

Pointers

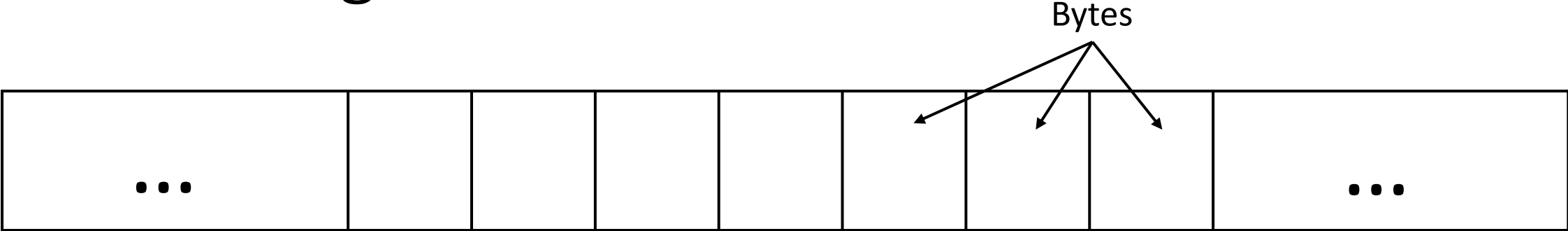
Computer Memory

- Random Access Memory (RAM)
 - The time it takes to access a given element in RAM is the same for any other random element in memory
- Store data for running programs
- All variables and arrays are stored in RAM
- Every byte (group of 8 bits) in memory has an address
 - Like one big array where each address is an index to a byte of storage space
- In C we can get the address of a variable using the & operator (address operator)

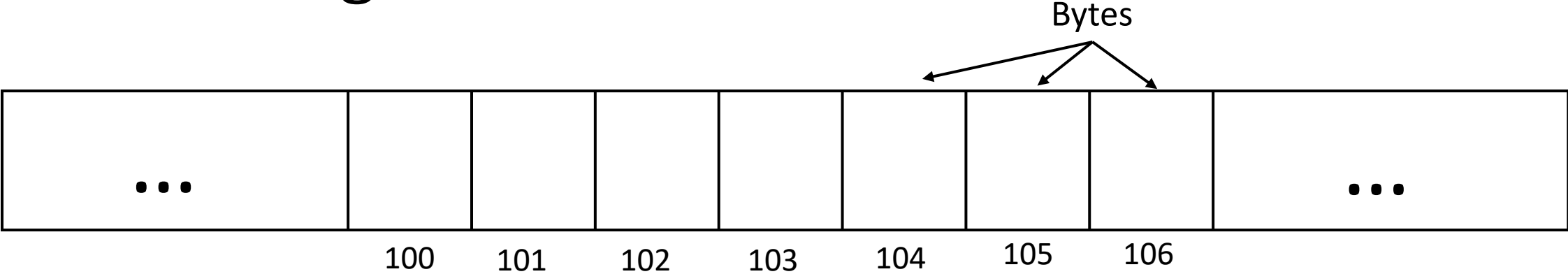
Addressing in RAM



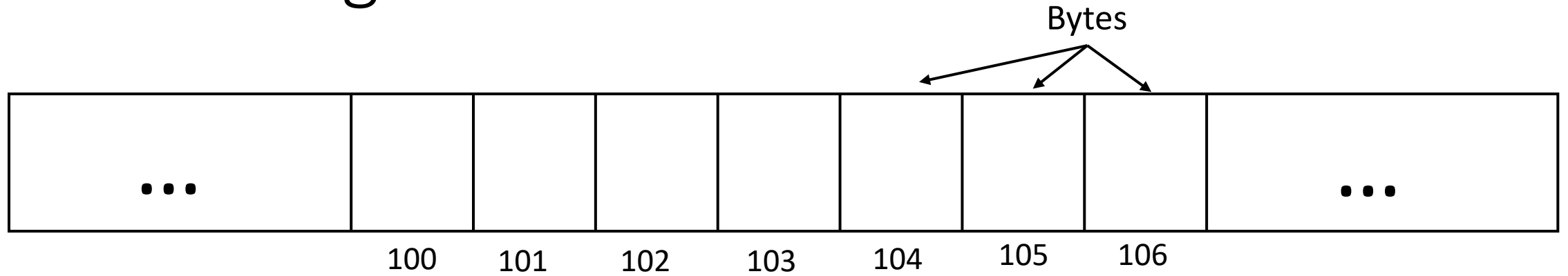
Addressing in RAM



Addressing in RAM

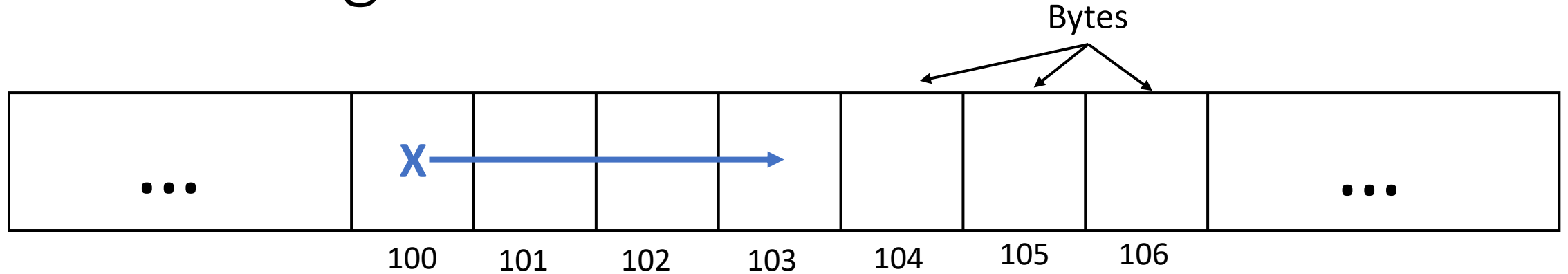


Addressing in RAM



```
int x;
```

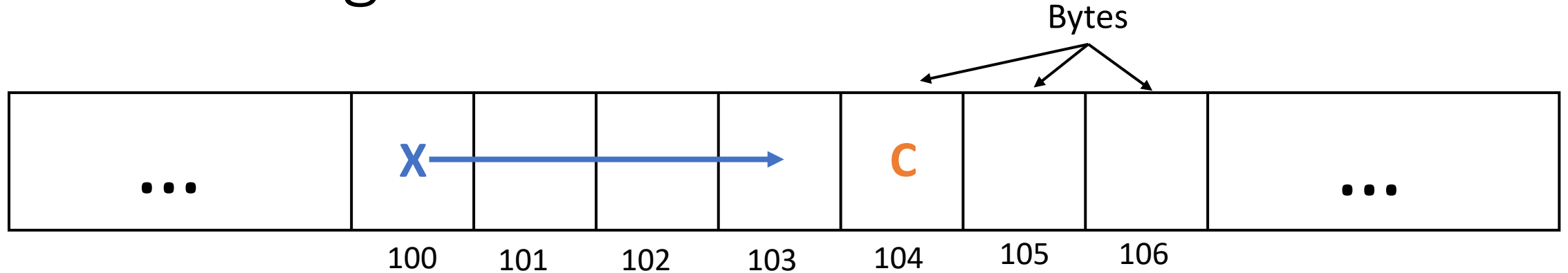
Addressing in RAM



`int x; // 32 bits or 4 bytes`

Assuming `x` is stored at 100.

Addressing in RAM



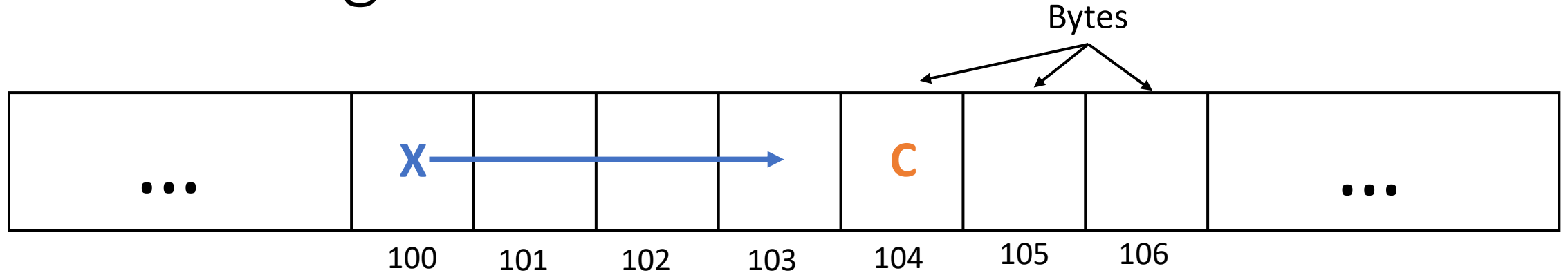
`int x; // 32 bits or 4 bytes`

Assuming `x` is stored at 100.

`char c; // 8 bits or 1 byte`

Assuming `c` is stored at 104.

Addressing in RAM



`int x; // 32 bits or 4 bytes`

Assuming `x` is stored at 100.

`char c; // 8 bits or 1 byte`

Assuming `c` is stored at 104.

NOTE: Variables can be stored at any address, and in most cases, we do not have to worry about what specific address number is used.