

Real number:

Scientific notation:



 sign integral part fractional part 10^{exponent}

Example: + 10 . 203 10²

The integral part can always be set to zero.

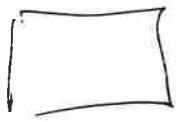
$$+ 10.203 \cdot 10^2$$

$$\hookrightarrow 0.10203 \cdot 10^4$$

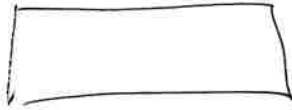
The only information I need to store:

sign
 fractional part
 exponent: 1 bit.

Real numbers:



sign



exponent



fractional part:

32 bit
system

1 bit

8 bits exponent

23 bits for
the fractional part.

64 bit
system

1 bit

11 bits exponent

52 bits for
the fractional part.

II) Representing text

Simpler alphabet: a, b, c, d

a

→

∅

b

→

1

c

→

1∅

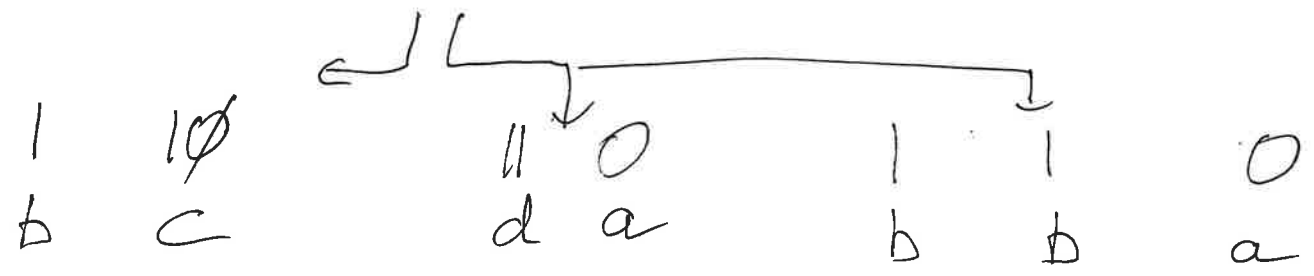
d

→

11

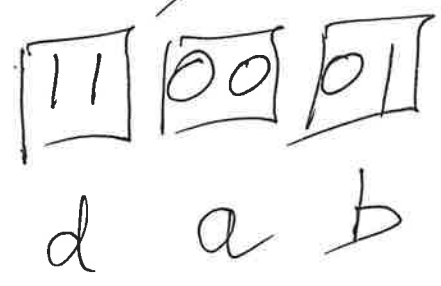
Careful:

if I show you the "text"

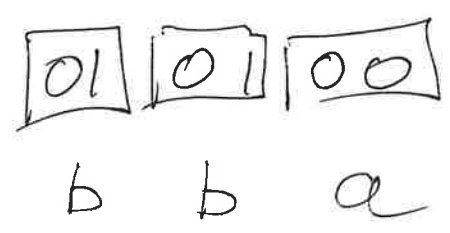


	<u>naive</u>	real
a	0	00
b	1	01
c	10	10
d	11	11

with this representation,
the "wad"



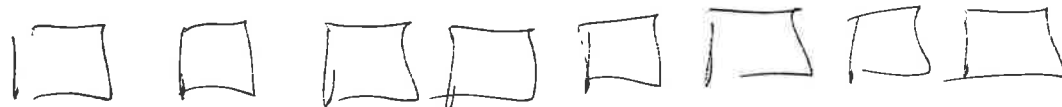
the "wad"



Convention for English:

(4)

We use up to 255 different characters: ASCII

255 

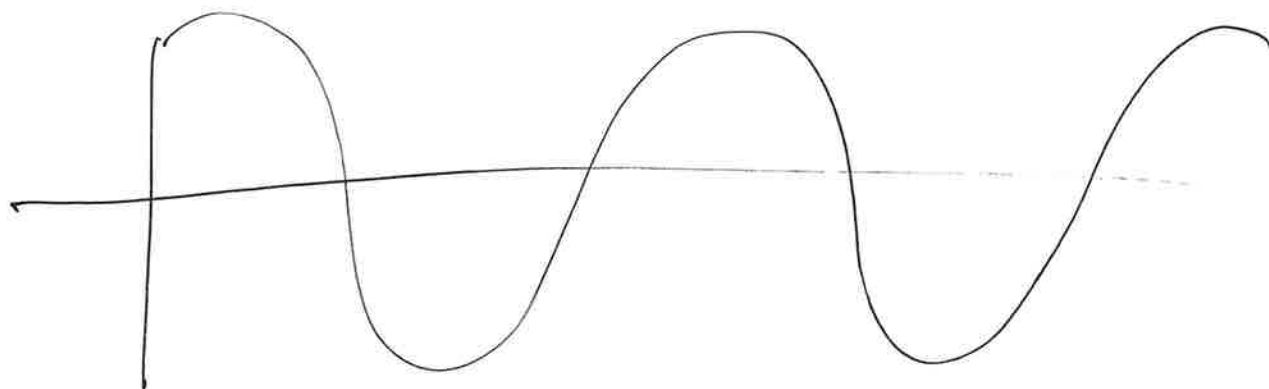
"New convention": UNICODE

$\approx 150,000$ characters
in UNICODE.

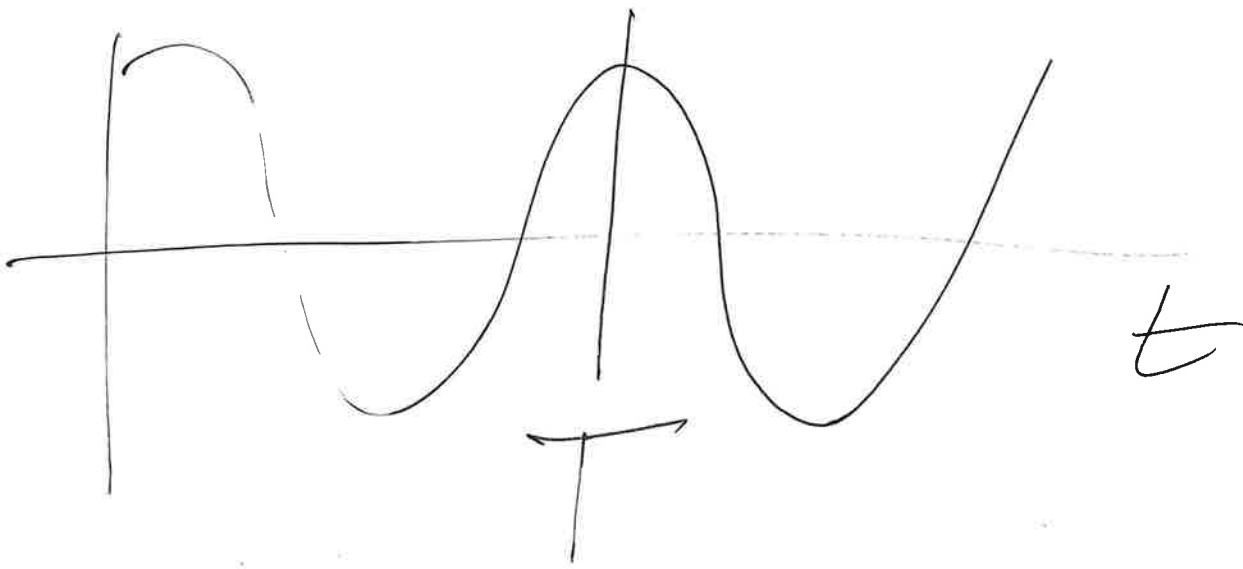
How many "numbers" can you represent
on N bits: 2^N

III Sound

A sound is a wave:



⑤



periodic function of time.

repeats itself.

T : length of time.

$\frac{1}{T}$: frequency f .

f : number of periods within 1 second.
Unit: Hz .