Information

Storage capacity determines the amount of data available on a digital system. Files vary in size and will depend on the data that needs to be stored. Digital systems help reduce unwanted data by compressing the amount of data within a file. Compressing a file reduces the amount of data required to represent a file. This allows the files to take up less space on the hard drive and reduces the time it takes to send or receive a file.

Lossy Compression

Lossy compression refers to permanently deleting data resulting in a reduction in the quality of the file in order to save space. An example is watching videos on YouTube where the original source material was uploaded in 1080p (i.e. full high definition HD) but the 720p option is the compressed video. The 720p option will use less data but you might also notice that the image isn't as crisp and clear as the 1080p. This is reflecting a loss in quality of the file as a result of data being deleted in the compression process going from 1080p to 720p. Image files such as JPEG uses lossy compression to delete data in the bitmap. Finer details in the image are deleted. Mp3 files also reduce the data by deleting the finer sounds.
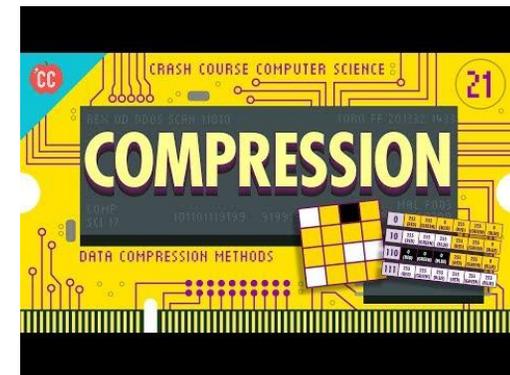
Lossless Compression

Lossless refers to the fact the file has not been compressed. The data remains the same and has not been compromised. These files will have a higher quality of data when looking at the images and sound, however they will also be a much larger file. An implication in this will be storing, uploading and sharing these files (attachments in emails may not be applicable due to the size allocated to send files).

Curriculum Expectation

Students will analyse the compression of data.
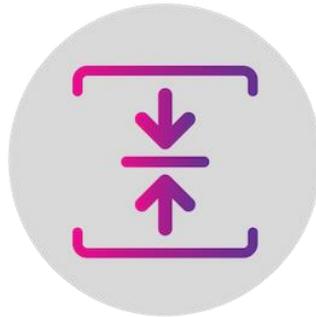
Video Resource

Click the image to open the video

Video Source: Crash Course Computing

DATA COMPRESSION

A file size is reduced to take up less storage on a hard drive

LOSSY

The file size is reduced

Less storage, quicker access to files

Can distort the image and make it look pixelated especially around edges

Takes unwanted data from the bitmap

GIF & JPEG are lossy formats

Reduces the space silence data takes up

Mp3 files are lossy formats

LOSSLESS

The file size remains the same

More storage is used, longer wait time to retrieve

PNG, BMP & Raw are lossless formats

ALAC, WAV & FLAC are lossless formats

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