



364 TEACH YOURSELF

C++

```

class list {
public:
    list *head;
    list *tail;
    list *next; // pointer to next item
    int num; // value to be stored

    list() { head = tail = next = NULL; }
    virtual void store(int i) = 0;
    virtual int retrieve() = 0;
};

// Create a queue-type list.
class queue : public list {
public:
    void store(int i);
    int retrieve();
};

void queue::store(int i)
{
    list *item;

    item = new queue;
    if(!item) {
        cout << "Allocation error.\n";
        exit(1);
    }
    item->num = i;

    // put on end of list
    if(tail) tail->next = item;
    tail = item;
    item->next = NULL;
    if(!head) head = tail;
}

int queue::retrieve()
{
    int i;
    list *p;

    if(!head) {
        cout << "List empty.\n";
        return 0;
    }

    // remove from start of list
    i = head->num;
    head = head->next;
}

```