, however throughout its development compression has been required, The most common compression scheme for .bmp is the lossless RLE (Run Length Encoding) compression scheme.

Portability:

Although it is considered widely portable, this has come about due to its extensive history. Bitmaps are rarely used in web applications, due to large file sizes. BMP tends to be rarely used in modern applications despite its wide portability.

GRAPHICAL INTERCHANGE FORMAT FILE (.gif)

* graphical interchange format (.gif) file. Despite the fact that most Net-savvy people recognise the term GIF as a specific image file, Gifs are more than just the annoying, inane animated images you encounter online. The file format can trace its history back to pre-Internet days where it was in common use as an image exchange format for “Bulletin Boards” which were early connected communities. As a bitmap, .gif files utilise a grid of pixels to store the image.

They use an indexed palette of up to 256 colours, with an interesting and valuable feature, one of the indexes can be used to denote a transparent pixel. Gif began utilising a standardised colour palette and used colour dithering to generate images. After a while this was found to be inefficient, so the ability to utilise a custom index, where the 256 colours used were selected by the system upon storage, making the index more appropriate to the image being stored. The most famous attribute of gif, is the ability to animate images though. The format allows for many frames of a video to be stored and played back. Each frame will be a complete copy of the grid with colour information written to it, thus increasing the file size drastically. For this reason, gif animations are usually small, simple and contain few frames.

Colour depth:

Indexed 256 colour

Compression:

Technically lossless, however since information is lost in the conversion to indexed colour, storing a .gif will involve some loss of information.

Portability:

widely portable, still used extensively throughout the web and therefore available for editing and viewing in most applications.

**Features:**

Indexed transparency and [animation](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-174/).

JOINT PHOTOGRAPHIC EXPERT GROUP (JPEG) IMAGE FILE (.jpg/.jpeg)

joint photographic expert group (JPEG) image file (.jpg/[.jpeg](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-3/)) Named after the team that developed the format, .jpg is an attempt to overcome the difficulties that became evident with widespread use of [.bmp](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu/) and [.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/) in an online context. These difficulties included large [file sizes](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-198/) ([.bmp](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu/)) and poor reproduction of images ([.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/) due to the indexed [colour](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-18/)). The JPEG was convened, it consisted of experts from various fields of photographic technology to come up with a [storage](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-142/) format to address these issues. The format they developed included the first [lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/) compression scheme, Using research which determined that the human eye was incapable of identifying many of the differences between colours within the 24 bit palette (16.7 Million colours) the group proposed that compression could be improved by standardising similar colours prior to [RLE](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/rle/) encoding. The format thus saves file size, but loses some information that cannot be recovered.

**Colour depth:**

Technically 24 bit, but due to [lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/) compression this is arguable

**Compression:**

[Lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/)

**Portability:**

Widely portable, probably the most known and available raster format in current use. It is still the format of choice for all but the most advanced and expensive digital cameras.

**Features:**

Very small [file sizes](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-198/)
High portability.

TAGGED IMAGE FILE (.tif)

[tagged image file](https://en.wikipedia.org/wiki/TIFF) (.tif) is a file format which allows for 24 bit [colour](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-18/) depth and [lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/) compression. TIFF has been widely used to produce images. Of late, it’s use has reduced in favour of [proprietary](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-153/) formats such as Photoshop (.psd) due to the added features of the latter, however .tif is still supported widely by many devices such as scanners etc.

**Colour depth:**

24 bit

**Compression:**

[Lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/)

**Portability:**

Widely portable, but not commonly utilised anymore

**Features:**

PORTABLE NETWORK GRAPHICS (.png)

[portable network graphics](https://en.wikipedia.org/wiki/Portable_Network_Graphics) (.png) is a web-friendly file format which was originally intended to replace [.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/). however it was not initially widely utilised. Microsoft browsers were notorious for handling .png poorly and this limited the use of the format even though it was approved as a MIME type in 1996. Png has many [advantages](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-256/) over competing file formats [.jpg](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-4/) and [.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/); .png supports a [full](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-334/) 24 bit [colour](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-18/) palette, [lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/) compression and Alpha transparency (as opposed to [.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/)’s index transparency) Alpha transparency involves adding 8 bits to the [colour](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-18/) depth, these 8 bits are used to identify the level of transparency for each pixel, allowing for 256 levels of transparency to be stored completely separately of the 16.7 million colours available. This was instrumental in overcoming many of the transparency issues present in [.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/).

**Colour depth:**

24 bit

**Compression:**

[Lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/)

**Portability:**

Commonly used in Internet applications where required, .png is typically avoided if [.gif](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/gif/) or [.jpg](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-4/) are suitable.

**Features:**

Alpha transparency, efficient [lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/) compression and high portability make this forma very useful for the web.

## AUDIO FILES

MOVING PICTURES IMAGE GROUP (.mp3)

moving pictures experts group (.mp3 ) Developed as a component of the widely-used .mpeg [video](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-219/) format, .mp3 is the [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) compression format. the 3 stands for layer 3, since the .mpeg format is conceptually separated into [layers](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-329/), the third of which is the [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) stream. Mp3 has an extremely efficient [lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/) compression system which uses similar techniques to the compression which may be found in [.jpg](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-4/) image files. The efficiency of its compression made .mp3 one of the most popular [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) file formats at a [time](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-305/) when demand for a digital [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) format was at its peak. Mp3 was so popular, that entire generations of personal digital listening devices were colloquially called mp3 players.

**Compression:**

[Lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/)

**Portability:**

Probably the most widely utilised of all file formats, .mp3 is supported by nearly everything.

**Features:**

Extremely efficient compression and excellent sound quality for highly compressed files, Mp3 is arguably only beaten by it’s successor MPEG 4 [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) (called .m4a)

WAVEFORM AUDIO FILE FORMAT (.wav)

[waveform audio file format](https://en.wikipedia.org/wiki/WAV) (.wav) A contemporary of [.bmp](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu/), .wav is the standard [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) file format of [Windows](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-124/) computers. Wav files were developed as the [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) compression stream of the popular .avi [video](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-219/) format. Like [.bmp](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu/), .wav utilises a [lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/) compression system which ensures there is no loss of sound quality, even though it does not offer the high compression rates of [.mp3](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/mp3/), .m4a and [.wma](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-8/).

**Compression:**

[Lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/), compression rates are not huge, but no information is lost.

**Portability:**

Widely supported, but like [.bmp](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu/), it’s use is limited by the filesize. Like [.bmp](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu/), .wav is being slowly superseded by [proprietary](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-153/) file formats.

**Features:**

Wide support and no loss of file quality make this a perfect [editing](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-176/) file format.

WINDOWS MEDIA AUDIO FILE (.wma)

[Windows media audio file](https://en.wikipedia.org/wiki/Windows_Media_Audio) (.wma) is Microsoft’s attempt to address the massive advantage [.mp3](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/mp3/) gained throughout the 90s. Developed as a component of the .wmv [video](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-219/) format, .wma is a deliberately versatile container format which allows for many variations within the one [storage](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-142/) format. Although it’s initial history indicates that it is a [lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/) format with reasonable sound quality, the developers have extended the format to allow for [lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/) compression, multiple tracks, High Definition [audio](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-207/) and Digital Rights Management. Whilst each of these features take [space](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-99/) and cause [file sizes](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-198/) to be larger they make .wma a very useful format.

**Compression:**

[Lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/), but with [lossless](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-59/) available, the compression rates of the [lossy](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/cpu-60/) codec aren’t as efficient as .m4a and not as widely supported as [.mp3](http://wordpress.stbrigids.wa.edu.au/11atarait2020/glossary/mp3/)

**Portability:**

Moderately portable, however the MPEG supported formats win in the portability stakes.

**Features:**

The big selling point is DRM, .wma files can be secured against unauthorised access, which is a big deal to publishers and copyright holders, but it bloats the file size.

# TERM 1 WEEK 5-6

## IMPACTS OF TECHNOLOGY

The intent and purpose of the Copyright Act 1968 (Australia), including:

Purpose: The reason that a document exists. The purpose of the document identifies what it is intended to achieve.

The Copyright Act 1968: is a legislative document that protects the authors of intellectual property, gives the author of an original work legal protection against that work being copied or used without their permission. Copyright applies automatically upon creation of a work and does not need to be registered. An author may choose to sell their rights to a third party, which ensures the same protections apply to the new copyright owner.

FAIR DEALING

* the copyright concept that a purchaser of rights to use a work cannot be prohibited from undertaking an action which is a fair and reasonable action taken in the steps of using the work
* Some examples are
	+ Students may use 10% or one chapter of a work in an assignment, as long as attribution is provided.
	+ A work may be reproduced for purposes of review or satire i.e. by a critic or in an original work by a comedian
	+ A work may be reproduced in research within the bounds of attribution.

PRIVATE USE

* Copyrighted materials may be used for private purposes, within certain guidelines.
* If you own a product (for example video or music) you may use that product with friends in a social setting.
* You may format shift the product as reasonable to allow you to use it on a device which you own (i.e. from CD to iPhone)
* As long as the private use is reasonable and within the original intended purpose of the copyright owner it is permitted.

MORAL RIGHTS

* The user of a work and the copyright owner have moral rights to the work.
* The concept of moral rights relates to the fact that nobody can unfairly take advantage of any copyright rule to force a use of a work that is not part of the original intention of the work by the creator
	+ One example is GeoLocking, Under Australian legislation it is not legal for a copyright owner to add a code to a work specifically to lock it to a geographic region. Therefore a user of a work is permitted to buy a legally licensed copy of a work in a foreign country, knowing it is possible to use this work in Australia
* Often though, the copies bought in foreign countries (with different copyright laws) are not legal reproductions

## CONCEPT OF DIGITAL CITIZENSHIP

* Being responsible online
* Your online community is like a real community and so you should be a good ‘citizen’ in both

THE RESPONSIBLE USE OF SOCIAL NETWORKING

Social networks must be used responsibly to ensure a vibrant online community.

* ‘Netiquette’ is the term used to describe the ways of interacting politely when online
* Emoticons (emojis) may be used to clarify intent when having a casual conversation in a textual medium
* It is important to guard against Cyber bullying and Cyber Stalking

FORMS OF CYBER BULLYING

* the act of using digital resources to cause emotional distress to an individual
* To be considered cyber bullying, the act must be:
	+ must use digital devices to be called cyberbullying
	+ must be a pattern of behaviour (not a single incident)
		- any pattern that causes distress may count – it doesn’t have to be intentional
* There is legislation to protect Australians against cyberbullying and these provide definitions to describe the act

the 10 forms of cyberbullying are listed here:

<https://blog.securly.com/2018/10/04/the-10-types-of-cyberbullying/>

* Exclusion
	+ act of leaving someone out deliberately
* Harassment
	+ refers to a sustained and constant pattern of hurtful or threatening online messages sent with the intention of doing harm to someone
* Outing/doxing
	+ openly revealing sensitive or personal information about someone without their consent for purposes of embarrassing or humiliating them
* Trickery
	+ bully will befriend their target and lull them into a false sense of security. Once the bully has gained their target’s trust, they abuse that trust and share the victim’s secrets and private information to a third party or multiple third parties
* Cyberstalking
	+ serious form of cyberbullying that can extend to threats of physical harm to the child being targeted. It can include monitoring, false accusations, threats, and is often accompanied by offline stalking
* Fraping
	+ when a bully uses your child’s social networking accounts to post inappropriate content with their name
* Masquerading
	+ when a bully creates a made up profile or identity online with the sole purpose of cyberbullying someone
* Dissing
	+ the act of a bully spreading cruel information about their target through public posts or private messages to either ruin their reputation or relationships with other people
* Trolling
	+ when a bully will seek out to intentionally upset others by posting inflammatory comments online
* Flaming
	+ constitutes of posting about or directly sending insults and profanity to their target

STRATEGIES TO MANAGE/LIMIT CYBER BULLYING

Some Strategies to prevent cyberbullying are:

* Don’t Engage – if you respond to an attack, the bully may be encouraged
* Tell Somebody – Parents, Teachers and Authorities can be useful in stopping main Bullies
* Block – Limit the bully’s access to your account by blocking
* Use Privacy Settings – having the right privacy settings and choosing your online friends carefully can stop it happening before it begins
* Take evidence – Screenshots and recordings can help adults to act on the problem
* Step in – If you see a friend being cyberbullied help them out by speaking against it, to say nothing is helping the bully

THE IMPACT OF DIGITIAL TECHNOLOGIES ON WORK-LIFE BALANCE

Work-Life Balance is the impact that your work has on your life. All jobs have some form of impact on your life, but some jobs are more intrusive than others. Digital technology can affect this by:

Negative:

* They can see what you’re doing on your phone (internet filtering and monitoring)
* Making employees more available out-of-hours (expected to be on call 24/7)
* Enabling the tracking of work activities conducted using digital devices

Benefits:

* Can work from home
* Free phone from work – if damaged it gets replaced
* Giving employees access to work resources at home

Each of these aspects has the potential to affect work-life balance either positively or negatively, depending upon how they are utilised.

## CONCEPT OF THE ‘DIGITAL DIVIDE’ AND ASSOCIATED ISSUES

* The disadvantage that is suffered by people who don’t have access to digital technologies
	+ Unable to be informed about current events
		- News – to see more about \_\_\_ go to \_\_\_.com
	+ Unable to access to employment
	+ Unable to access to entertainment

Including:

AVAILABILITY OF DIGITAL RESOURCES

* Resources is anything that is used to undertake the product
* Resources and be loosely grouped in the following way:
	+ Capital resources are anything that the developer owns, or will buy that does not get used up during the project, for example tools and machinery etc. consumable resources will be used by the project.
	+ Human resources are the people that will be needed to complete the project.
	+ -----
* All three types of resources must be managed efficiently for the project to be completed successfully

USE OF DIGITAL TECHNOLOGIES

* Digital technologies such as Internet, Desktop publishing and social networking are considered ubiquitous (appearing or found everywhere) aspects of modern society
* Increasingly, familiarity with these resources is required for members to have access to information, communication and employment

AVAILABILITY OF WEB-BASED APPLICATIONS

* Web-based applications are becoming increasingly important in society. These resources make the victims of digital divide even less likely to be able to participate in society.
* Digital Divide is the term given to difficulties caused by some segments of society having limited access to technology. Societal groups that might experience difficulties from lack of access to technology include:
	+ the poor
	+ those living in regional zones
	+ the elderly
	+ the disabled
	+ those who choose to shun technology
	+ various other groups
* The divide can be the cause of various limitations
	+ Limited access to employment – job ads posted online
	+ Limited access to communication – society increasingly relies upon online communication sources
	+ Limited access to government/business services – as these services upgrade to online services
	+ Limited access to news – Media services often post extended content on the web

## CONCEPT OF ELECTRONIC COMMERCE (ECOMMERCE)

Including:

IMPLICATIONS OF IMPROVED DIGITAL COMMUNICATION

* Improved digital communication will obviously have a major impact on Australian E Commerce habits
* As it becomes easier and faster to access online content it also becomes easier and faster to shop online
* As people access the Internet more, their trust of services will increase, further increasing their utilisation of online shopping.
* When this is considered along with the global reach that is afforded by ecommerce, today’s consumer faces a difficult choice between supporting local retailers to keep them open and purchasing online which is often cheaper and offers wider choice.

24/7 COMMUNICATIONS

* Since ecommerce sites are automated they are available 24/7/365, this availability and the comfort of shopping from home cause many Australians to prefer online shopping over retail
* With the increasing prevalence of Australian retail centres relying on franchised chains, there is also a tendency for shopping centres to all look the same
* In many ways, online shopping offers a different mix of retail opportunities.

ONLINE RETAIL OPPORTUNITIES

* Online retail is becoming easier than ever
* Sites such as eBay and Gumtree make it possible for anybody to sell online, if somebody has a good idea for a product, they can easily try selling it through one of these e-stores.
* There are also many turnkey (ready-to-go) ecommerce solutions available to fledgling web stores.
* From solutions bundled with popular accounting software such as MYOB, to ecommerce CMS systems that offer the opportunity to build your own web store with a few clicks.
* There are even WordPress plugins that turn your blog into a powerful web store
* Financially, payment gateways such as PayPal allow anybody to collect online payments from clients with a small (3%) surcharge per transaction.

# TERM 1 WEEKS 7-8

## HARDWARE COMPONENTS

* Computers consist of a variety of hardware components, all of which are required to work together to make the computer work

The following are typical hardware components used in a modern computer system:

MEMORY/STORAGE

Memory is a hardware device which computers use to store data. Memory consists of two types:

* Primary Memory
	+ Primary Memory or RAM is the memory device
	+ computer uses for short-term storage of data
	+ Primary memory is analogous to the human ‘working memory’
	+ Primary memory operates just like when you are adding up a string of numbers and you ‘carry the 1’ you remember that in your working memory
	+ Primary Memory is volatile
		- Volatile - when power is removed, volatile memory loses storage of its data
* Secondary Memory
	+ Cdrive, hard disk
	+ Secondary Memory is analogous to the human long-term memory, it is used for storage of data which can be retrieved at a later date. Secondary memory is non-volatile
		- Non-volatile: Retains data whether power is present or not

CPU

The CPU or Central Processing Unit is a silicon chip which drives all the major functions of the computer. Each computer, of any type has a CPU. It can be considered the “brain” of the computer. The CPU performs the following functions:

* Boots the computer
* Manages Devices
* Performs Operations
* Manages memory

A modern CPU consists of several components that historically would have been separate devices.

* the Processing Unit
* the ALU (Algorithmic Logic Unit)
* the Registers (Extremely fast, but small memory locations)
* the Cache (CPU localised memory, larger and slower than Register, smaller and faster than RAM) Cache/registers (on the same chip as CPU) – faster but low volume
* The clock (an oscillator which regulates the tempo with which the CPU operates)

Multiple Cores

CPUs can also be created with multiple processing units (or cores), modern multicore processors can also contain multiple ALUs, Registers etc. Increasing the number of cores can enable the CPU to perform multiple operations at the same time. thus increasing the speed with which a CPU can perform it’s assigned tasks.

MOTHERBOARD

BIOS

POWER SUPPLY

EXPANSION CARDS

## THE PURPOSE OF THE CENTRAL PROCESSING UNIT (CPU)

The CPU is the ‘brain’ of the computer

## THE PURPOSE OF MEMORY/STORAGE

* Memory is used to retain data for use by the CPU
* Without memory, the computer would not be able to perform even the simplest tasks
* Memory can be implemented in various ways, depending upon its purpose, but memory is typically implemented as:
	+ Silicon Chips
	+ Magnetic Media such as Hard Disks
	+ Or Optical Media such as CD-ROM.

## TYPES OF MEMORY/STORAGE

There are many types of memory, which are categorised by the generic task that the memory performs. These include:

* Cache
* Register
* CMOS (ROM)
* Primary (RAM)
* Secondary (Hard Disk)

## TYPES OF PERIPHERAL DEVICES

* A peripheral device is any device that is considered auxiliary to the computer’s core function
* They are the ‘extras’
* Peripheral devices typically plug into the computer to extend its capability
* Peripheral devices may be grouped into three groups based upon their function:

Input Devices – Devices that put information INTO the computer

Output Devices – Devices that take information OUT of the computer

Storage Devices – Devices that store information externally of the computer

* Peripheral memory – hard disks. Etc
	+ Anything that plugs into a computer to extend the capabilities of that computer
		- E.g USB flask drive
		- Printer
		- Webcam
		- Speaker
		- 3D printer
		- Monitor
		- Scanner
		- microphone

## TYPES OF COMPUTER SYSTEMS

* Desktop
* Mobile
* Server

Desktop Systems

* Desktop systems are personal computer systems that are designed to be non-portable
* They derive their name from the fact that the majority of these systems will be located on a desk in an office
* Desktop systems are generally more powerful in every benchmark than mobile systems, but often are less powerful in some (but not necessarily all) measures than Server systems.

Mobile Devices

* A mobile device is designed to be used “on the move”
* Examples of mobile devices are Tablets, Smartphones and Digital Watches. Laptops might be included in the definition of a mobile device. Mobile devices typically have a CPU with lower power and less memory.

Server Systems

* Server - A server system is designed to provide networked services to other computers.
* Servers typically perform a specific task for a large number of devices
* For example a web server will specialise in hosting web pages to provide this content to networked devices upon request
* Server systems typically have significant primary memory and secondary memory resources, but may not have as much CPU power.

## PURPOSE OF AN OPERATING SYSTEM

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User interface – what does it look like, how do you use it

Managing system resources – how its going to save things to secondary memory, how many peripherals you can have at a time etc.

Managing security and access rights – mac (type password and be able to do anything etc)

Running applications – OS runs the application, word for windows won’t work on mac and vice versa

## TYPES OF OPERATING SYSTEMS

Define operating system: A computer program (software) that runs on the hardware of your computer that gives it life as a computer. This allows a computer to:

* Boot
* Provide a user interface
* Run applications
* Provide user services and security

WINDOWS

* + Reliable
* an operating system designed and marketed by Microsoft
* Windows can trace its history back to MS-DOS (a text-only OS that was released in the early 80s)
	+ DOS was, in essence, a copy of the text-based Unix variant of the time, designed to run on IBM x-86 computers
	+ MS-DOS found favour amongst business users through its relationship with IBM, but Microsoft rapidly outgrew the relationship
* Through many developments and an open architecture philosophy, DOS and its offshoot Windows has developed into a modular, versatile operating system that boasts highly configurable tools, especially in Networked environments
* Windows remains the most common OS with 91.72% of market share in all its forms

MAC OS

* Mac OS was originally developed by Apple in the eighties and has undergone many developments since then
* Originally a natively graphical OS running on RISC processors such as the ARM series, MacOS underwent a transformation in the early 21st century with the development of Mac OSX
* OS X is a Unix variant designed to run on intel processors but retain the traditional Apple philosophies of proprietary hardware and ease-of-use.

iOS

* iOS is a lightweight mobile operating system developed by Apple
* Despite losing market share to Android in 2015, iOS is still a major player in the Mobile device market
* iOS has a very secure pasture which requires applications to undergo significant testing before submission, therefore the range of apps is lower than android and their cost is higher, however the apps found on the apple store can be considered more reliable
* Similarly, iOS is locked to running only on genuine Apple devices, making it more reliable, but (usually) less powerful and less innovative, competition in the device platform tends to drive android devices to lead in innovation

Android

* Android is a lightweight mobile operating system developed by Google as a competitor to Apple’s iOS
* It works on a variety of portable devices, has a widely utilised pasture, which encourages developers to submit apps more easily than iOS and is not locked to specific hardware making the variety of devices that use android wider

Linux

* + Reliable
	+ Open source, free
	+ Techhead
	+ More configurable
	+ More powerful if you know what youre doing
* Linux is a free, open-source operating system developed and used by enthusiasts all around the world
* Due to its modular nature and wide variety of applications, Linux is capable of operating as a Desktop, Server or as a mobile OS
* Linux has been developed from the Unix architecture which was initially developed by Bell Labs in the 1970s!
* Unix was so efficient and extensible as an OS that it has provided the basis of all other systems, as a matter of fact, Mac OSX, Android and IOS all share significant amounts of Unix Kernel code
* Linux is the closest to nix in both function and appearance

## IDENTIFICATION OF SOFTWARE COMPATIBILITY ISSUES

* It is important to consider the specifications of computers when purchasing or installing software
	+ Older hardware running new software is unlikely to have sufficient Primary Memory and CPU power to run the software, the computer will run slowly and be unreliable
	+ Old software running on newer hardware is unlikely to utilise the hardware to its full capability. In extreme circumstances, the software will be completely incompatible with the hardware

# TERM 1 WEEK 9 – TERM 2 WEEK 1

## PROJECT DESIGN PROCESS

A project design process has many components that the designer must consider in order to formulate an effective design.

* Product Purpose and Design Criteria
	+ The purpose of a product is critical information when preparing a design.
	+ Creating a design without a clear purpose will risk the finished product seeming to be disjointed and disorganised. For example a website advertising a product can have a variety of purposes
		- Attracting New Customers
		- Informing Existing customers of an improvement in a product
		- identifying features of a product to deal with a competing product
		- Transferring a product to a new market
	+ In each case, the website will contain different styles, different layouts, different textures and different information
* Target Audience Characteristics
	+ It is important that the designer knows the target audience for any product they design
	+ Just like knowing the purpose of a product is important, so is knowing the target audience
	+ The needs and expectations of the target audience will impact the design decisions that a designer will make
		- For example, Middle-Class business people will have very different needs from 7 Year old girls.
	+ Think of the differences in colour you would use to attract each group, Now think about Typography, Language, Music…..It’s all different.
	+ Similarly, it is important that you define the target audience specifically, and have a good reason for choosing the target audience you choose.
* Project Presentation Medium
	+ Different presentation media will suit different purposes and target audiences. Think about which purposes and target audiences are best served by creating:
		- an app
		- A poster
		- A website
		- A video
* Situation Analysis
	+ A situation analysis is a detailed breakdown of the design situation
	+ The designer will conduct research to find the best Target Audience, the needs of the Audience, the purpose of the product, any constraints to the design and the most effective presentation medium.
* Style Guide
	+ A style guide operates in a team-based development environment to define the styles of all the elements in a project. The value of a style guide is that designers are clear of the styles to use when creating content
	+ Typical things that will be described in a style guide are typography, How will a header look? What about body text? What colour is text? Similar information should be included for every element
	+ You can tell that the style guide is complete when a contract designer could create the exact product based upon the guide.

## COMPONENTS OF A DESIGN PLAN

A design plan will always include a number of specialised components which are used to describe a design in sufficient detail for a team to create a design accurately.

* storyboard
	+ A storyboard is a sequence of panels which contain a layout sketch accompanied by explanatory notes that describes in detail the structure and storyline of a linear visual product (such as a video or animation)
	+ A storyboard usually describes the major points of the storyline in the product. as scenes become more important, the number of panels devoted to that scene will increase
* thumbnails (hand/digital)
	+ Thumbnails or Concept Sketches are rough, rapid sketches that are quickly created to demonstrate a concept or a style. They are intended to be the “first Draft” of the design process and as a result are rough, will often be altered and redrawn, even thrown away
	+ It is important when creating thumbnails that the designer doesn’t expend too much effort on the sketch, otherwise they risk being too invested in the design to modify or reject it.
* wireframes/sketches (hand/digital)
	+ Once a concept has been decided upon (with consultation from the client)
	+ Designers will generate a series of wireframes and sketches to develop and fine-tune a design
	+ Just like an English teacher will recommend that you write several drafts of an essay, so a Design teacher will recommend that you draw several sketches on the way to creating your final design.

## CRITERIA REQUIRED TO EVALUATE A DIGITIAL PRODUCT AND/OR DIGITAL SOLUTION

There are many criteria that may be used to evaluate a digital product. Typically, these criteria will relate to User Experience (UX), Audience Reaction, Stability, Accessibility, Inclusivity and Design Specifications. Developers will use various testing methods to obtain empirical ratings of the success in meeting the criteria.

Evaluate a digital product:

* To evaluate a digital product or solution, it is important to have criteria to do so
* The IB Design Cycle utilises the concept of design specifications as success criteria which are used to evaluate digital products. Specifications (or success criteria) can evaluate;
	+ Aesthetics
	+ Useability
	+ Accuracy of information
	+ effectiveness at meeting the purpose
* Evaluation should be undertaken with appropriate subjects (i.e. there’s no point assessing the aesthetics if the Target Audience aren’t involved in the assessment)

User Experience (UX):

* UX is the term used to define the overall experience the user feels when using a product
* UX may take into account the UI, the Structure, the complexity of content the design elements and principles
* UX can often be expressed using abstract terms
* It isn’t uncommon to describe a UX as “friendly” or “Aggressive” in much the same way as Principles are made up of elements, UX is made up of a range of considerations.

Accessibility:

* Accessibility is the tendency of a system to be available to be used by people who have a disability, many digital systems require additional features to be accessed by the visually or hearing impaired
* There is a set of Accessibility standards which allow digital systems to interface with text reading hardware, and other systems to enhance accessibility.

Inclusivity:

* Inclusivity is the tendency of a system to be available to multiple, disparate people groups
* Inclusivity ensures a system is usable by people with different abilities, cultural backgrounds, economic situations, locations etc. Inclusivity is a designer’s response to an awareness of the Digital Divide

Specifications:

* Specifications describe standards which a product is required to meet
* They are essential to the successful creation of a product, since they direct the team to meet standards which relate to the user/client requirements

# \*TERM 2 WEEK 2

## APPLICATION SKILLS – LOOKUP TABLES (SPREADSHEETS)

Lookup Tables may be used in a spreadsheet to locate a specific value within a list of values. The function is capable of displaying a corresponding value from within the list. E.g. for the list shown below, if the lookup function needs to find the value for Fred, it might return his phone number 04230895, however looking for Julie it would return 95270033.

Lookout tables are queried using one of the following functions which are standard in Microsoft Excel

considerations for the construction and design of lookup tables in spreadsheets, including:

* Hlookup
	+ a lookup table function which searches for a value in the top row of a table, the function returns a value in the same column as the found value
* Vlookup
	+ a lookup table function which searches for a value in the left column of a table, the function returns a value in the same row as the found value

organisation and management of data, using sort filters in spreadsheets

# TERM 2 WEEK 3

## MANAGEMENT OF SOFTWARE

Software Management is the term used to describe the various maintenance activities to do with the software on a computer

Key concepts within this area are:

* installation of software
	+ Software installation describes the process by which software is installed onto a computer and prepared for use. Most software is provided in some portable format (such as a CD/DVD or via a downloadable file) which must be run by a user with sufficient access privileges.
* update of software
	+ Software Updates are released on a semi-regular basis by the manufacturer of the software. Updates might happen automatically (like Windows Update is used to keep Windows up to date) or they may be contained in files which must be run in the same way as installation of software. Failure to update software regularly can lead to stability and security issues.

## TYPES OF SOFTWARE LICENSES

* Software licenses are a contract which exists between the manufacturer of the software and the purchaser
* The licensing agreement can contain many clauses which are intended to describe and control the use that is made of a piece of software

Licenses fall into four main categories:

* open and closed source
* proprietary
* shareware
* freeware

Open and closed source

Open and Closed Source describes the difference between an emerging movement in software engineering known as open source

Software becomes open source based upon a decision by the copyright owner (developer) of that software to make certain actions allowable with the IP that they have copyright over

An Open Source software must be:

* Free to use
* able to be modified by anybody who is capable of understanding the programming
* perpetuate these rights for any modification developed by any person

The open source software movement is growing and open source software is gradually becoming a preferred option for many tasks. If you are interested in finding some appropriate open source software resources, you can find a great deal at Sourceforge.

Proprietary

Proprietary software is software that has had all copyright rights enforced by the developer. It is traditionally software that you will pay to use

Proprietary software does not allow for users to modify the software, however some proprietary packages allow extensions or plugins.

Examples of Proprietary Software:

* Microsoft Office
* Adobe
* Autodesk
* Apple
* \*This list is not exhaustive

Shareware

Shareware is software that is released on a try-before-you-buy basis

There are several models by which this is achieved, some developers will release the full version of their software and require payment using an honour system, others will restrict the capabilities of the software until it is "unlocked" with a code that the developer sells the user, others will release the software with full functionality on a time limited basis, again to be unlocked with a code

Regardless of the method by which payment is enforced, software which is free to distribute, but requires payment after some form of trial is known as shareware.

Freeware

Freeware is closed source software which is free to use in perpetuity

The developer retains all rights over the Intellectual Property, but allows users to use the software without charge.

# TERM 2 WEEKS 9-10

## SKILLS

* use animation software
* edit audio files
* create a navigation map
* use web-authoring software
* use multimedia applications to edit and create a digital product and/or digital solution

## FEATURES OF ANIMATION SOFTWARE

Animation software such as Adobe Flash uses a variety of structures to make animated files. These include:

* Frame by Frame
* Tweens
* Buttons
* Simple Actions
	+ Start
	+ Stop
	+ Move Object

Frame by Frame

Frame by frame animation is a process whereby the artist draws each frame or cell of an animation

* It can be very detailed due to the control that an artist has over the style of each frame, but it is very time consuming to produce

Tweens

As opposed to Frame by Frame animation, Tweens employ some technique where the “in-between” frames are not drawn by the lead animator

* Historically this was done by employing less experienced and therefore cheaper artists to draw tween frames
* In the modern context, this work is usually done by computers. The lead artist still draws the Keyframes and the computer manages the tween frames.

Buttons

Buttons may be used to enable the user to initiate actions that are pre-written by the developer of a product

* Simple Actions can be added to a button in a similar way to adding a hyperlink in a webpage

Simple Actions

Simple actions in animation software are usually completed by undertaking some form of scripting

* Adobe Flash uses a scripting language called Actionscript to instruct the computer which actions to perform

Actions include:

* Start
	+ A start action may be used to start the animation, often attached to a play button
	+ In Actionscript, the code to start a movie looks like this start();
* Stop
	+ A stop action may be used to pause execution of the animation. It is usually linked to a pause button or to pause the animation so that the user may press other buttons
	+ In Actionscript, stop looks like this stop();
* Move Object
	+ Moving an object can be completed using the scripting language. Many languages use the Object-Oriented concept of storing information within the object
	+ In ActionScript, this Object-Oriented method to access the location of an object involves using a dot notation to access the object’s x and y location variables using the following method .x and .y replacing the current values in those variables will cause the object to move. .x = 20; .y = 120;

# TERM 3 WEEKS 1-2

## FEATURES OF AUDIO SOFTWARE

Editing

* Editing audio files typically involves importing audio, recording audio, cutting and arranging and sometimes layering the audio in a multi-track environment
* Effects may be added at various stages of the process performing tasks such as removing noise, reducing or increasing volume or performing more complex tasks such as adding echo, reverb or compression

Converting

* Audio files may be converted to various formats using audio editing software
* Various file formats may be used to publish, making use of the features of Lossy Compression, Lossless Compression and other file features

Exporting

* Audio may be exported from an audio editing application for publication

# TERM 3 WEEK 3

## FEATURES OF WEB AUTHORING

* Web Authoring is the task of preparing content to be delivered using and online delivery method
* Websites are viewed in browsers and hosted on servers. There are many applications which may be used to author for the web

Hyper-links

* Hyperlinks are added using the tag <a>, with a HREF modifier
* The tag is required to identify a location or file which will be shown if the hyperlink is clicked

Graphics

* In HTML, graphics are added using the tag <canvas>
* This tag identifies the location of the source image file using a URL and specifies any post-processing which is required (for example resizing)

Templates

* Many web authoring systems (wordpress, Wix Weebly) offer templates which can be used to reduce the development time for a website
* Since many design decisions are already made for the developer they are an easy and quick way to begin the process
* Templates limit developers, since they are often written in complex ways to allow them to perform out-of-the-ordinary actions and therefore templates can be difficult to modify

## TYPES OF FILES

Cascading Style Sheet (.css)

* a Cascading Style Sheet file (.css) is a file that is used when authoring for the web
* CSS files contain organised sets of stylistic structures which may be applied to elements within a HTML file
* Once the CSS file is linked to the HTML file, the sets can be applied to a tag by invoking the name of the style
* CSS allows for easy changes to be implemented across the entire website
* If a change is made in the CSS file, all elements which are linked with the edited style will be changed, ensuring consistency throughout the entire website

Hypertext Markup Language (.htm/.html)

* Hypertext Markup Language (HTML) is the coded language that is used to author websites
* HTML consists of tags
* Tags are surrounded by brackets that consist of Greater than and less than signs (< and >)
	+ these tags are used to describe the layout of a website and the arrangement of the various elements within the website
* HTML files are text files consisting of the various tags, arranged in a strict pattern
* The browser can interpret the codes within the HTML file and use the information gained to gather the resources required and construct a copy of the webpage on your screen in real time

## TYPES OF ONLINE COLLABORATION

Online collaboration describes the concept of using a wide variety of online tools to facilitate communication and collaboration over a distance. Online collaboration can be as simple as using:

* Email
	+ Email is a system which allows users to send messages to each other
	+ The messages reside on an email server until collected by the recipient and therefore are not time-dependent
* Instant Messaging
* Social networking tools
* Pseudo social networking (such as OneNote, Yammer and Teams)
* Video Conferencing
	+ Video conferencing is the activity of using computers and networks to communicate over distance
	+ Video conferencing systems by definition include cameras, monitors, microphones and speakers

## CONCEPT OF RESPONSIVE DESIGN

Responsive design is an emerging feature of modern website design

* Responsive websites reformat themselves to fit the size and orientations of various screen sizes and shapes
* Without responsiveness, a website developer would need to create a different version of each page to suit the various screens upon which it would be viewed.

# TERM 3 WEEKS 4-5

## MANAGING DATA

## CONSIDERATION FOR THE COMPRESSION OF FILES FOR THE TRANSFER AND DISPLAY OF DATA

Files may be compressed in various ways to enable data to be transferred. File compression always requires thought to be applied to the tension between file size and file quality

* Lossless compression systems will maintain file quality, however they do not typically generate high compression rates and therefore result in higher file sizes
* Lossy compression can generate higher compression rates at the expense of quality.

Purpose

Lossy Compression

* A compression method where the original file cannot be recreated exactly
* Lossy compression is used mainly for Image, Audio or Video file types and generally involves changing similar colours or tones so that they match in order to make the compression phase more efficient.
* see .jpg and .mp3

Lossless Compression

* Lossless file compression is a file compression scheme which enables the original file to be reconstructed perfectly with no loss of data
* Unlike lossy compression, lossless schemes produce moderately small file sizes of high quality. RLE (Run Length Encoding) is one example of a lossless compression system

File Sizes

* File size is the term used to describe the number of kilo/mega/Giga/Terabytes a file occupies in memory
* When files are transmitted across a network, it is important to reduce their file size in order to speed up transmission

## TECHNIQUES FOR FILE SIZE MINIMISATION

Cropping

* Cropping is commonly used to reduce the file size of images
* Cropping involves removing unnecessary pixels from the edge of an image file
* Cropping will directly impact file size, since removing 20% of the pixels in an uncompressed file will reduce the file size by 20%. The advantages of cropping may apply differently when the file is compressed

Resampling

* Resampling is the term used to describe the process of reducing the number of pixels in an image without cropping
* Image editing applications usually perform this by combining multiple pixels and choosing an appropriate colour which blends the original pixels
* Resampling often causes pixelation, especially when it involves multiple resamples or resampling by a high ratio

## OPTIMISATION OF FILES FOR DIGITAL/ONLINE AND PRINT

Digital or online

* Files that will be transferred digitally will have a requirement for small file sizes
* These files will often be compressed to reduce transfer time
* This size reduction will cause a degradation of file quality and therefore the creator must make a decision between acceptable quality and file size

Print

* Files that are to be used for print publication may have a large file size, since they may be transferred using systems where speed of transfer isn’t a key requirement
* For this reason, files destined for print will be optimised for high quality, regardless of file size

## STRATEGIES FOR EFFICIENT ONLINE DATA MANAGEMENT

Online data management is similar in concept to local data management

* You should ensure that your data is stored securely, with an appropriate document version control system and effective backup techniques.

Strategies for efficient document version control

* Document version control is a way of tracking the currency of a document
* This is typically achieved through a numbering or dating system
* Numbers or dates are updated on a file every time it is modified and therefore the users of that file can tell whether they are using the latest version
* Version control is most obvious with software applications.

Concept of cloud computing

Cloud computing describes the use of resources provided on the Internet to undertake tasks which have traditionally been performed locally

The three main areas of cloud computing are:

* Cloud Storage
* Cloud Apps
* Remote Control

Emerging fields and new tech companies are seeking to leverage cloud computing as a concept to bring greater services to a cloud-based architecture, rather than local. Streaming would be an example.

## SYSTEM UTILITY TOOLS AND ACCESSORIES FOR THE EFFICIENT OPERATION AND MAINTENANCE OF DATA

System Utility tools are software applications that are designed to perform routine maintenance tasks that keep your computer running efficiently

* Some utilities run automatically based upon a schedule, some must be invoked manually

Including:

Disk clean-up tools

* Disk clean up tools is a term used to describe any utility tool which performs the task of identifying unused files on a disk and removes them
* Along with temporary files, there are many files that can fill up a disk without the user’s knowledge
* Some are there through errors (failed installation/uninstallation of software, Duplication of files, user error) some have been saved deliberately by either malware or system files

Deletion of temporary files/internet cache

* Temporary files are created by a computer during normal operation
* Operating Systems are often inefficient in removing these files and they will take up disk space, along with causing disk fragmentation
* Removal of temporary files on a regular basis is one maintenance task which will improve the reliability and speed of a computer
* One source of temporary files is the Internet (or Browser) cache
* This is a memory location that is used by your browser to store the files it downloads when you are viewing webpages
* It will contain every HTML file, every image, and many of the videos you have viewed
* Some browsers will delete files in the cache on a regular basis, some have security settings which will manage this for you, but on some occasions you will be required to do this manually
* Temporary files in the Browser Cache cause the same issues as other temporary files

Disk fragmentation

* Disks become fragmented when they are used frequently
* The files on a disk are rarely contiguous
* Typically fragmentation occurs when a small file is deleted
* Rather than shifting everything on the disk to close up the space created by the deleted file, a computer simply leaves the gap
* When a new file is saved, the disk manager starts at the first available memory location (block) and writes as much of the file as it can in that gap
* If the file doesn’t fit into the gap, the disk manager splits the file, putting the remainder in the next available block
* The disk manager keeps track of all the pieces (fragments) of the file, so that it appears as a single contiguous file to the user
* When the file is accessed, fragmentation causes the disk access to be slower, since the disk head (reading mechanism) must jump around various sections of the storage medium to find the file
* A Defragmentation tool performs the task of rearranging all the fragments of files to make each disk file contiguous
* This will have the effect of speeding up disk access, particularly on systems that have heavily used disks.

Anti-malware, virus, SPAM and spyware

# TERM 3 WEEK 6

## PROJECT MANAGEMENT TECHNIQUES

Project Management is the process by which a complex project is coordinated and structured to ensure it runs smoothly

* In the context of AIT, Project Management ensures that teams are organised, structured and managed, so that everything happens efficiently

Project Management includes:

User/Client Requirements

* Users and clients bring various requirements to a project
* These requirements should always be documented in the project management plan and referred to whenever they affect a design or scheduling decision
* Other requirements may be added as a result of legislation, delivery platform etc.

Plan of Action

* A plan of action is used to organise the order of tasks in a complex project
* Usually when a project is being managed, the plan of action involves coordinating many resources, physical, digital and human to ensure that a project is completed efficiently
* Tools such as Time Plans, Procedures Lists and GANTT Charts are typically used to construct a time plan.
	+ GANTT Chart: A GANTT chart is a graphical tool used to plan and track the completion of tasks within a complex project
	+ It consists of horizontal cells representing either a task or a worker, these cells are shaded to indicate the planned time for working on a task
	+ When task dependency is planned properly it can be seen where there is “slack time” which might allow for workers to be reassigned to help out with mission critical tasks

Time Management Strategies

* It is important that time is managed efficiently when conducting a complex project
* The plan of action is used to coordinate time, ensuring that resources are available at the right time, human resources are given enough time to complete tasks and tasks are completed in the correct order so that nothing is wasted sitting around for another resource to become ready

Resources Requirements

Resources are the things that might be used to conduct a project. Resources need to be managed to ensure they are:

* Available on time
* not wasted
* meet standards

It is not commonly known that people (Human Resources) is included in this.

Evaluation

* Evaluation should always be conducted on any product that is produced and Evaluation is therefore a critical component of any design plan
* The product should be tested to ensure it meets Specification, User/Client Requirements and legislative targets
* Such testing may involve Alpha Testing, Beta Testing, Focus Groups, Surveys or other tests as required. see Evaluate a Digital Product

# TERM 3 WEEKS 7-8

## APPROPRIATE REFERENCING TECHNIQUES FOR DIGITAL PUBLICATIONS

Digital Publications must be referenced to comply with copyright. It is as important to acknowledge copyright owners in digital works as in any other format, however there are issues with such acknowledgement impacting on product design. Many designers overcome this issue with the use of Credit Rolls, Watermarks or Footnotes.

## ACKNOWLEDGEMENT OF THE INTELLECTUAL PROPERTY (IP) OWNER

Moral Rights is the Copyright concept which identifies that an IP owner is never required to relinquish their right to attribution. It is never OK to use somebody’s work without identifying that person as the author, even if they are paid for the privilege.

Moral Rights - The user of a work and the copyright owner have MORAL RIGHTS to the work.

The concept of moral rights relates to the fact that nobody can unfairly take advantage of any copyright rule to force a use of a work that is not part of the original intention of the work by the creator.

One example is GeoLocking, Under Australian legislation it is not legal for a copyright owner to add a code to a work specifically to lock it to a geographic region. Therefore a user of a work is permitted to buy a legally licensed copy of a work in a foreign country, knowing it is possible to use this work in Australia.

Often though, the copies bought in foreign countries (with different copyright laws) are NOT legal reproductions.

## IMPACT OF THE PRIVACY ACT 1988 (AUSTRALIA) ON:

The collection of personal information

* The Privacy Act 1988 (Privacy Act) regulates the way individuals’ personal information is handled.
* As an individual, the Privacy Act gives you greater control over the way that your personal information is handled. The Privacy Act allows you to:
	+ know why your personal information is being collected, how it will be used and who it will be disclosed to
	+ have the option of not identifying yourself, or of using a pseudonym in certain circumstances
	+ ask for access to your personal information (including your health information)
	+ stop receiving unwanted direct marketing
	+ ask for your personal information that is incorrect to be corrected
	+ make a complaint about an entity covered by the Privacy Act, if you consider that they have mishandled your personal information.

How personal information is used

Personal information may only be used for the specific purpose for which it has been collected. If a collector needs to use previously collected information for a different purpose, this can only be done with agreement for the information owner.

Access to personal information

Access to personal information must be restricted to employees who have a need to access that information to complete the purpose which is identified and agreed to during collection

Implications of identity theft

Identity theft is an illegal act where the perpetrator impersonates an individual. The activities that can be conducted as a result are many:

* CyberBullying
* Fraudulent credit applications
* Use of a false identity when facing prosecution
* Slander and Defamation

Safe disposal of data

Data must be disposed of in such a way to ensure that personal data cannot be retrieved. For physical printouts, likely solutions would include shredding or incineration, for Digital files, there needs to be a form of data destruction employed to ensure that contents cannot be retrieved.

## ISSUES RELATED TO THE DEPENDENCY OF SOCIETY UPON ELECTRONIC AND VISUAL COMMUNICATION IN BUSINESS

If society is too dependent upon digital communication, various issues can be caused. In instances where the digital communication is unavailable, for example during device failure or in locations where access to digital networks is unavailable, then communication is often impossible. Communicating with third parties who use different protocols is similarly difficult.

## CONCEPT OF SOCIAL NETWORKING

The Responsible use of Social Networking

Social networks must be used responsibly to ensure a vibrant online community:

* Netiquette is the term used to `describe the ways of interacting politely when online.
* Emoticons may be used to clarify intent when conducting a casual conversation in a textual medium.
* It is important to guard against Cyber bullying and Cyber Stalking

## TYPES OF SOCIAL NETWORKING AND THEIR FEATURES

## TYPES OF VIRTUAL COMMUNITIES

Including:

Online chat rooms

* An online chat room is a virtual space where users can communicate in real time. They differ from instant messaging in that the comments default to public view. Many chat rooms allow private messaging as an option.

Virtual worlds

* Virtual world is the term used to describe any virtual space which is used to simulate the real world. Virtual worlds offer a wide range of complexities and purposes, from fictional world spaces created in games where users play as a character and interact in manners which may or may not reflect their real world personality, to Virtual reality simulations where that user is immersed into a virtual environment and are able to interact using software controls.

# TERM 3 WEEKS 9-10

## CONCEPT OF COMPUTER NETWORKING

Computer networking is the connection of a number of computers with the intention to share data

Purpose of Networking

Computer networks exist in order that computers can share data. This data sharing can take many forms, including but not limited to:

* Email
* Web Surfing
* Connected databases
* File Sharing
* When computers are networked, they are connected by a physical medium designed to transmit data (see transmission media)
* Various networking protocols are used to standardise the different processes to ensure that both the sender and receiver understand the message

Advantages

The advantages of computer networking are

* Cost
* Sharing of resources
* Ability to enable access to data for a selected list of users

Disadvantages

The disadvantages of Computer networking include

* Reliability
* Security
* Potential loss of data
* Loss of productivity through shared devices being unavailable

## TYPES OF TRANSMISSION MEDIA

Transmission media are the physical components used to connect computers together and form a network.

Optic Fibre

* Optic Fibre is a networking connection medium that consists of fine strands of glass, coated in a heavy rubber-like coating
* Data is transmitted as flashes of light
* Optic fibre is:
	+ Reliable
	+ suffers from very little loss
	+ particularly at long distances
	+ Has high bandwidth (up to 1 Gigabit/Second)
	+ And it isn’t affected by electromagnetic radiation
* However it is expensive, fragile and must be installed by specially trained technicians using specialised tools.

Wired

Networks are termed wired when they are connected together using physical cables.

* Copper cables
* Up to 100m distance
* Pulses of electricity
* 1000 megabits per second

Wireless

A network is termed to be wireless when the data is transferred using non-physical connections, typically radio waves.

* 56 kilobits per second

## THE CONCEPT TRANSMISSION RATES

* Transmission rates or Bandwidth, is the concept that various configurations of networking connection transmit data at various speeds
* Network data transmission is measured in bits per second (bps or b/s) networking devices and transmission media have known transmission rates, often measured in Kbps or Gbps

## NETWORK TOPOLOGIES FOR LOCAL AREA NETWORK (LAN)

A network topology is a physical arrangement of networking devices. They are often drawn as stylised maps.

Wired Star

A wired star network topology describes a number of networked devices, connected to a central router directly using cables

Wireless

A network is termed to be wireless when the data is transferred using non-physical connections, typically radio waves.

Client Server

* A server system is designed to provide networked services to other computers
* Servers typically perform a specific task for a large number of devices
	+ For example a web server will specialise in hosting web pages to provide this content to networked devices upon request
* Server systems typically have significant primary memory and secondary memory resources, but may not have as much CPU power.

Peer-to-peer

Peer to Peer is a networking technology (or connection type) that removes the server, rather having data stored on individual client computers.

* Sets up a mini server on your computer

## NETWORK COMPONENTS FOR INTERNET CONNECTION FOR A SMALL BUSINESS

Server

A server system is designed to provide networked services to other computers

* Servers typically preform a specific task for a large number of devices
* For example a web server will specialise in hosting web pages to provide this content to networked devices upon request
* Server systems typically have significant primary memory and secondary memory resources, but may not have as much CPU power.

Router

* A router is a device that connects several networked devices together and that maintains a routing table
* Does the same thing as switch
* Multiple devices connecting to network
* Keeps a routing table
	+ A routing table indicates the most efficient pathway for data to be directed to ensure the efficient transfer of messages.
	+ Its not directly plugged into me but it looks like this, send it there

Network interface card (NIC)

* A networking adapter is an electronic device that allows a computer to physically connect to a network
* In the modern context, most computers have an integrated network adapter using either a networking cable or WiFi

Switch

* A network switch (also called switching hub, bridging hub, officially MAC bridge) is a computer networking device that connects devices together on a computer network by using packet switching to receive, process, and forward data to the destination device.
* Packet switching sends data only to the port that connects to the device requiring the data.
* ‘what is directly plugged into me’
* If its not directly plugged into me idk where to send it so I ignore it

Modem

* A modem is a networking device that connects a single computer to a network (or the internet which is another kind of network)
* Only allows one device to connect to a network