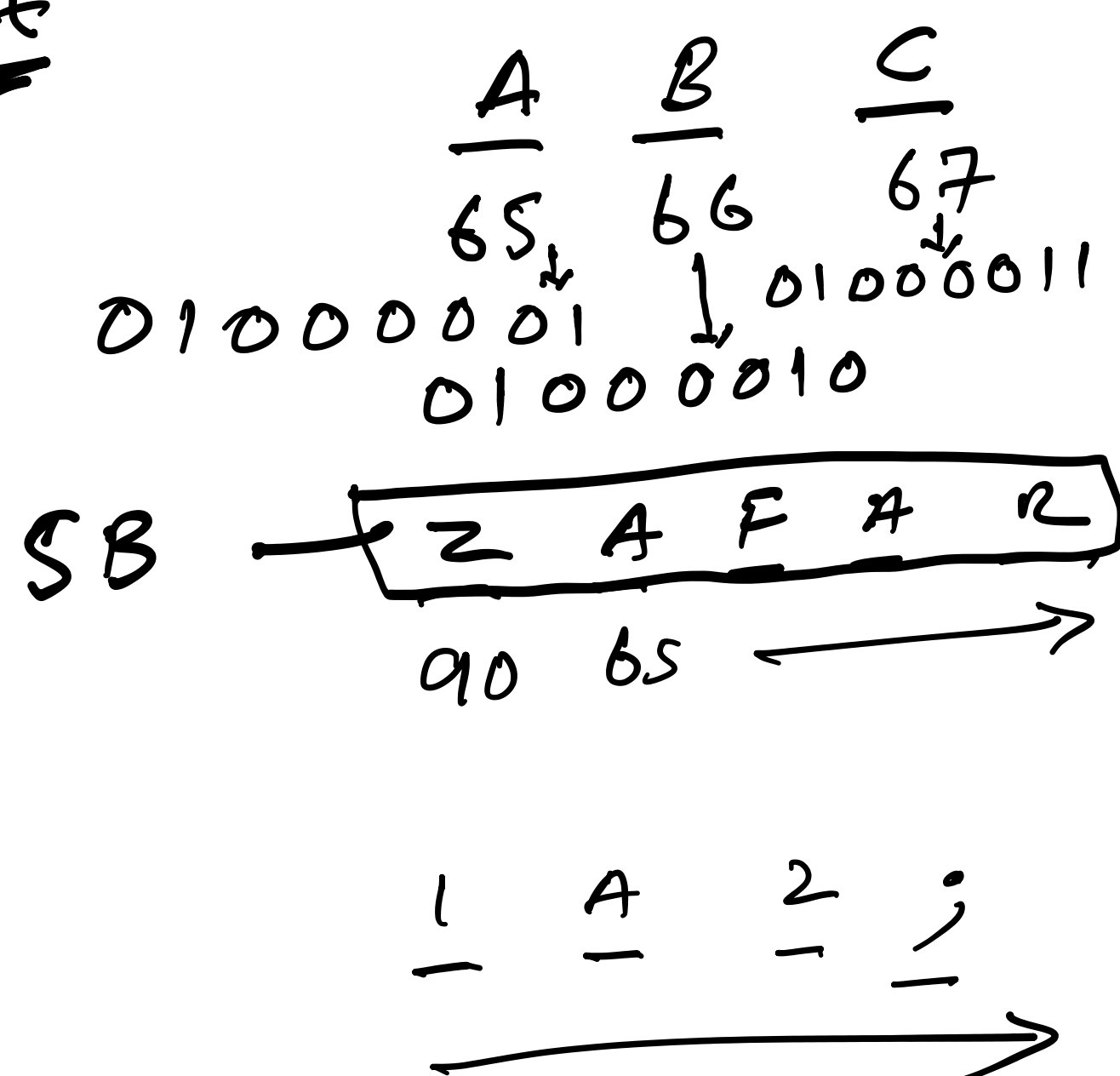


Text

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:

Extended ASCII

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

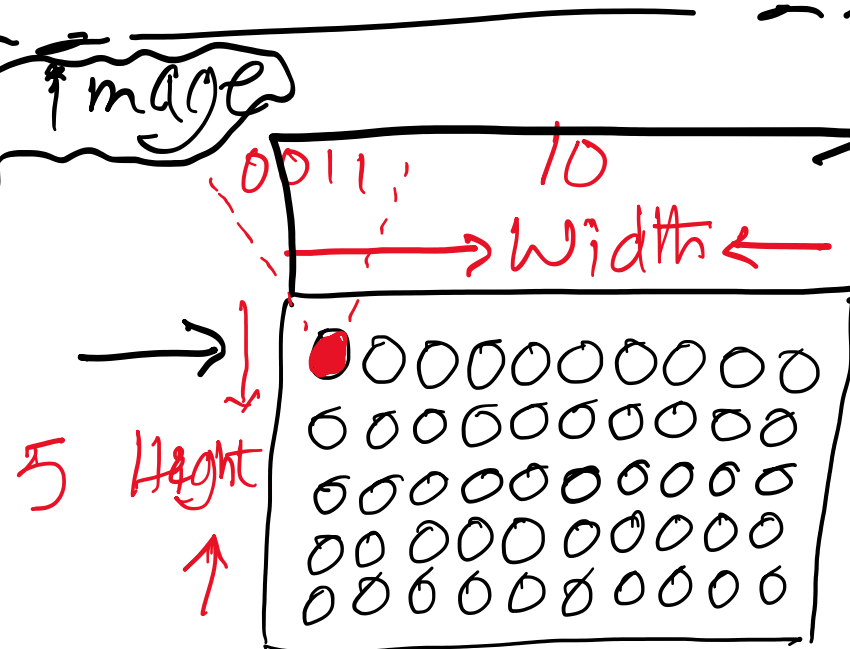
2B

"Ali" ASCII 3B
UNICODE 6B

Extended ASCII

- It uses 8-bits
- No parity bit
- 0-127 (128-255)
2⁷ 2⁸

- Allows for other characters
e.g. non-English chars.

Image:

File header Resolution, Color Depth

Resolution = Width x Height

Total colors that an image can show = 16 colors.

Every pixel shows a color. A color is saved using a certain number of bits called "color depth".

$$2^8 = 256 \text{ (Range 0 to 255)}$$

$$2^4 = 16 \text{ Color}$$

$$2^{16} = 65K$$

$$2^{24} = 17 \text{ million}$$

$$2^4 = 16 \text{ Range 0 to 15}$$

$$0 = 0000$$

$$1 = 0001$$

$$2 = 0010$$

$$\vdots$$

$$15 = 1111$$

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

Image 1

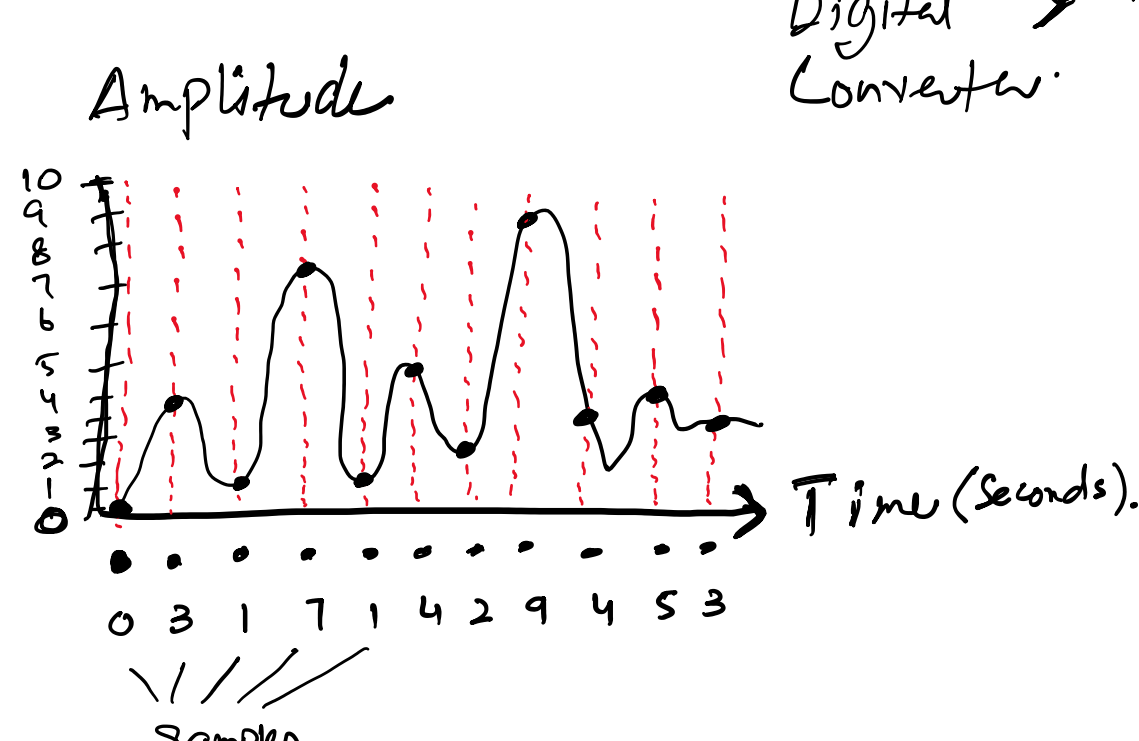
✓ Colors 256

✓ Color Depth 8 bits $2^8 = 256$ ✓ Resolution $500 \times 100 = 50000 \text{ pixels}$ Image File Size = $50000 \times 8 = 400000 \text{ bits}$ $400000 / 8 = 50000 \text{ Bytes}$

$$\text{Image File Size} = \frac{\text{Resolution}}{W \times H} \times \frac{\text{Color Depth}}{\text{bits per pixel}}$$

Sound:

Analogue to Digital Converter: Natural → Analogue → Continuous → Binary → Digital → Discrete → 010010



Digital sound is broken down into number of samples per second. Each sound sample is saved as binary data.

Sample rate: No. of captured samples per second.

Sample: Single recording of sound amplitude.

Bit depth: No. of bits saved per sample.

CD quality: 44100 samples per second

1982 → 44K

Sony → 16 bits per sample

$$\text{Sound File Size} = \frac{\text{Sample rate}}{\text{Samples recorded per second}} \times \frac{\text{bit depth}}{\text{In bits (Sample Resolution)}} \times \text{Time} \text{ In seconds}$$