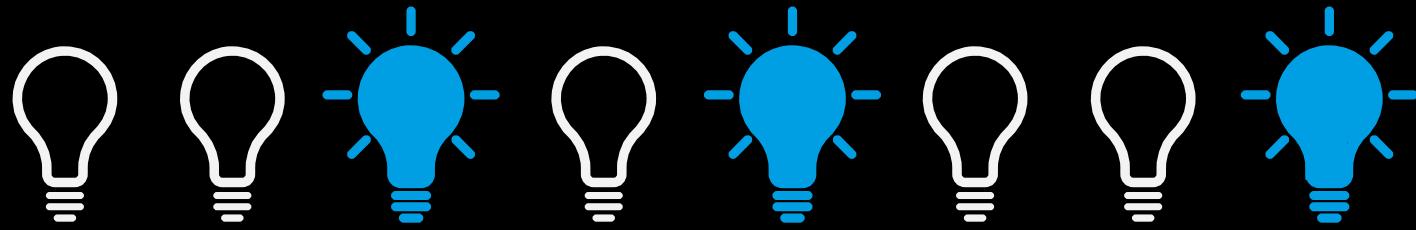
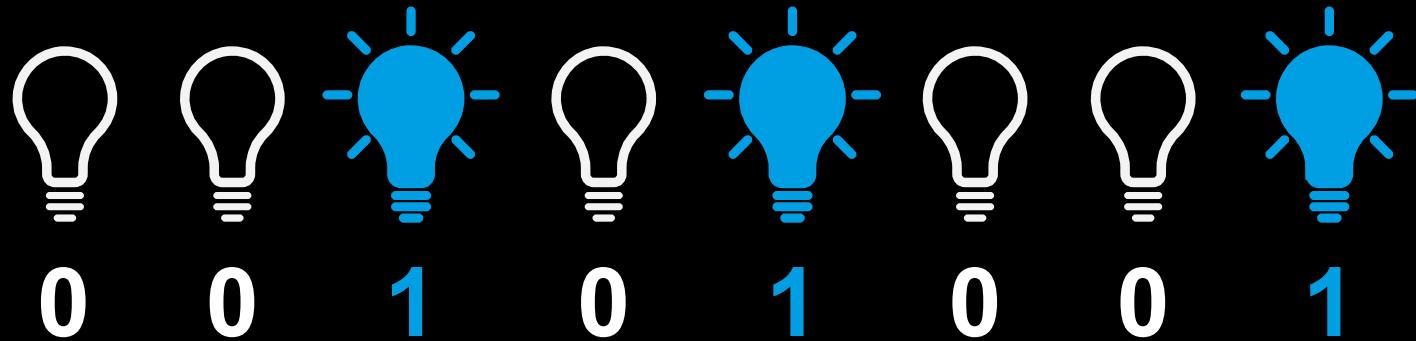


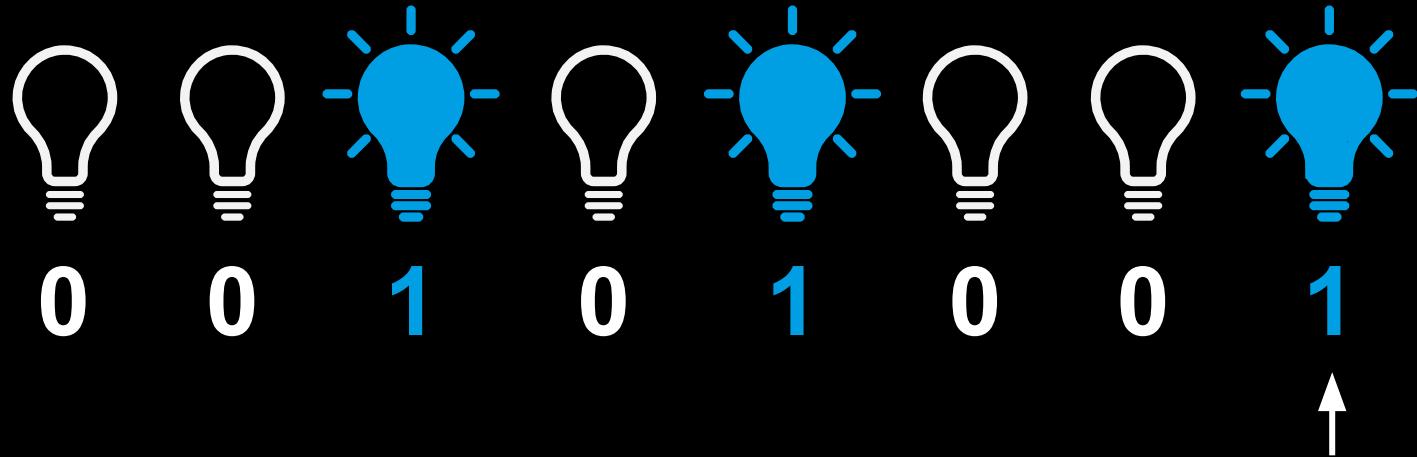
BITS

why do computers think binary?

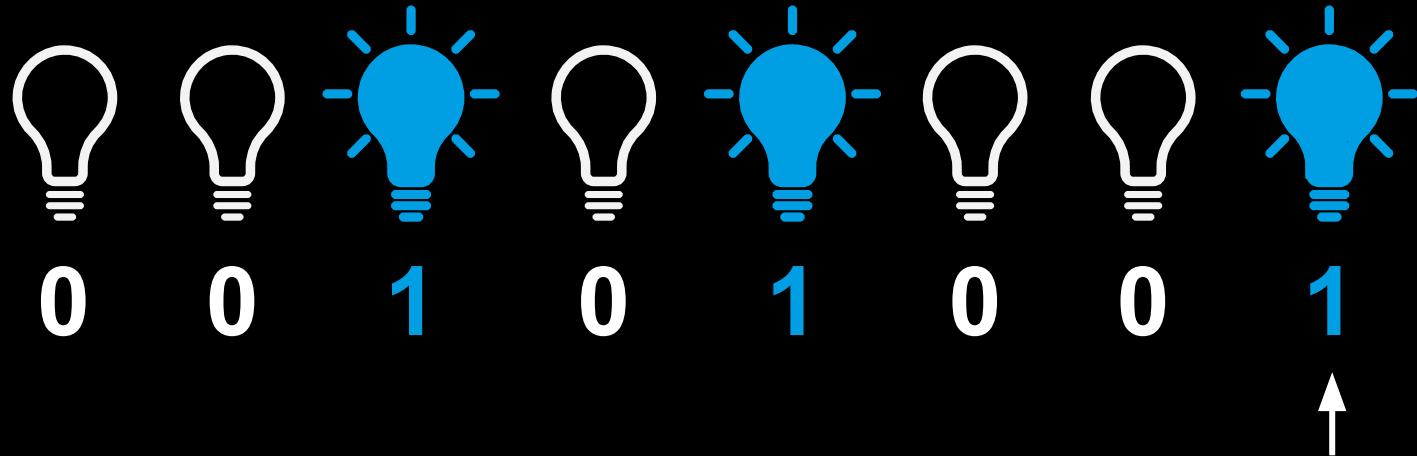








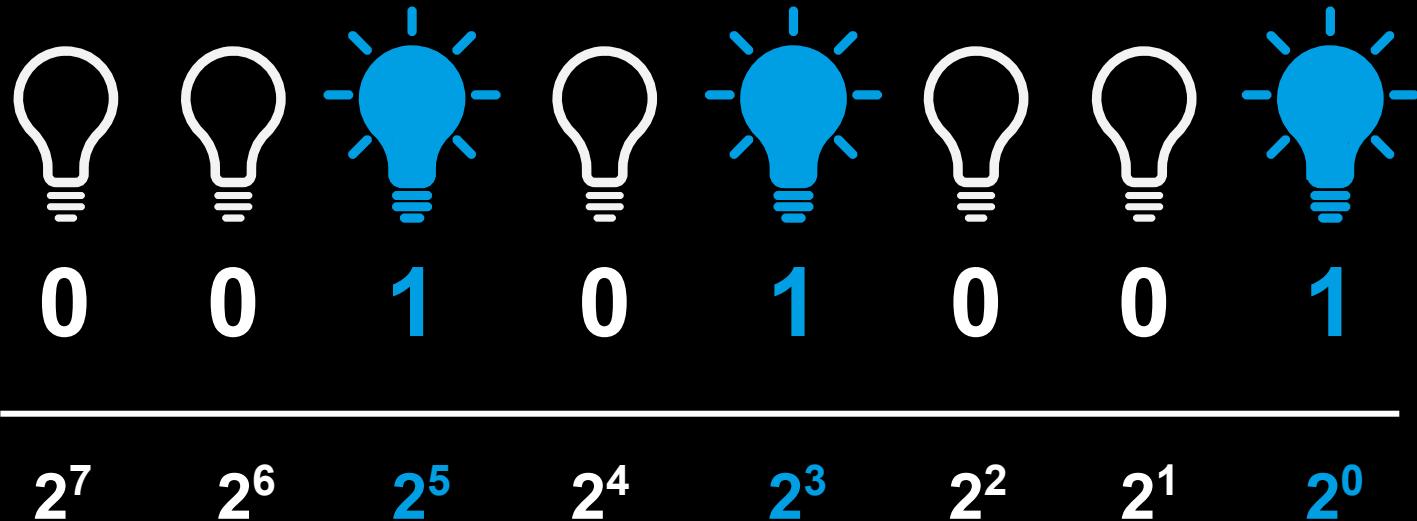
a **bit** (binary digit)

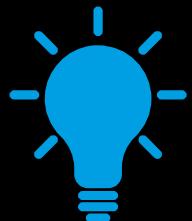
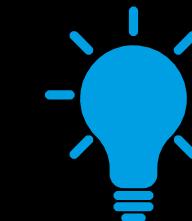
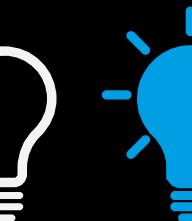


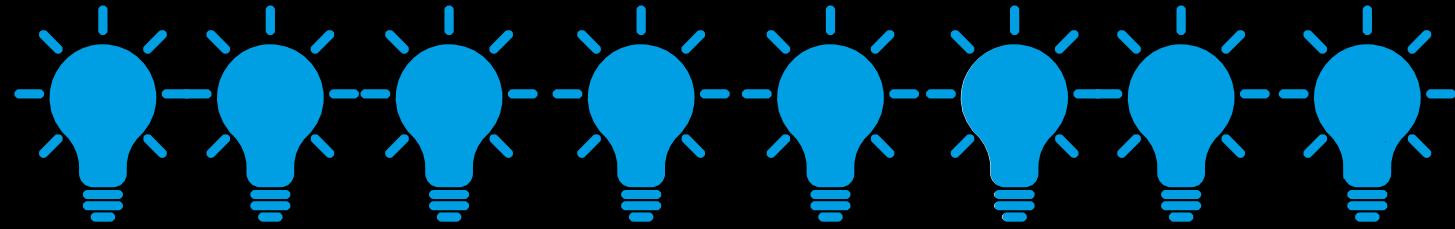
a **bit** (binary digit)

{

a **byte** (8 bits)



							
0	0	1	0	1	0	0	1
<hr/>							
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1



what can we store in one byte?

what comes after the byte?

2^{10} bytes = 1.024 bytes = 1 Kibibyte (KiB)

2^{20} bytes = 1.048.576 bytes = 1 Mebibyte (MiB)

2^{30} bytes = 1.073.741.824 bytes = 1 Gibibyte (GiB)

10^3 bytes = 1.000 bytes = 1 Kilobyte (KB)

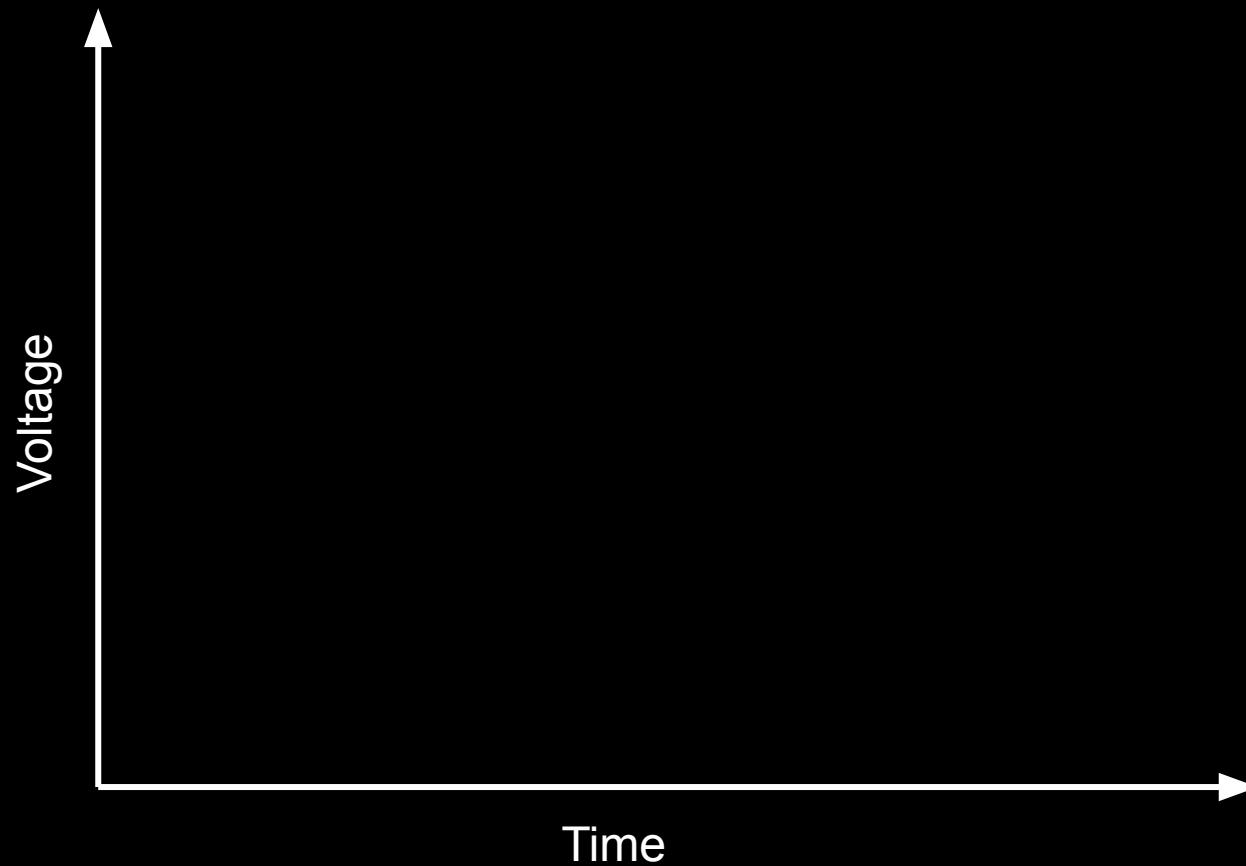
10^6 bytes = 1.000.000 bytes = 1 Megabyte (MB)

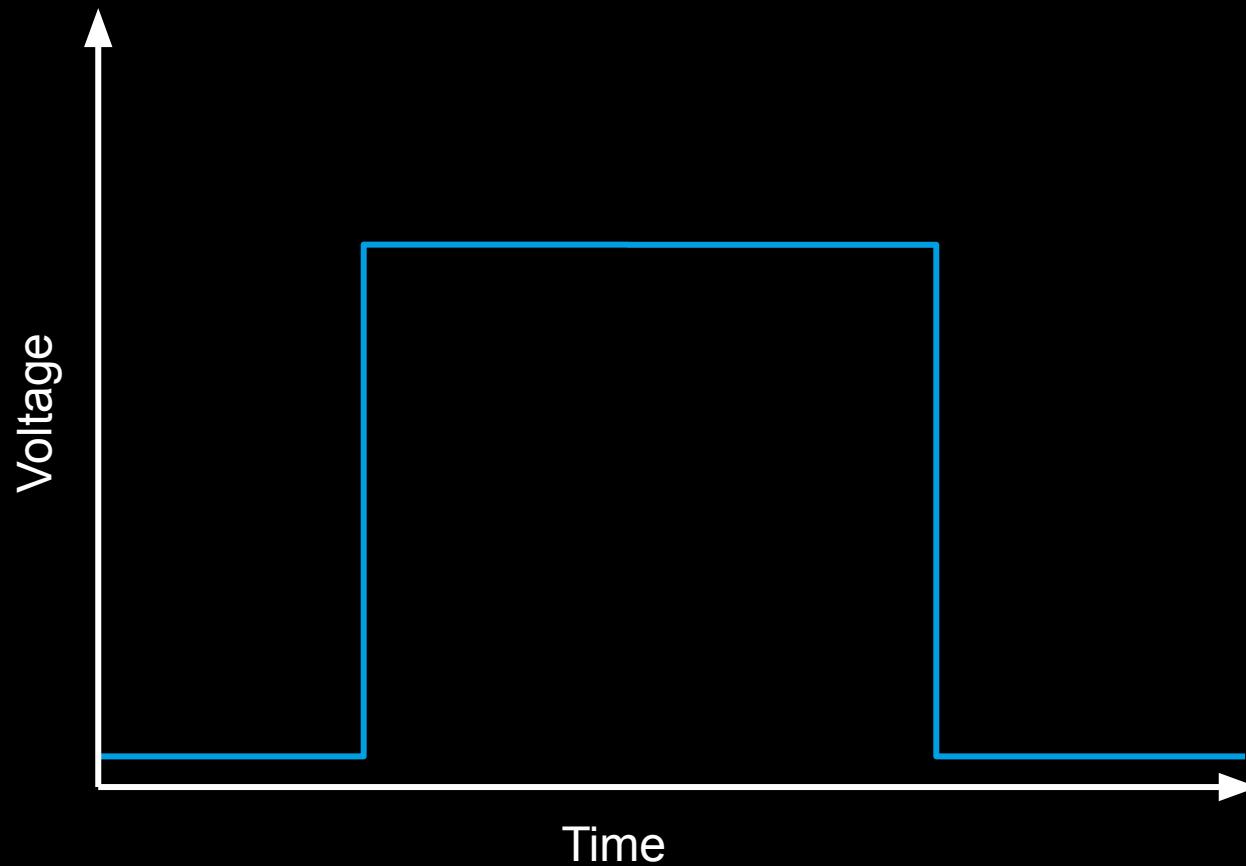
10^9 bytes = 1.000.000.000 bytes = 1 Gigabyte (GB)

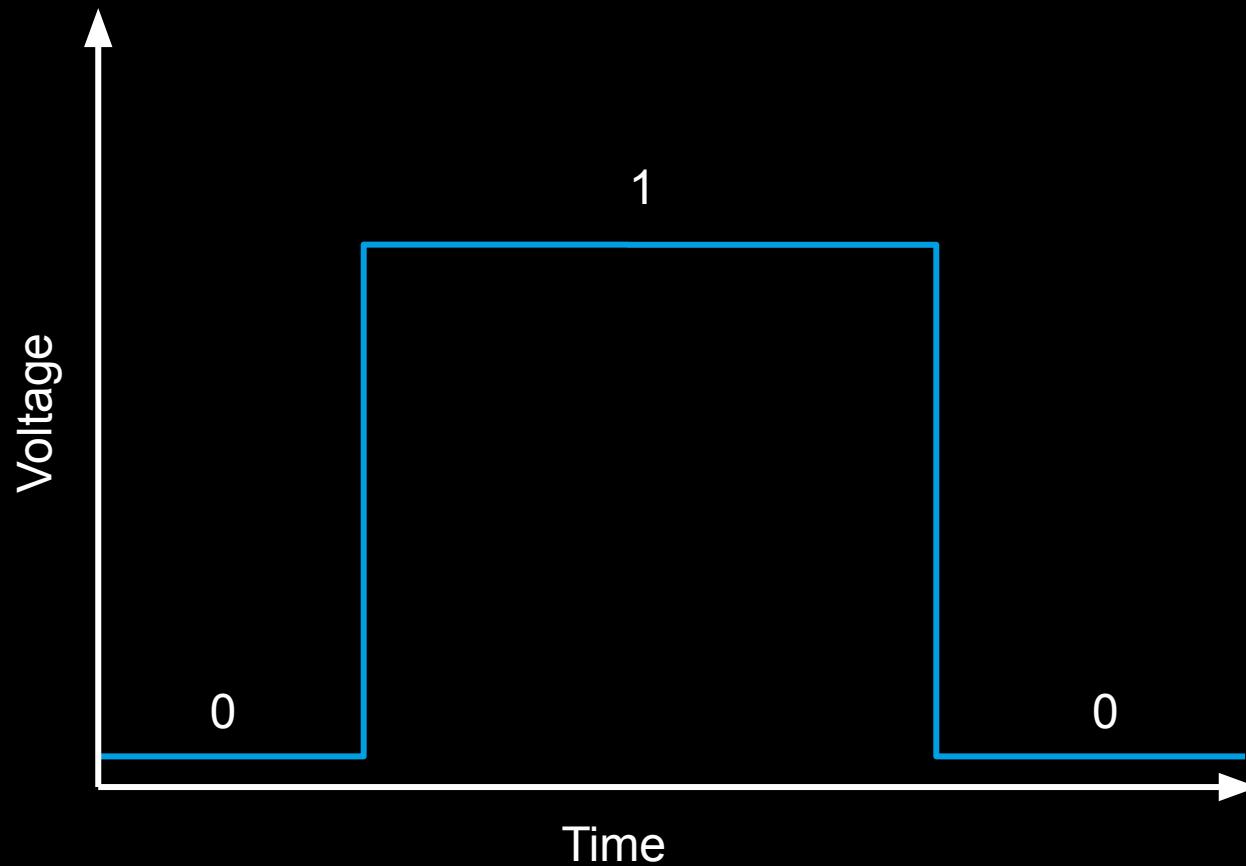
10^{12} bytes = ?

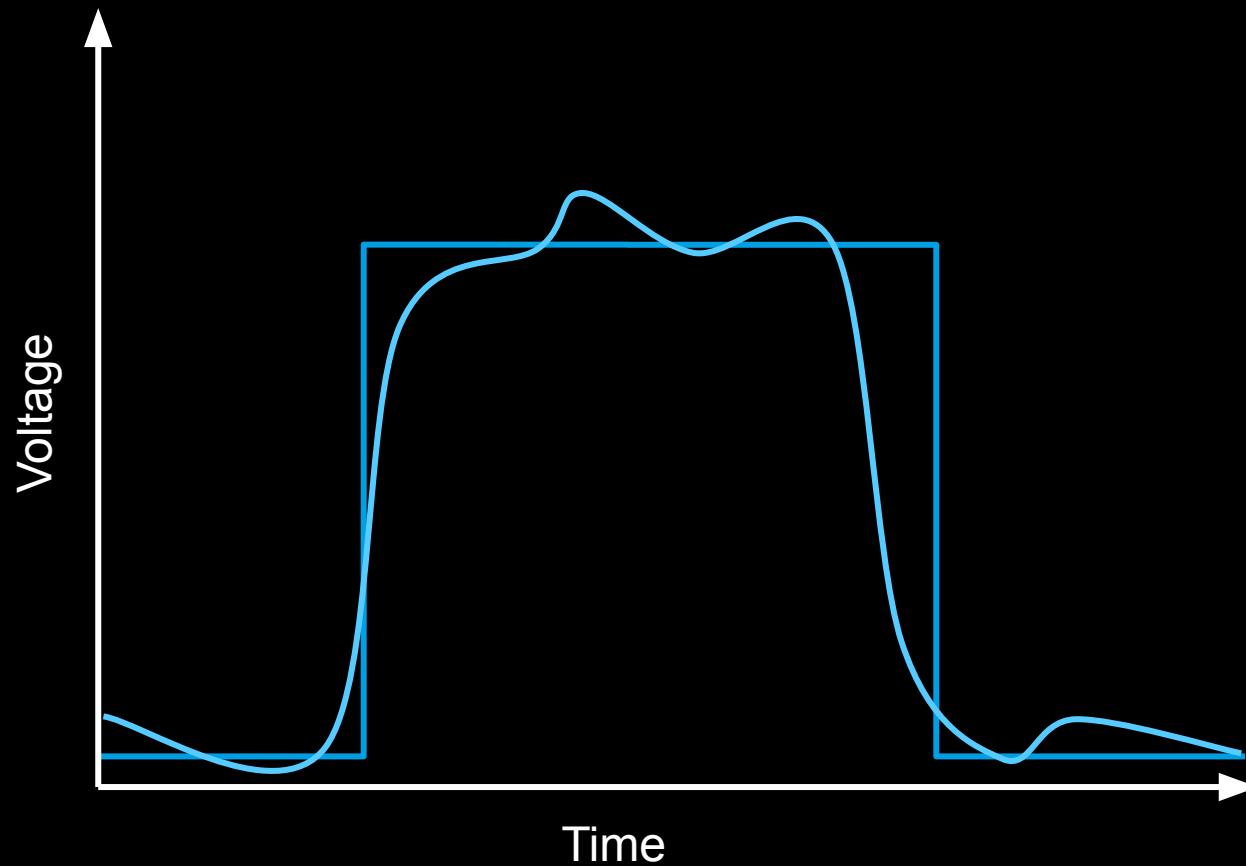
how many bits are on a DVD with
4.7 GB capacity?

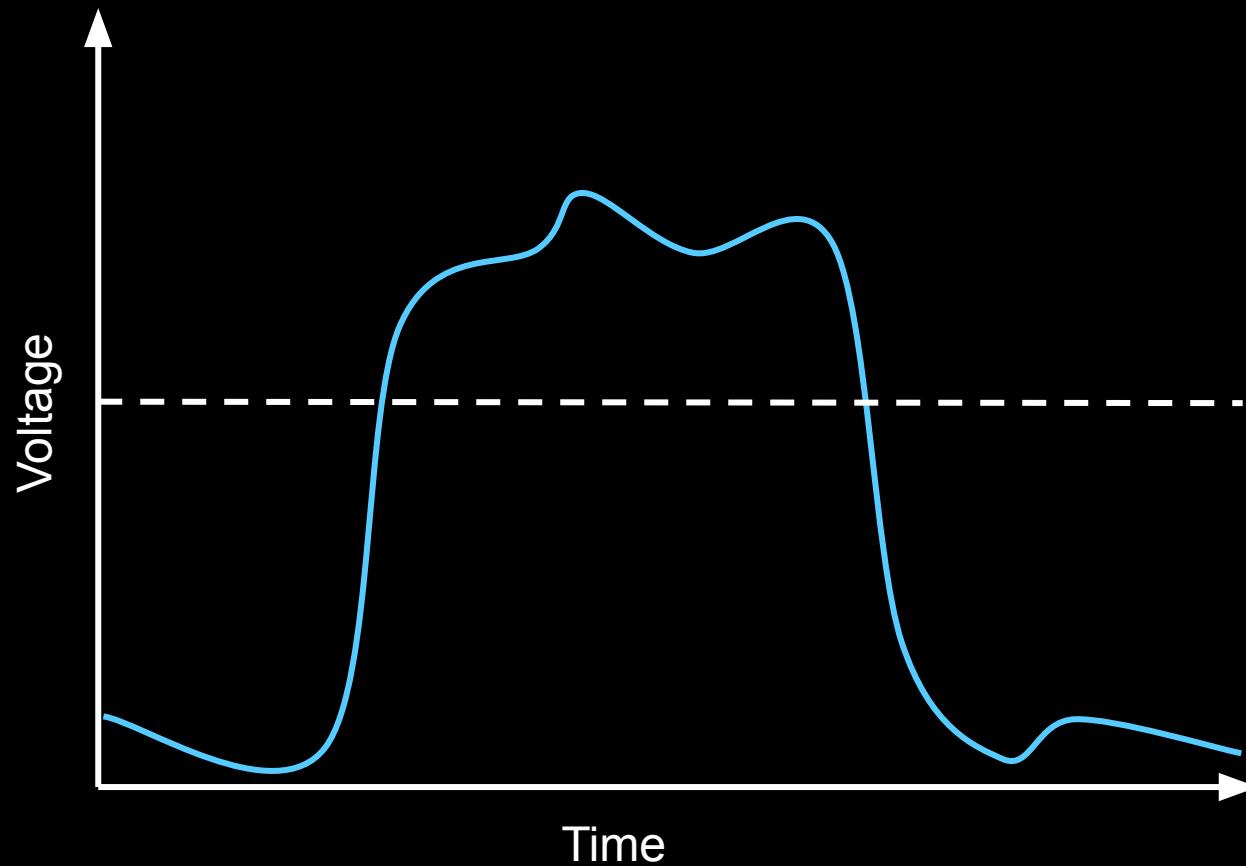
are we stuck with binary?

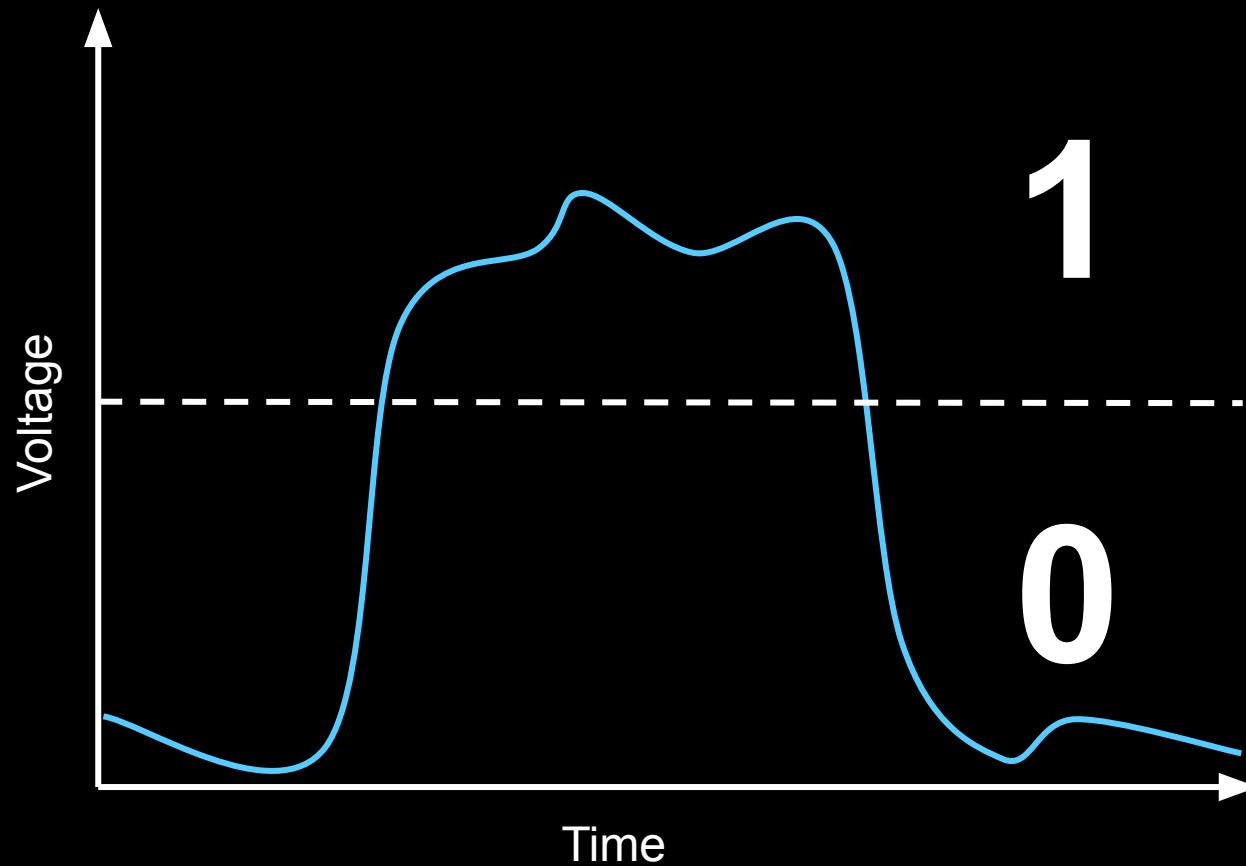


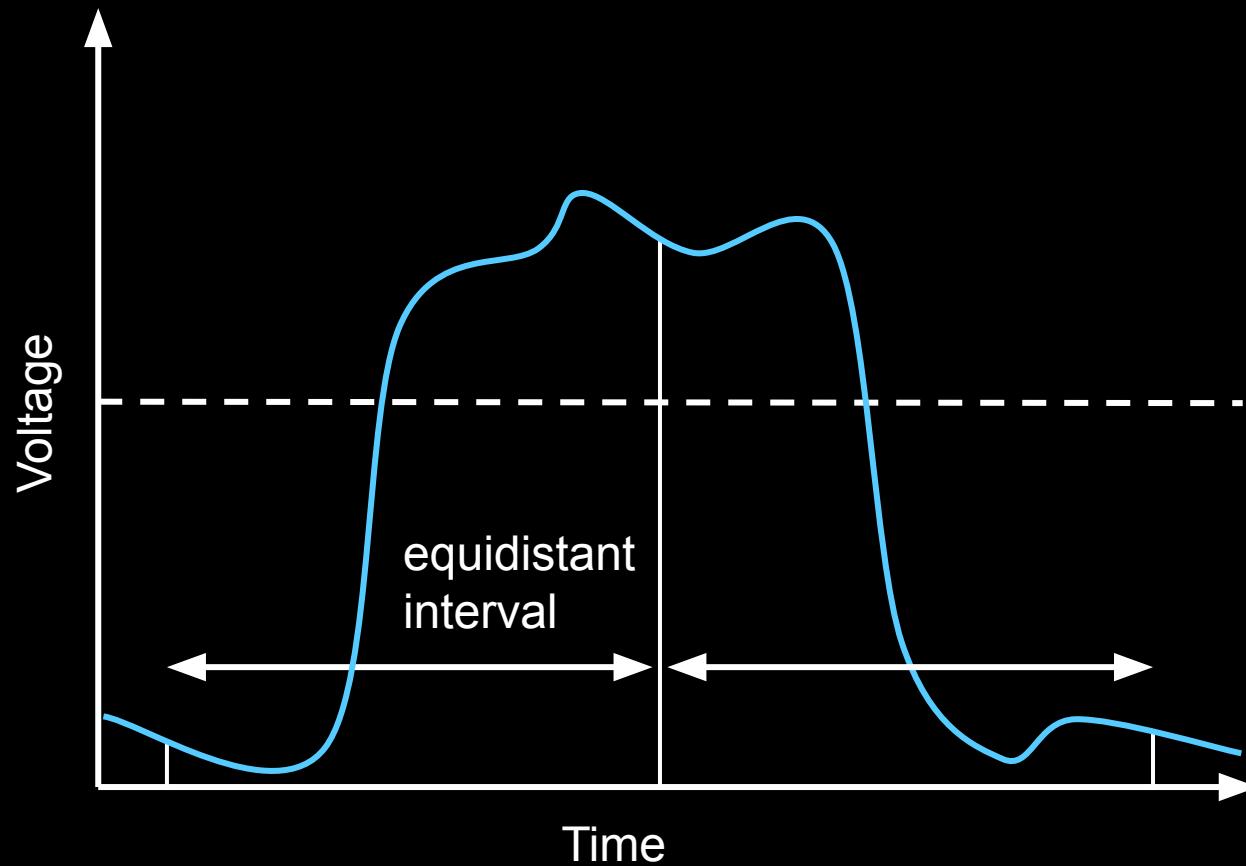


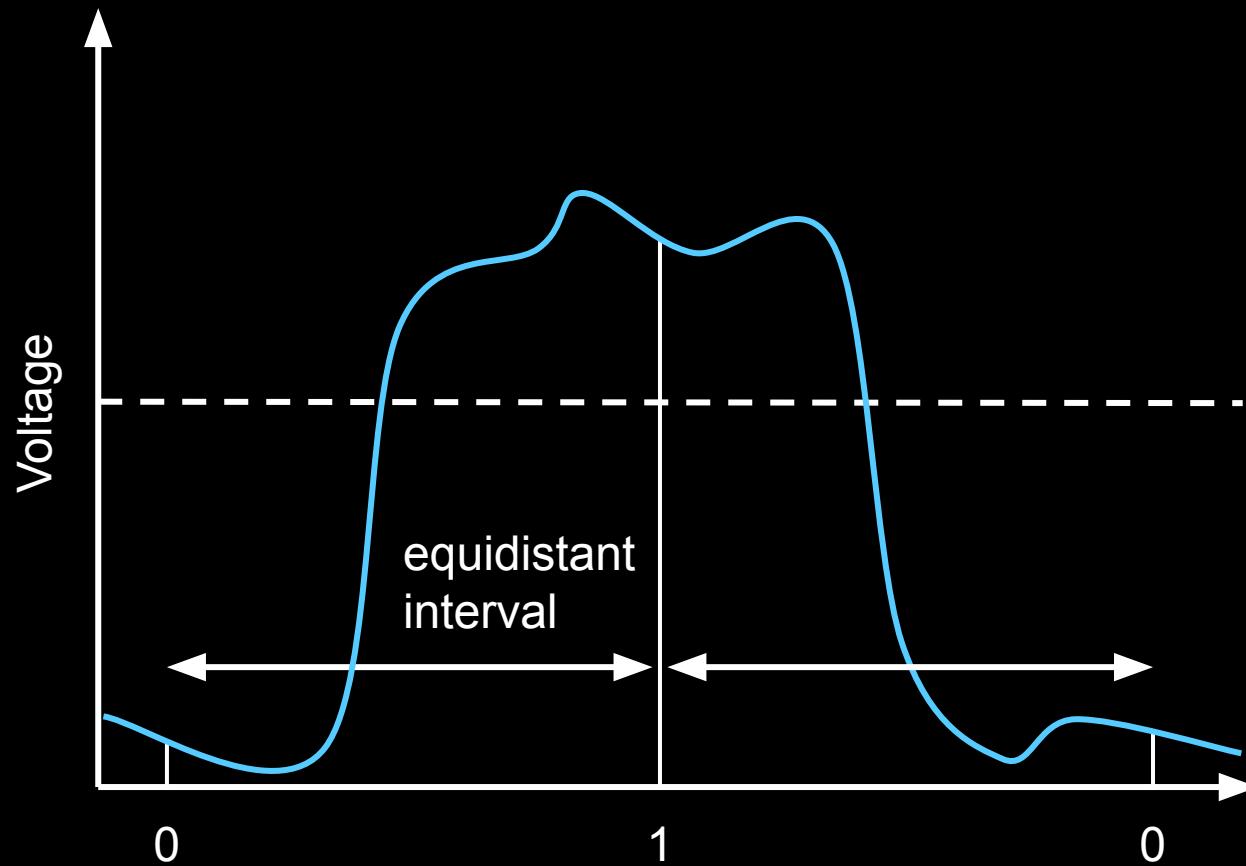


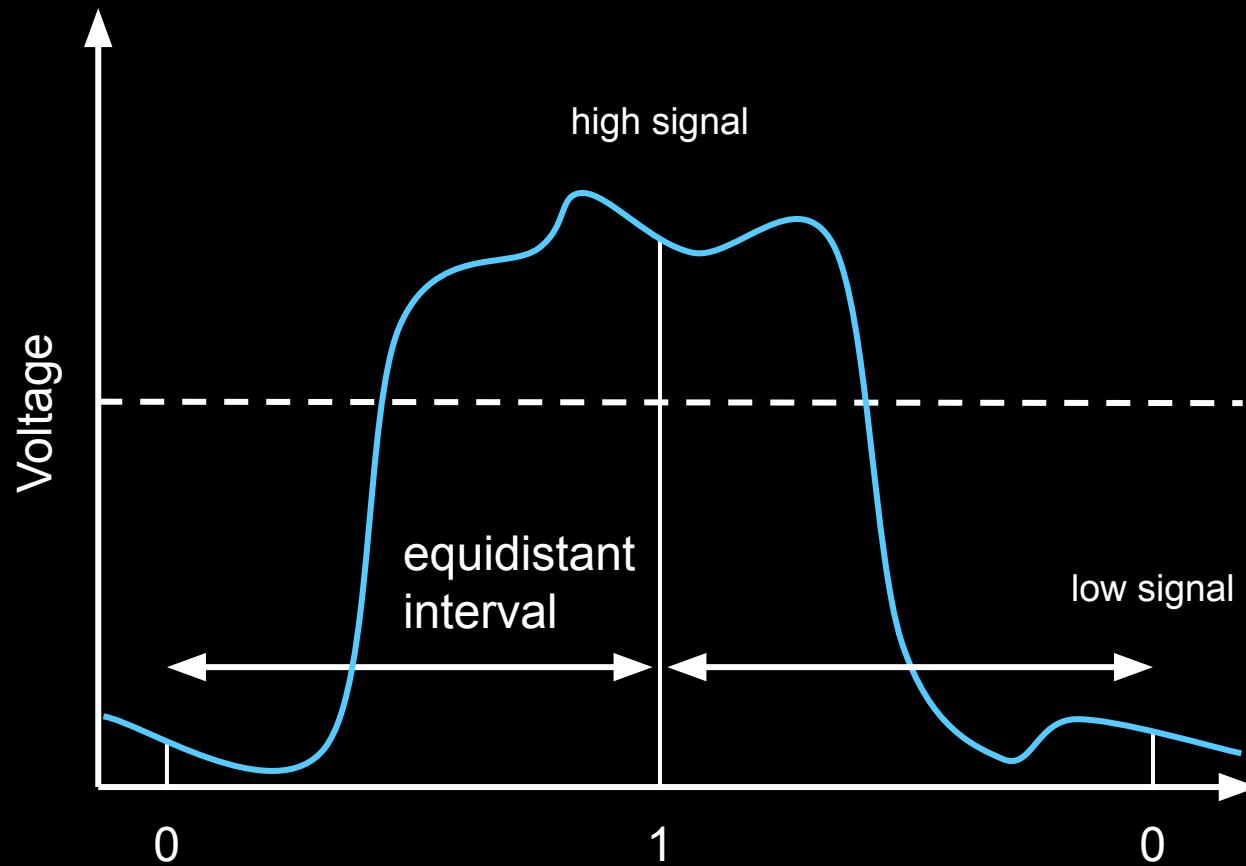




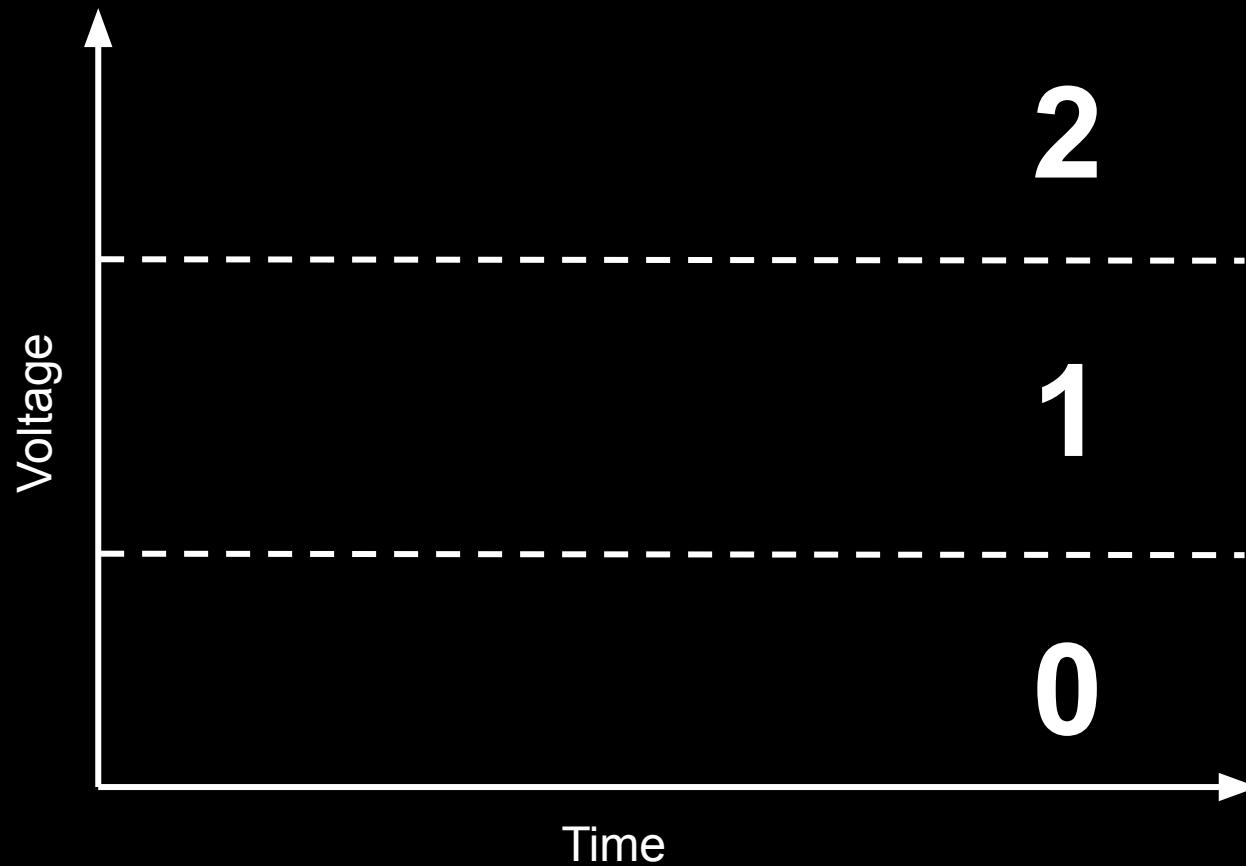


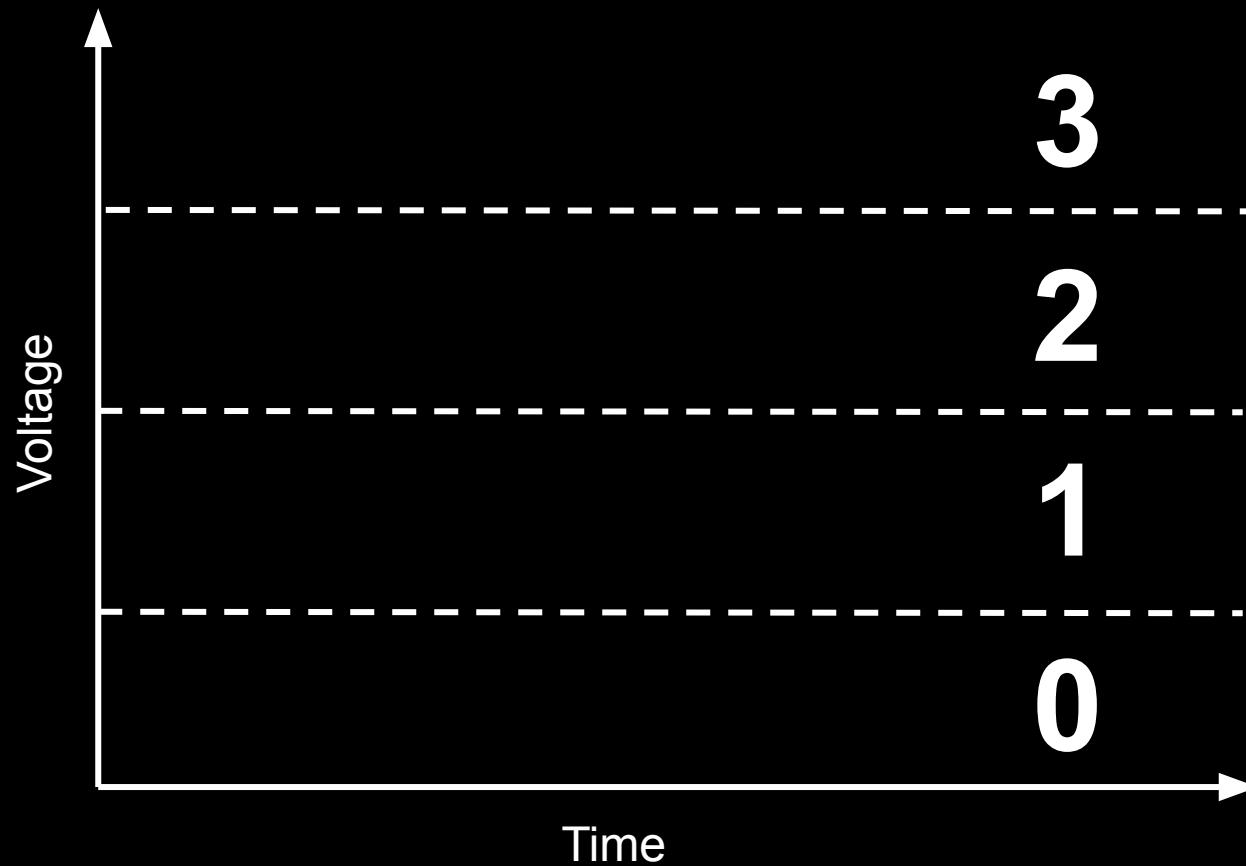


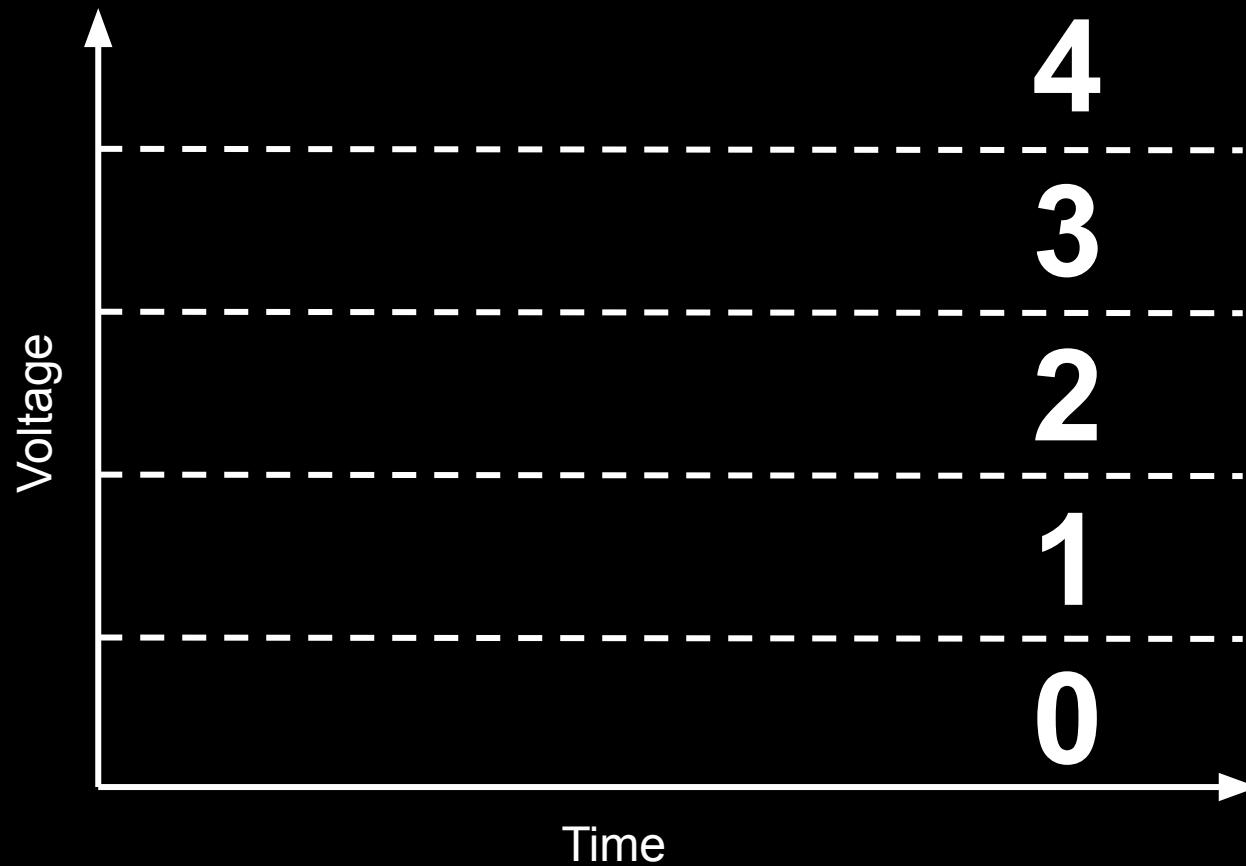


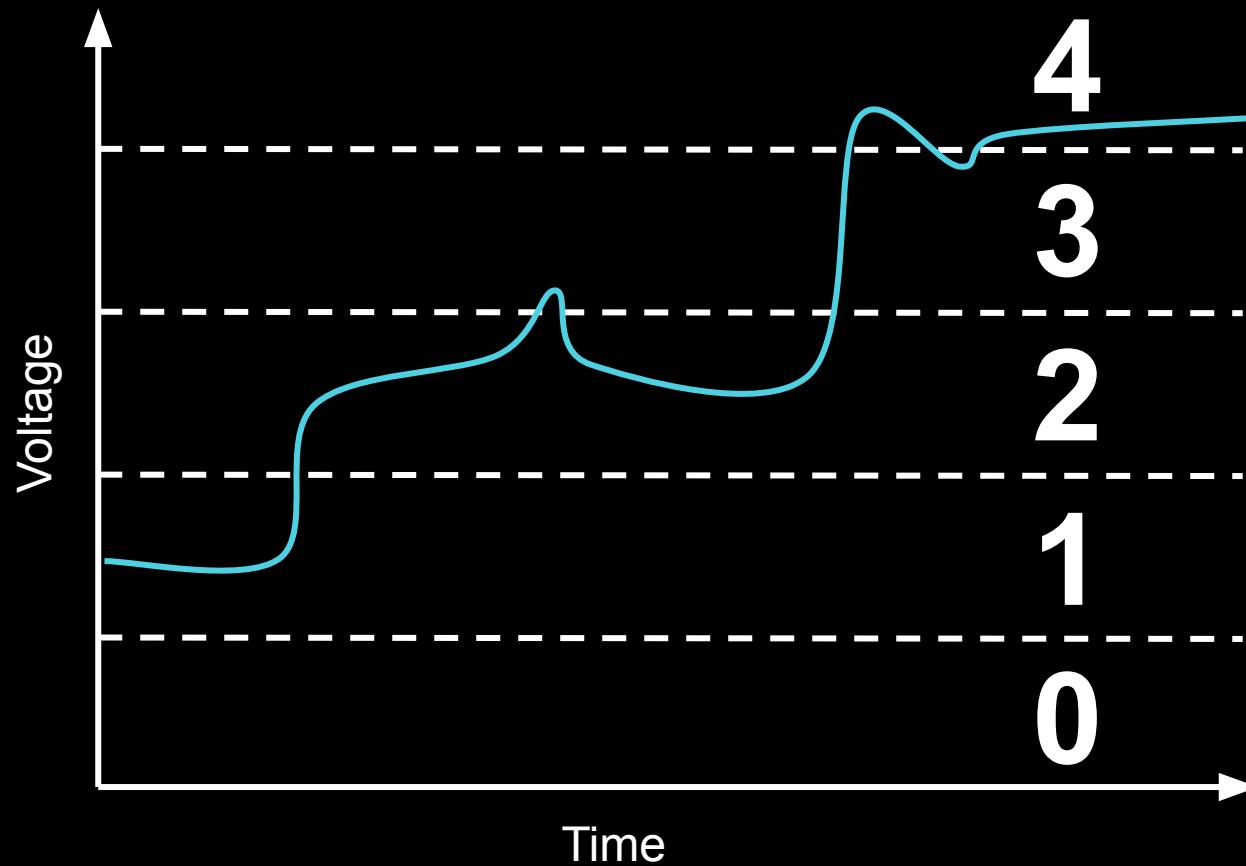


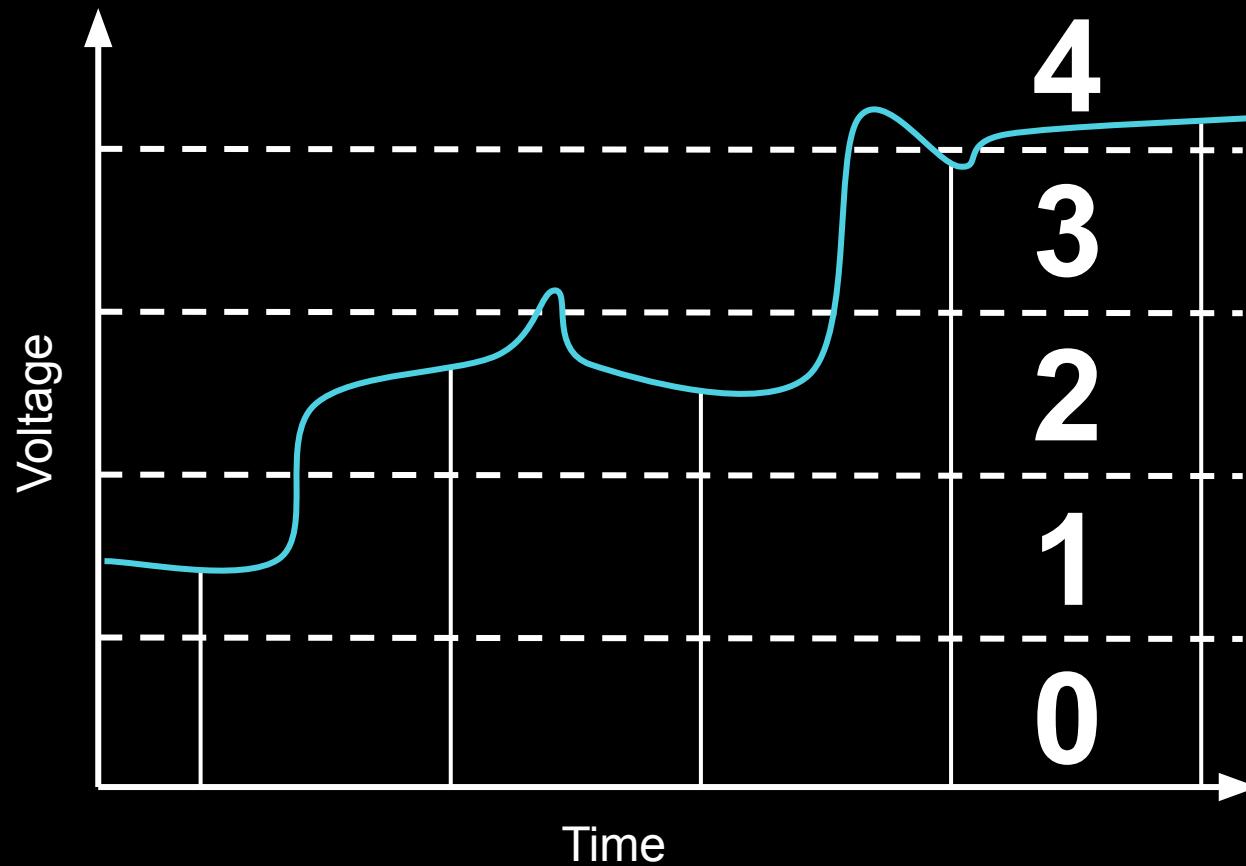
what about $R > 2$?

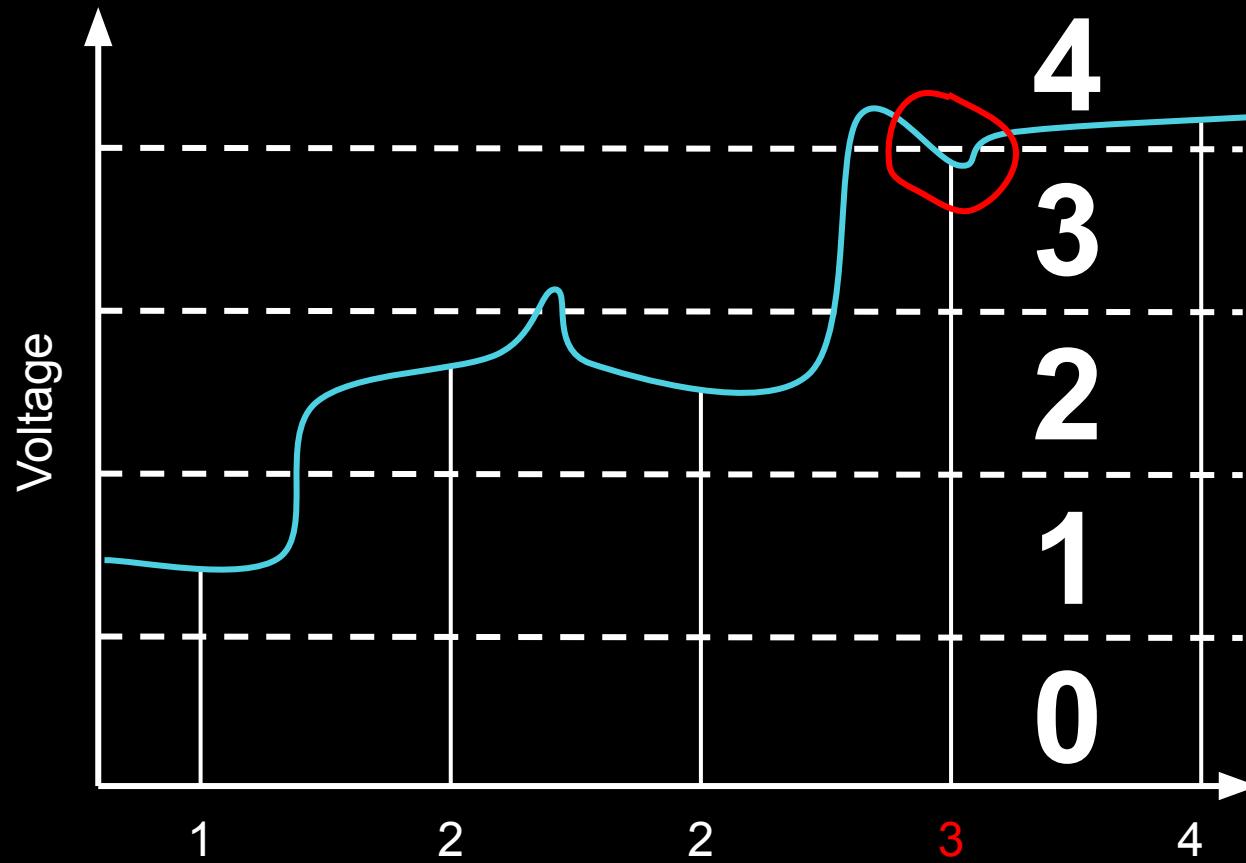












a higher base means less hardware

a higher base means less hardware
but more complex devices

a higher base means less hardware
but more complex devices
and more errors