

Dynamic memory

C Reference

malloc, free & realloc

malloc allocates 分配 memory on the heap 堆 at run time and returns a pointer to it. realloc resizes that block; free gives it back. Every malloc needs a matching free, or you get a memory leak 内存泄漏. These live in <stdlib.h>.

```
#include <stdio.h>
#include <stdlib.h>

int main(void) {
    int n = 3;
    int *a = malloc(n * sizeof(int));    // room for 3 ints
    for (int i = 0; i < n; i++) a[i] = i * 10;

    a = realloc(a, 4 * sizeof(int));    // grow to 4 ints
    a[3] = 30;

    for (int i = 0; i < 4; i++) printf("%d ", a[i]);
    printf("\n");                       // 0 10 20 30

    free(a);                             // hand the memory back
    return 0;
}
```