

### 1.1.5 Compression

\* Lossless file compression ✓ Run-length Encoding (RLE)  
 \* Lossy file compression ✓ MP3, JPEG  
 Sound, Images.

#### Run-Length Encoding:

Text Data:      a a a a a b b b b c c d d d d  
                     05-97 04-98 ↓ 05-100  
    02-99

String a a a a a a a a b b b b b b b b c d c d c d e e e e e e e e  
          08 97                      10 98                      01 01 1 1 1 1                      08 101  
    99 100 99 100 99 100

255 08 97 255 10 98 99 100 99 100 99 100 255 08 101



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# Using RLE with images



8x8 B&W image

1	1	1	1	1	1	1	1
1	0	0	0	0	0	0	1
1	0	1	1	1	1	1	1
1	0	1	1	1	1	1	1
1	0	0	0	0	0	1	1
1	0	1	1	1	1	1	1
1	0	1	1	1	1	1	1
1	0	1	1	1	1	1	1

64 Bytes  
RAW

9 W	6 B	2 W	1 B
7 W	1 B	7 W	5 B
3 W	1 B	7 W	1 B
7 W	1 B	6 W	

30 Bytes  
RLE



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File compression application (Lossy):

\* MP3 / MP4

MP3 { 80MB  
8MB

perceptual music shaping

\* BMP (bitmap/Photographic) images:

\* JPEG

\* Vector Graphics (.svg)



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## General Methods of Compressing files

MOVIE FILES

- reduce the sampling rate used
- reduce the sampling resolution
- reduce the frame rate

IMAGE FILES

- Crop the image
- Decrease the color depth
- reduce the image resolution



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