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#ifndef _ARRAY_HPP
#define _ARRAY_HPP

#include <iostream>
#include <initializer_list>

template<typename T, const unsigned N>
class Array {

    T data[N];

    void copy(const Array<T, N> &other) {
        for ( unsigned i=0; i<N; i++ ) { this->data[i] = other[i]; }
    }

    // Class Iterator

    class Iterator {

        T* ptr;

    public:

        Iterator(T* ptr): ptr(ptr) {}

        T &operator*() { return *(this->ptr); }
        Iterator &operator++() { this->ptr++; return *this; }
        Iterator &operator--() { this->ptr--; return *this; }

        Iterator operator+(int val) const { return Iterator(this->ptr + val); }
        Iterator operator-(int val) const { return Iterator(this->ptr - val); }

        auto operator<=>(const Iterator& other) const { return this->ptr <=> other.ptr; }
        bool operator!=(const Iterator& other) const { return this->ptr != other.ptr; }

    };

    class ConstIterator {

        T* ptr;

    public:

        ConstIterator(T* ptr): ptr(ptr) {}

        const T &operator*() const { return *(this->ptr); }
        ConstIterator &operator++() { this->ptr++; return *this; }
        ConstIterator &operator--() { this->ptr--; return *this; }

        ConstIterator operator+(int val) const { return ConstIterator(this->ptr + val); }
        ConstIterator operator-(int val) const { return ConstIterator(this->ptr - val); }

        auto operator<=>(const ConstIterator& other) const { return this->ptr <=> other.ptr; }
        bool operator!=(const ConstIterator& other) const { return this->ptr != other.ptr; }

    };

public:

    // Member Function

    constexpr Array()=default;
    constexpr explicit Array(T val) {
        for ( unsigned i=0; i<N; i++ ) { data[i] = val; }
    }
    constexpr explicit Array(std::initializer_list<T> args) {
        if (args.size() > N) { perror("Too many arguments"); exit(1); }
        if (args.size() < N) { perror("Arguments are missing"); exit(1); }
        int i=0; for ( auto arg : args ) { data[i] = arg; i++; }
    }
    constexpr Array(const Array<T, N> &other) { this->copy(other); }

```

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constexpr void operator=(const Array<T, N> &other) { this->copy(other); }

// Element access

T& at(int i) {
    if ( i < 0 or i >= N ) { perror("Bad index in Array"); exit(1); }
    return data[i];
}
T& operator[](int i) { return data[i]; }

const T& at(int i) const {
    if ( i < 0 or i >= N ) { perror("Bad index in Array"); exit(1); }
    return data[i];
}
const T& operator[](int i) const { return data[i]; }

// Iterators

Iterator begin() { return Iterator(this->data); }
Iterator end() { return Iterator(this->data + N); }

ConstIterator cbegin() { return ConstIterator(this->data); }
ConstIterator cend() { return ConstIterator(this->data + N); }

Iterator rbegin() { return Iterator(this->data + N-1); }
Iterator rend() { return Iterator(this->data - 1); }

ConstIterator crbegin() { return ConstIterator(this->data + N-1); }
ConstIterator crend() { return ConstIterator(this->data - 1); }

// Capacity

int size() const { return N; }

// Debug

void print() const {
    std::cout << "(";
    if (N == 0) { std::cout << ")"; return; }
    for (unsigned i=0; i<N-1; i++) {
        std::cout << this->data[i] << ", ";
    } std::cout << this->data[N-1] << ")" << std::endl;
}

};

#endif
```