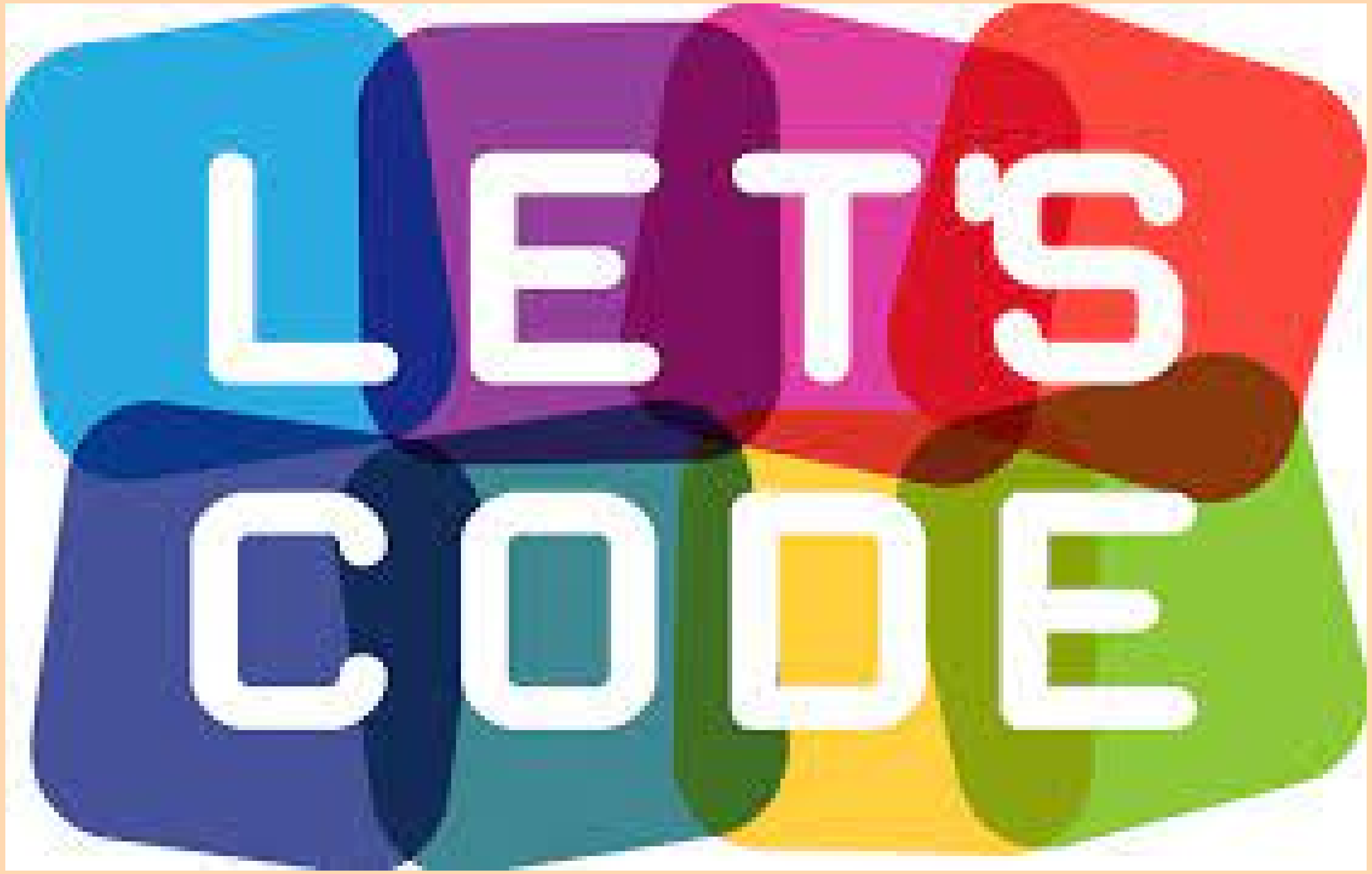
7. Pointers and Arrays

Hengfeng Wei (魏恒峰)
hfwei@nju.edu.cn

Nov. 15, 2024

Pointers and Arrays (7 sentences = 4 + 3)

Dynamic Memory Management



pointer.c **selection-sort.c** **pointer-array.c**

Pointers ≈ (typed) Addresses

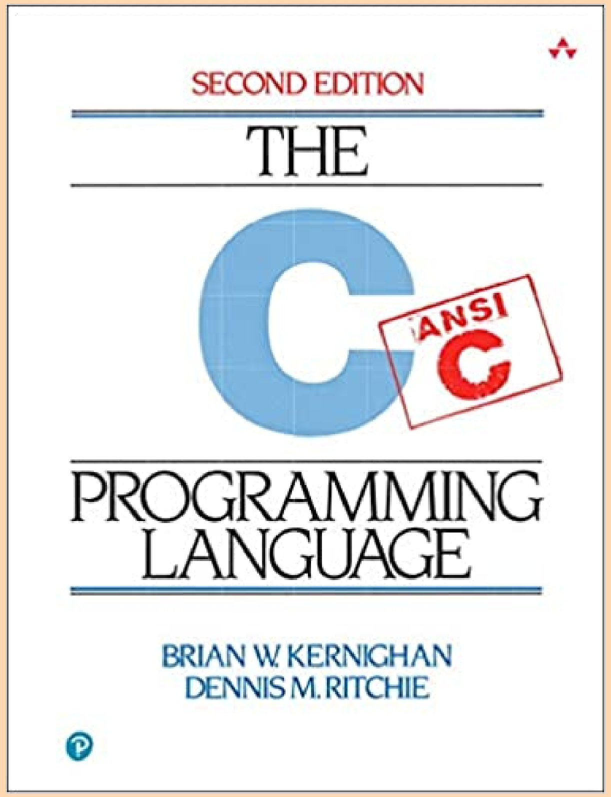
Manipulate variables through pointers indirectly

Variables (pointer.c)

A **variable** has its ***type***, ***value***, and ***address***.

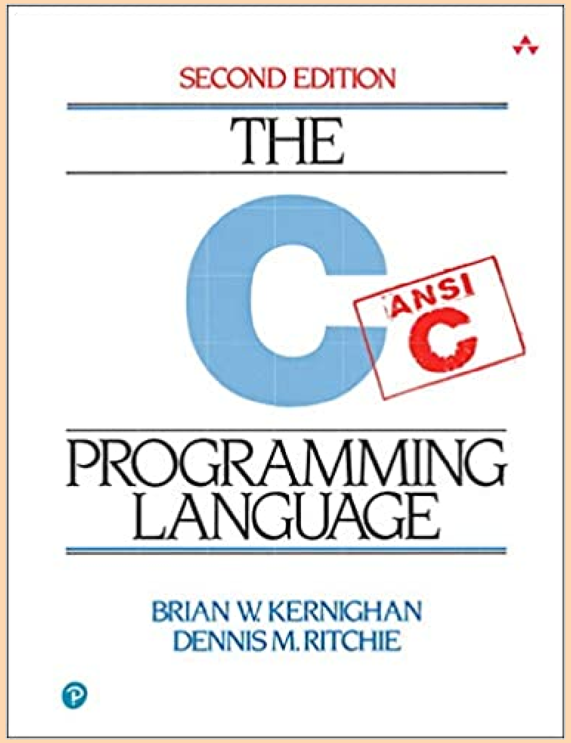
A **variable** can be used as a ***lvalue*** or a ***rvalue***.

"A ***pointer*** is a ***variable*** that contains the ***address*** of a variable."

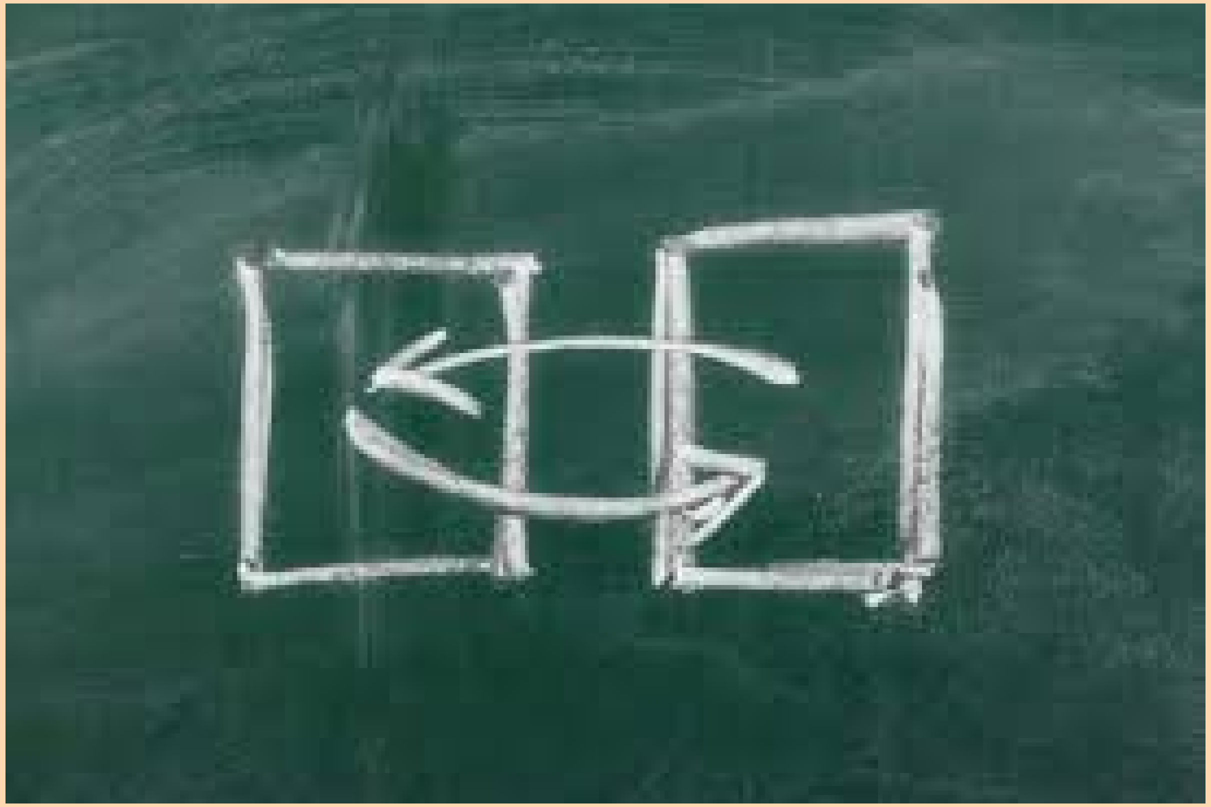


```
int *ptr = &var;
```

"****ptr*** can occur in any context where ***var*** could"



Swap (selection-sort.c)



Pointers and Arrays (selection-sort.c)

In ***expressions***, the ***name*** of an array is a synonym for the ***address of its first element***.

Pointers and Arrays (selection-sort.c)

arr[i] is an ***lvalue***.

Pointers and Arrays (selection-sort.c)

But an ***array name*** is **NOT** a ***variable***.

(***unmodifiable lvalue***)

Dynamic Memory Management (selection-sort.c)

void *malloc(size_t size);

void free(void *ptr);

SEE
YOU
NEXT
WEEK