

Sparse Table for Range Minimum Query

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#include<bits/stdc++.h>
using namespace std;

const int MAX_N = 1e5 + 5;
const int LOG = 20;
int mini[MAX_N][LOG];

int main() {
    int n, q;
    cin >> n >> q;

    for(int i = 1; i <= n; i++) cin >> mini[i][0];
    for(int k = 1; k < LOG; k++) mini[n+1][k] = INT_MAX;

    for(int k = 1; k < LOG; k++) {
        for(int i = 1; i <= n; i++) {
            int next = i + (1 << (k-1));
            next = min(n+1, next);
            mini[i][k] = min(mini[i][k-1], mini[next][k-1]);
        }
    }

    for(int i = 1; i <= q; i++) {
        int l, r;
        cin >> l >> r;

        int k = 0;
        while(l + (1 << (k+1)) - 1 <= r) k++;
        int res = min(mini[l][k], mini[r - (1 << k) + 1][k]);
        cout << res << endl;
    }

    return 0;
}
```