

RAM: Random Access Memory

- We use RAM to store Runtime data.
data Structure

What is data Structure?

Structuring of data { in Storage || RAM }
Permanent Storage Runtime Storage

- This data Structures are stored in RAM during Program Runtime.

- Examples of data Structures are

→ Int {1, 2, 3, -5, ...}

→ float {1.1, 3.8, ...}

→ Char {a, b, c, ..., \$, %, #}

→ User build { Gender class }

Male, female, others
data Structure !!

- It is very common for RAM to come in 4GB, 8GB, 12GB, 16GB, 32GB, ...

8 GB

↓ ↓

Giga Byte = 8 bits

||

$10^9 \approx$ Billion ↓

1 bit

Griga

Byte

8 bits

$10^9 \approx \text{Billion}$

1 bit is either
0 or 1.

- 0 means low Voltage
- 1 means High Voltage

Computer Works
with low & high
Voltages.

To store, for example, $\{1, 7\}$ in bits ...

- 1 (integer : takes 4 bytes)

A diagram of a 32-bit register. It consists of 32 circles arranged in a horizontal row. The first 31 circles are white, and the last circle is red. A red bracket underneath the first 31 circles is labeled "31 zeros, 31 bit". A red arrow points to the last circle, which is labeled "1".

- 7 $(2^n \dots \dots \dots 8 \quad 4 \quad 2 \quad 1) \rightarrow$ bits are in form of 2^n .
 $00 \dots \dots 111$
29-zeros

How Arrays are Stored in RAM?

- Array is a contiguous block of data.

1	7	11
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Mostly integers
are stored in
bytes of 4.

Value		1	7	11	
Address		\$0	\$4	\$8	

+4 +4

a	b	c
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Mostly ASCII
Characters are
stored in 1
byte.

Value		a	b	c	
Address		\$0	\$1	\$2	

+1 +1