

Exemplar



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Level 1 Digital Technologies CAT, 2018

91887 Demonstrate understanding of compression coding for a chosen media type

Credits: Three

INSTRUCTIONS

Put your identification information in a header

Choose ONE option:

1. **School Sports Day**
- OR
2. **School Rock Band**

Use the information from your chosen option to answer the questions to produce a short report. You must write about the option you have chosen. You may use this information and additional information and examples from your course.

You cannot use information from the Internet. You cannot position links in your answer.

Your answer may be sampled and compared with answers from other candidates to ensure it is your own work.

You should aim to write between 600 and 1000 words. You can expand (or reduce) the text boxes as needed.

Save your work with the file name schoolcode-yourNSN-91887.pdf.

Your teacher will tell you where to save this file.

Achievement

1. School Sports Day



As head of the school student media team, you have been asked to organise photography for the school sports day. You have a team of photographers to assist you with this task. All of them will be using digital SLR cameras. All files will be downloaded from the cameras to a shared drive on the school network.

Required outputs

1. Photographs for the school magazine
2. Photographs for the school newsletter (online and printed)
3. Photographs for the school website and Facebook page, including a gallery page with thumbnail links to full size images.
4. Photographs of athletics champions or students who break school athletics records will be printed and framed (A3 size)
5. The school archives also require photographs, where they will be stored on the school network for future use.

Questions

1. **What format would you have the cameras set on, RAW or JPG? Explain your answer in detail.**

I would set the camera to RAW personally because it means I get the best quality photos and if I need to reduce the size via compression later for email or a thumbnail on a website, but I can also have a high quality one for printing or a slideshow. You don't want it on JPG because it is then already compressed when it is saved to the camera. This means the quality is limited because it is already compressed with lossy and you can't recover the lost data because it's compressed as soon as it is saved on the memory card.

2. Explain how uncompressed files are represented using bits.

An uncompressed file will NOT use Run Length Encoding because that is a form of compression, An uncompressed b/w file will be like the flower, with an uncompressed colour image each pixels colour will be determined by 3 channels of colour (RGB) and each channel is 1 byte or 8 bit, those 8 bit determines



This is one channel, when this channel is combined with the G and B channels it makes an RGB colour

126	64	32	16	8	4	2	1
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
1	1	0	0	0	0	0	1

3. Explain how compression affects the image from a viewer's perspective.

Using JPG compression reduces the quality of an image to decrease the size of the file. Different levels of compression result in different quality photos, for example (text below) this photo is heavily compressed using JPG compression and already you can see pixelation around the words, "pixelation" is where the pixels in the screen become more apparent because of how low the quality of the photo is. If the portions of the photo did not compress properly you would get "artefacting" which is the discolouration in highly compressed photos (in the photo below it is the white discolouration on the black letters.). A JPG is best used for scaled down photos because humans have difficulty seeing the low quality in

>Lorem ipsum

smaller photos, such as on a website or a on the side of a presentation.

4. For two of the school's output requirements, (see above) state what type of compression you would use ensuring that you:
- (b) explain why you would use lossless or lossy compression, outlining the advantages and disadvantages of each compression type for the specific output.
 - (a) justify your decision for each output, explaining why your chosen type of compression would be the most appropriate

***** You may add information from your own course work to support your answers*****

School output requirement 1

Photographs for the school website and Facebook page, including a gallery page with thumbnail links to full size images.

The best file type for this situation is a lossy JPG for the smaller thumbnail photos because the smaller the photo is, the less noticeable the artefacting or heavy compression is to the naked human eye. This is because our eyes aren't good at picking up on small details like compression on small images.

For the bigger gallery photos I would suggest a lossless PNG photo or a lightly compressed lossy JPG file, this is because as the photo gets bigger, the lossy compression becomes more apparent to the user/viewer, the only problem with using a lossless PNG is that it comes with a larger file size than the lossy JPG but it looks clearer in a full screen gallery.

School output requirement 2

Photographs of athletics champions or students who break school athletics records will be printed and framed (A3 size)

The best file type for this output is most likely a TIFF file format, this is because a TIFF file is a professional format used for high quality photos that are going to be printed or displayed in a slideshow. I would use a TIFF because you get the best quality photo for the space the photo takes up and you get the clearest photo for framing. Only problem with a TIFF is does the printer have a file size limit, if so I would use a more compressed file like JPG and If you used a JPG instead of a TIFF, the printed photo would be lower quality and more pixelated but the print could still print it.

Achievement Exemplar 2018

Subject	Level 1 Digital Technologies CAT 2018	Standard	91887	Total score	04
Q	Grade score	Annotation			
1	A	The student describes the best camera setting.			
2	A	The student provides a description, with little explanation.			
3	A	The student describes how compression affects and an image form the users' viewpoint, no reference to lossy or lossless (This is explained in the outputs section)			
4	A	The student suggests the correct output formats with some justification.			