

Tutorial 4

1. (a) Able to capture sound accurately. Takes up more space
- (b) Quantization doesn't remove data from our input, it actually adds in a noisy error signal.
- (c)

$$\frac{\text{Quantization (bit)} \times \text{Sampling Rate (Hz)} \times \text{Channels} \times \text{Duration(s)}}{8 \times 1024}$$

$$= \frac{8 \times 8000 \times 1 \times 60}{8 \times 1024}$$

$$= 468.75 \text{ KB}$$

(d)

$$\frac{\text{Quantization (bit)} \times \text{Sampling Rate (Hz)} \times \text{Channels} \times \text{Duration(s)}}{8 \times 1024}$$

$$= \frac{16 \times 44100 \times 2 \times 30}{8 \times 1024}$$

$$= 5167.97 \text{ KB}$$

$$\frac{5167.97}{1024} = 5.05 \text{ MB}$$

2. (a)

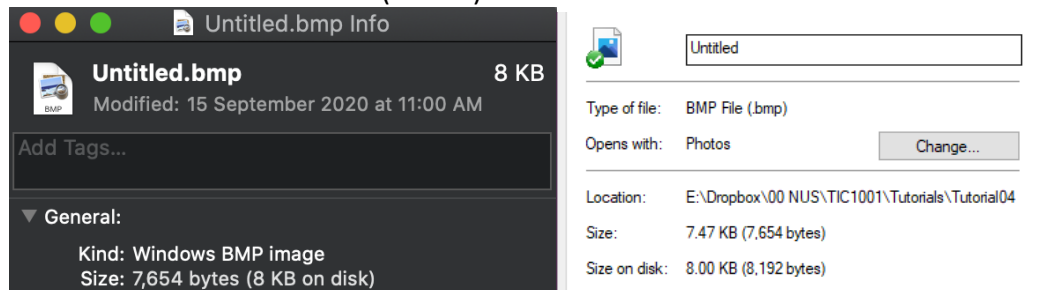
Calculation of 24-bit bmp file size in KB:

$$\frac{\text{Width (px)} \times \text{Height(px)} \times \text{Bit Depth}}{8 \times 1024}$$

$$= \frac{50 \times 50 \times 24}{8 \times 1024}$$

$$= 7.32 \text{ KB}$$

Calculated file size is 7.32KB (7500B)



Actual file size is 7.47KB (7654B)

(b)

R=38, G=190, B=217

R:

$38/16 = 2 \text{ R } 6$

$2 / 16 = 0 \text{ R } 2$

G:

$190/16 = 11 \text{ R } 14$

$11 / 16 = 0 \text{ R } 11$

B:

$217 / 16 = 13 \text{ R } 9$

$13 / 16 = 0 \text{ R } 13$

RGB -> HEX = 2-6-11-14-13-9 = 26BED9

(c)

1 character = 8b = 1B

$$1B \times 6 \text{ char} \times 2500 \text{ copies} = 15000B = 1500KB$$