Sound

Friday, 16 July 2021 11:46 PM

Voltage

Analogue — Natural — Continuous —

Analogue to Digital Converter — ADC — Digitise

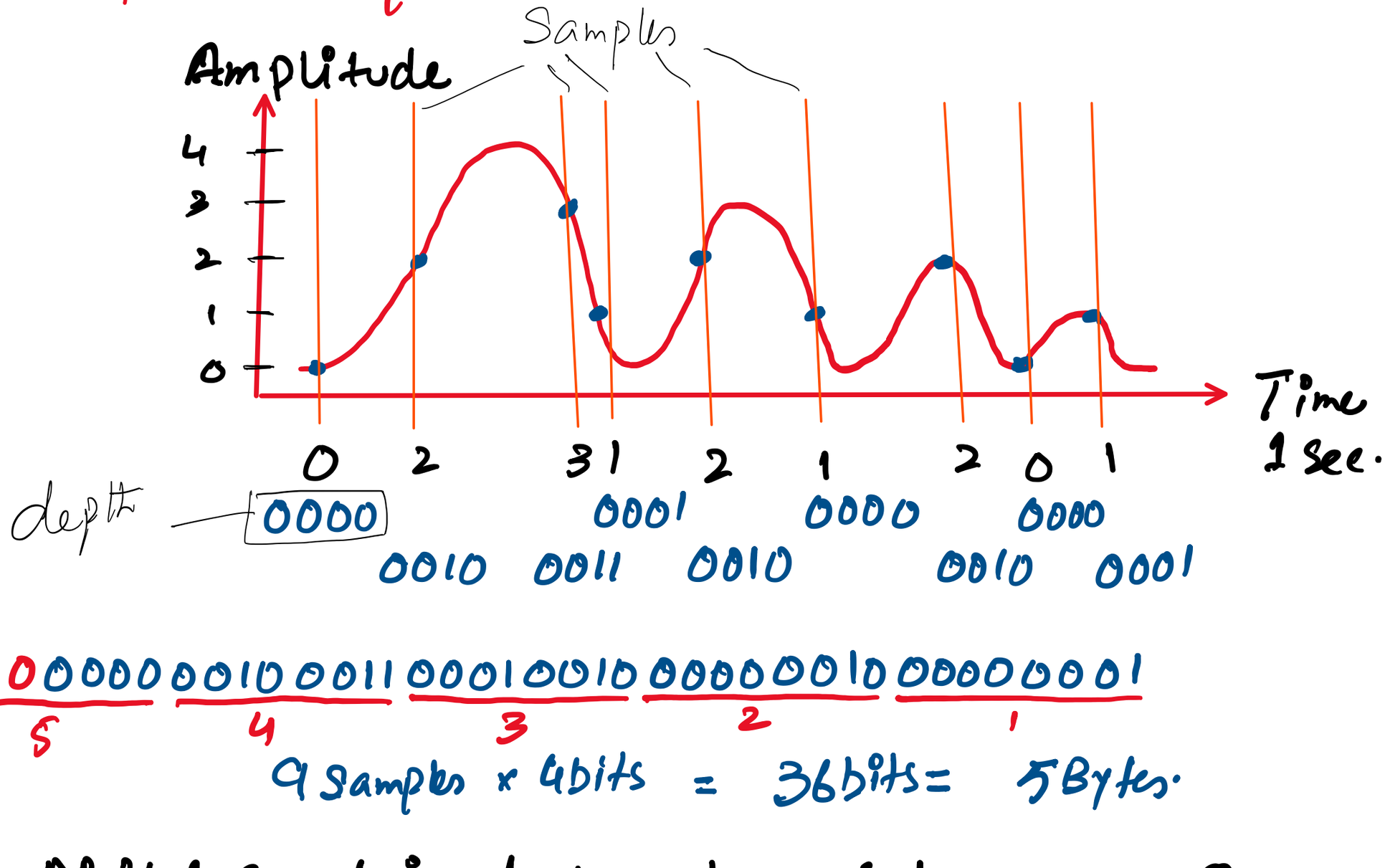
Digital — Binary — Discrete — 0100100100

Sound → Mic → Current

To consider sound conversion, we have to take two things into account.

1. Speed of computer (Samples per second)
2. Data captured in 1 unit of time. (Depth)

- CD was invented/manufactured in 1981 by Sony Corp.
- In 1981 max. speed of computer was 44100 Hz. (44kHz)
- In 1981 max. amount of data, that can be captured by the computer was 16bits (2 Bytes) → word size.



000 00000 0010 0011 0001 0010 0000 0010 0000 0001

5 4 3 2 1

9 samples × 4bits = 36bits = 5Bytes.

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

Sample rate: Number of captured samples per second.
Sample: Single recording of sound amplitude.
Depth/bit depth: Number of bits saved per sample. (Resolution)

Sound File Sizing:

Sound file size = Sample rate × Bit depth × Time

- Sample rate: Samples recorded per sec.
- Bit depth: Resolution or depth
- Time: In seconds.

Example:

Sample rate : 1000
Resolution : 16 bits.
Duration : 1 minute

Sound file size = 1000 × 16b × 60 = 960,000 bits = 120,000 Bytes.
1000 × 2B × 60 = 120,000 Bytes.