

# Pointers

## C Reference

### &, \* and pass-by-pointer

A pointer 指针 stores the address 地址 of a variable. `&x` gives the address of `x`; `*p` dereferences 解引用 the pointer —it reads or writes the value stored there. Passing a pointer lets a function change the caller's variable (pass-by-pointer).

```
#include <stdio.h>

void addOne(int *p) {      // p holds an address
    *p = *p + 1;          // change the value at that address
}

int main(void) {
    int x = 10;
    int *ptr = &x;        // & takes the address of x
    printf("%d\n", *ptr); // * reads the value: 10
    addOne(&x);
    printf("%d\n", x);    // 11 — changed through the pointer
    return 0;
}
```