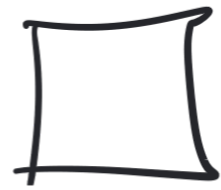
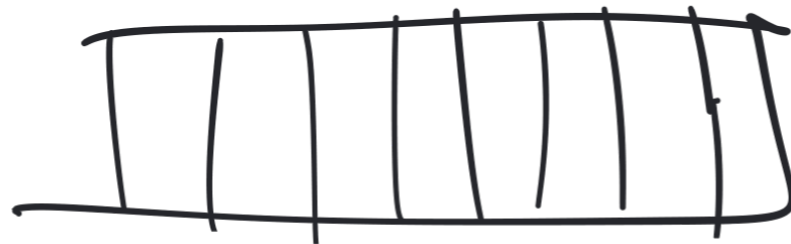


Bit: "binary digit"



← can contain
a 0 or a 1

Byte: 8 bits



Fred Brooks

"The Mythical
Man-Month"

Character encodings
(how do you store a
character as a
sequence of bytes)

ASCII

American Standard
Code for Information
Interchange

1 byte = 8 bits

How many different
bit patterns can you
have in 1 byte?

00000000
⋮
01011010
⋮

} $2^8 = 256$

ASCII $128 = 2^7$ (7-bit characters)

Coming

Unicode

UTF-8

Binary

128 64 32 16 8 4 2 1's
0 1 0 0 1 0 1 1
 2^3 2^2 2^1 2^0 two

$$64 + 0 + 0 + 8 + 0 + 2 + 1$$

$$= 75_{\text{ten}}$$

$$95_{\text{ten}} = ?_{\text{two}}$$

Biggest power of 2 ≤ 95

$$\begin{array}{r} 64 \\ + 31 \\ \hline \end{array} = \begin{array}{r} 64 \\ + 16 \\ + 15 \\ \hline \end{array} = \begin{array}{r} 64 \\ + 16 \\ + 8 \\ + 4 \\ + 2 \\ + 1 \\ \hline \end{array}$$

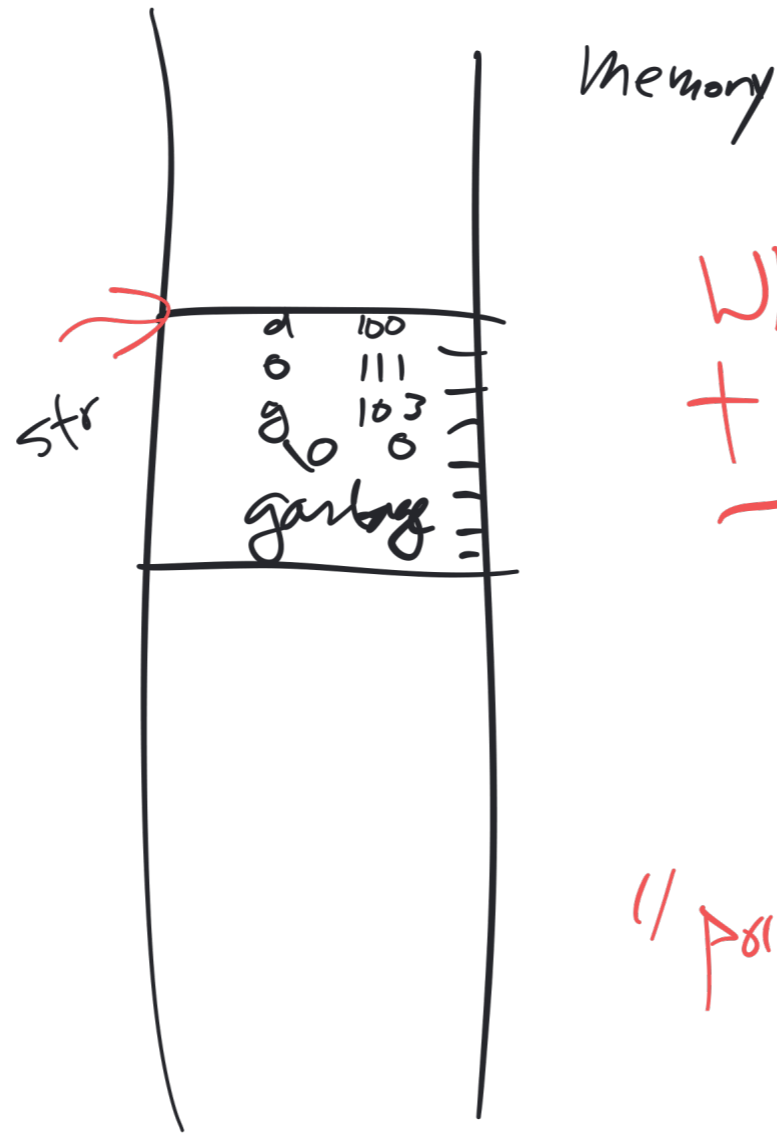
$$\begin{array}{cccccccc} 1 & 0 & 1 & 1 & 1 & 1 & 1 & 1 \\ \text{\$4} & 32 & & & & & & \text{two} \end{array}$$

01011111 two = 95 ten

5 F hexadecimal
16's place ones place sixteen

0 1 2 3 4 ... 9 A B C D E F
↑
15

char str[8] = "dog";



What is the
type of str?

char *

"pointer to a
char"

char const *

←
str doesn't
change

const char *t = "cat";

the string
itself can't
be
changed

