* So how large each of the data types, typically, is in C?

MEMORY

BOOLEAN VALUE — 0 or 1 — 1 byte
T or F

CHAR — 1 BYTE OR 8 BITS

INT — 4 BYTES OR 32 BITS

FLOAT — 4 BYTES OR 32 BITS

LONG — 8 BYTES OR 64 BITS

STRING — ? BYTES (just for today)
it depends.

RAM memory → each of these little black chips on this circuit board, the green thing, these little black chips are where 0s and 1s are actually stored.

If this is like, 1GB of memory, for the sake of discussion, it stands to reason that, if this thing is storing 1 billion bytes, 1 gigabyte,

then we can number them, arbitrarily.

Maybe this will be byte 0, 1, 2, 3, 4, 5, 6, 7, 8, ... and maybe down in the bottom is byte number 1 billion. We can just NUMBER these things or might be our convention. So, graphically, we have somethings like that:

the data is taking up some number of bytes. So if you're storing a CHAR in a computer's memory, which uses 1 byte, it might be stored at this top left-hand location of this black chip of memory.

If you were to store something like an integer that uses 4 bytes, as well, it might use 4 of these bytes but they're going to be contiguous, in this case.

If you were to store a LONG or a DOUBLE, you might, actually, need 8 bytes. So I'm filling in these squares to represent how much memory one given variable of some data type would take up.

So memory as being a grid... Or like a canvas that we can paint any types of data onto that we want. At the end of the day, all of this data is just going to be 0s and 1s.

But it's up to you and I to build abstractions on TOP of that things like actual numbers, colors, images, movies and beyond.

→ So I have a program that needs 3 integers.
↳ SCORES.C and (3), I need to convert to FLOAT.
(%f) So I divide for 13.0 I'm treating float as a float now...
YES! ok now it's correct.

But... if you ever want to have to take the average of any number of scores other than 3? So it turns out, there are better ways, in languages like C, if you want to have multiple values stored in memory that happened to be of the same data type.

What's really being stored in the computer's memory are patterns of 0s and 1s ∀ 32 total because 4 bytes = 32 bits (32 0s or 1s).

But there might be a better way to store many more by declaring 1 variable to store all of them instead 3|4|5 or more individual variables.
↳ ARRAYS !!