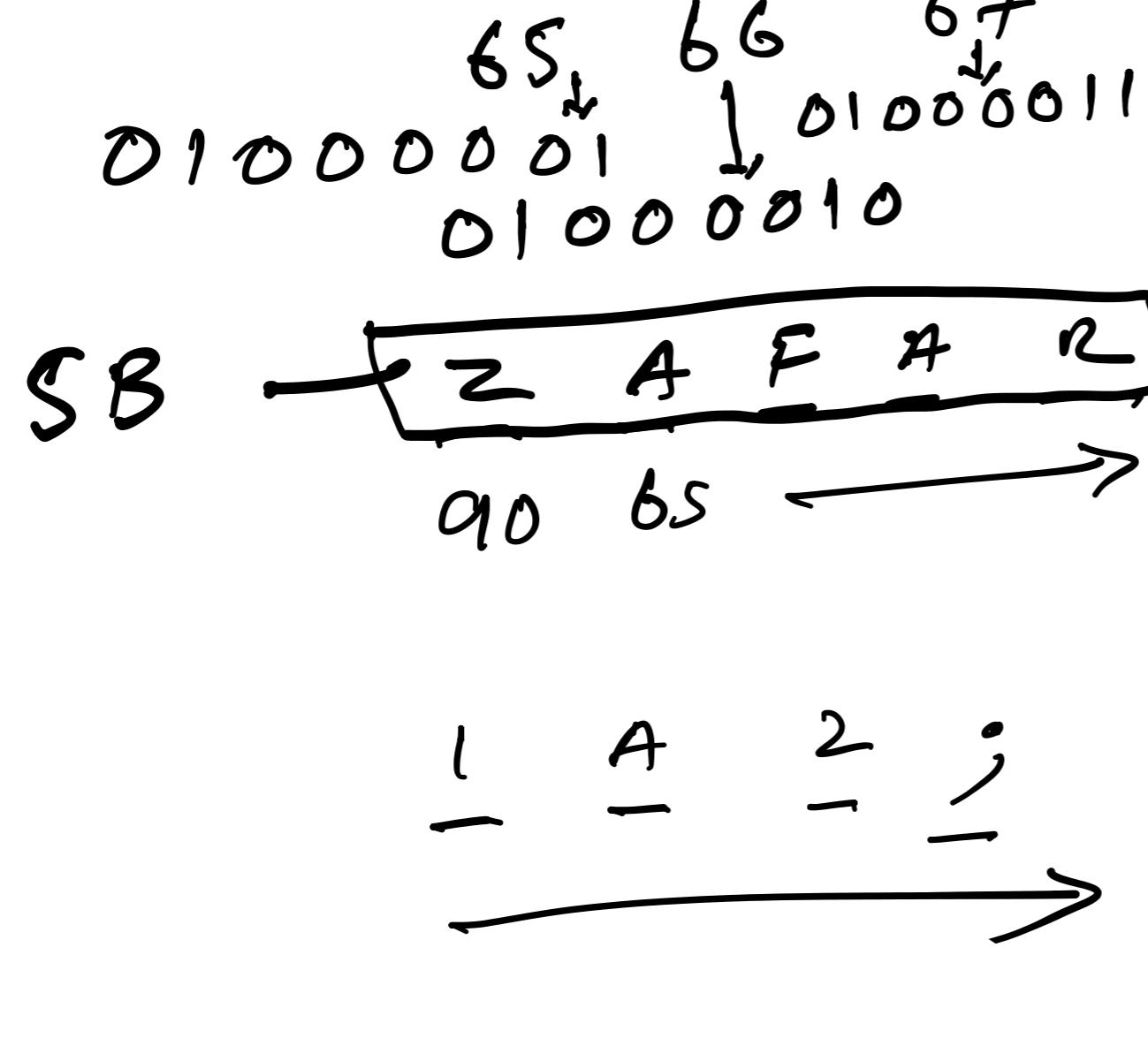


## Text image video sound binary conversions

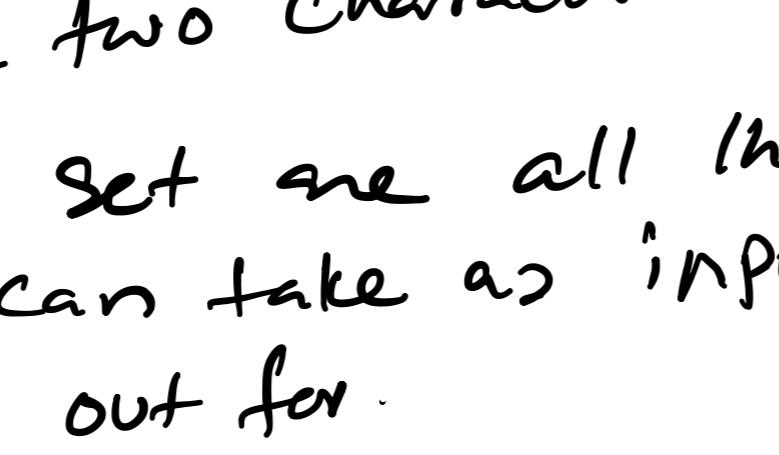
Friday, 11 December 2020 3:41 PM



Every single character over the keyboard has an associated number. This number is called ASCII (S-key).

American Standard Code for Information Interchange.

Every single ASCII code holds one byte of data.



### Character Sets:

There are two character sets, ASCII & Unicode.

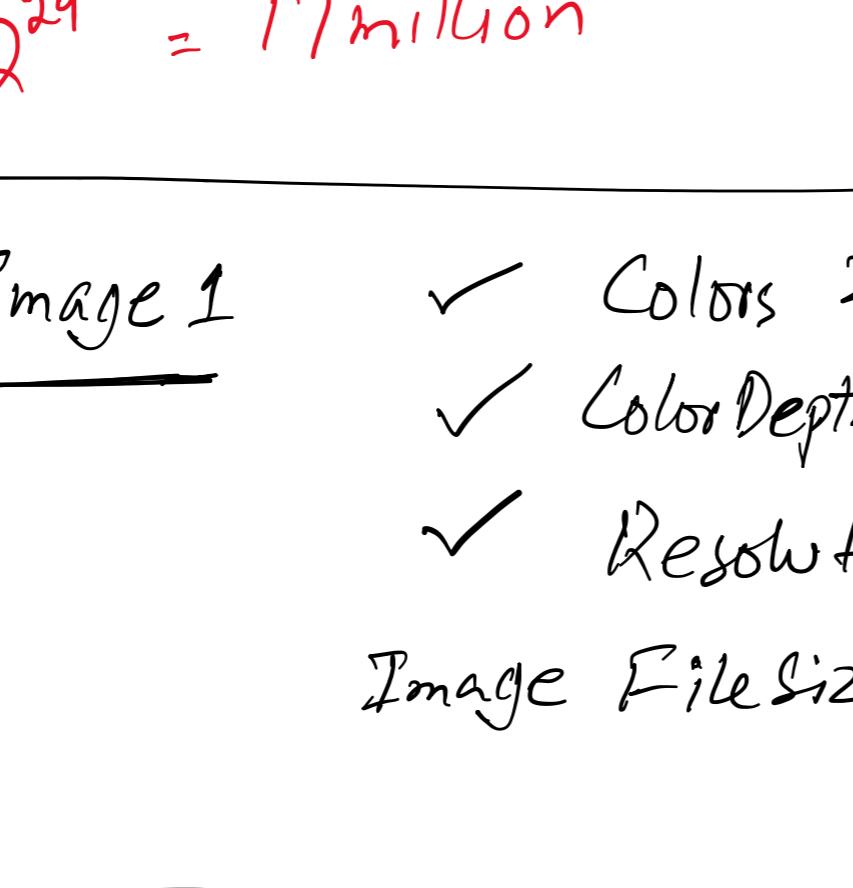
Character set are all those characters that computer can take as input, process, store and gives out for.

ASCII & Universal Code are world standards.

1B      Unicode  
2B

"Ali"    ASCII 3B  
UNICODE 6B

### Image:



Resolution = Width × Height

Total colors that an image can show = 16 colours.

$2^4 = 16$  Range 0 to 15

0 = 0000

1 = 0001

2 = 0010

3 = 0011

4 = 0100

5 = 0101

6 = 0110

7 = 0111

An image is saved using colors, or image is a list of colors.

$2^4 = 16$  Color

$2^{16} = 65K$

$2^{24} = 17$  million

### Image 1

✓ Colors 256

✓ Color Depth 8 bits  $2^8 = 256$

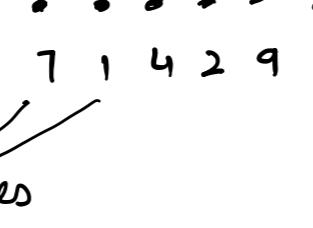
✓ Resolution  $500 \times 100 = 50000$  pixels.

Image File Size =  $50000 \times 8 = 400000$  bits

$400000 / 8 = 50000$  Bytes.

$$\boxed{\text{Image File Size} = \text{Resolution} \times \text{Color Depth} \times \text{Bits per pixel}}$$

Video: Actually video is images (frames) shown per second for a length of time.



$$\boxed{\text{Video file size} = \text{Resolution} \times \text{Color Depth} \times \text{FPS} \times \text{Time}}$$

FPS  
Frames per second

Time  
In sec.

Resolution

Color Depth

Frames per seconds

Seconds (Time).

$$\text{Video Size} = 100 \times 50 \times 5 \times 15 \times 30$$

$$= 11250000 \text{ bits / 8}$$

$$= 1406250 \text{ Bytes}$$

$$= 1373.3 \text{ KB.}$$

$$\boxed{\text{Sound file size} = \text{Sample rate} \times \text{Bit depth} \times \text{Time}}$$

In bits In seconds

Samples recorded per second

CD quality: 44100 samples per second

192k → 44k

Sampling → 16 bits per sample

Analog to Digital Converter.

Natural → Analogue → Continuous →

Digital → Binary → Discrete → 010010



Amplitude

Time (seconds).

0 3 1 7 1 4 2 9 4 5 3

↓ ↓ ↓ Samples

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0

10 9 8 7 6 5 4 3 2 1 0