Permutación hermosa

Solución en C++

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#include<bits/stdc++.h>

using namespace std;

typedef vector<int> vi;

vi p;

int ab(int x) {
	return x > 0 ? x : -x;
}


void solve(int i, int j) {
    int n = j-i+1;
    if(n == 1) {
        p[i] = i;
    }
    else if (n == 5) {
        vi sol5 = {4, 2, 0, 3, 1};
        for(int k=0; k < 5; ++k) {
		p[i+k] = sol5[k]+i;
        }
    }
    else if (n == 9) {
        vi sol9 = {8, 7, 6, 3, 2, 4, 1, 0, 5};
        for(int k=0; k < 9; ++k) {
		p[i+k] = sol9[k]+i;
        }
    }
    else if (n % 3 == 0) {
        int m = (n-9)/3;
        if(m % 2 == 0) {
		for(int k=0; k < m+1; ++k) {
			p[i+k] = (n-1-k)+i;
		}
		p[i+m+1] = (n-m-3)+i;
		p[i+m+2] = (2)+i;
		p[i+m+3] = (n-m-2)+i;
		p[i+m+4] = (n-m-4)+i;
		p[i+2*m+5] = (m+3)+i;
		p[i+2*m+6] = (m)+i;
		p[i+2*m+7] = (m+4)+i;
		p[i+2*m+8] = (m+1)+i;
		for(int k=0; k < m/4; ++k) {
			p[i+n-1-4*k] = 1 + 4*k + i;
			p[i+n-1-4*k-1] = 6 + 4*k + i;
			p[i+n-1-4*k-2] = 3 + 4*k + i;
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                p[i+n-1-4*k-3] = 0 + 4*k + i;
            }
        }
        else {
            for(int k=0; k < m+1; ++k) {
                p[i+k] = (n-1-k)+i;
            }
            p[i+m+1] = (n-m-2)+i;
            p[i+m+2] = (2)+i;
            p[i+m+3] = (n-m-3)+i;
            p[i+m+4] = (n-m-4)+i;
            p[i+2*m+5] = (m+3)+i;
            p[i+2*m+6] = (m+2)+i;
            p[i+2*m+7] = (m)+i;
            p[i+2*m+8] = (m-1)+i;
            p[i+2*m+9] = (m+4)+i;
            for(int k=0; k < m/4; ++k) {
                p[i+n-1-4*k] = 1 + 4*k + i;
                p[i+n-1-4*k-1] = 6 + 4*k + i;
                p[i+n-1-4*k-2] = 3 + 4*k + i;
                p[i+n-1-4*k-3] = 0 + 4*k + i;
            }
        }
        solve(i+m+5, i+2*m+4);
    }
    else if (n % 3 == 1) {
        int m = (n-1)/3;
        for(int k=i; k < i+m; ++k) {
            p[k] = (n-k+i-1)+i;
        }
        p[i+m] = i;
        for(int k=i+2*m+1; k <= j; ++k) {
            p[k] = m-(k-(i+2*m+1))+i;
        }
        solve(i+m+1, i+2*m);
    }
    else if (n % 3 == 2) {
        int m = (n-5)/3;
        if(m % 2 == 0) {
            p[i] = n-1+i;
            p[i+1] = n-1+i-3;
            p[i+2] = n-1+i-1;
            for(int k=i+3; k <= i+m; ++k) {
                if((k-i)%2 == 0) {
                    p[k] = n-1+i+2-(k-i);
                }
                else {
                    p[k] = n-1+i-2-(k-i);
                }
            }
            p[i+m+1] = i+1;
            p[i+m+2] = n-1+i+2-(m+2);
            for(int k=2*m+3+i; k <= j-2; ++k) {
                p[k] = j-k+1+i;
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                }
                p[j-1] = i;
                p[j] = i+2;
        }
        else {
                p[i] = n-1+i;
                p[i+1] = n-1+i-2;
                for(int k=i+2; k <= i+m; ++k) {
                        if((k-i)%2 == 0) {
                                p[k] = n-1+i-2-(k-i);
                        }
                        else {
                                p[k] = n-1+i+2-(k-i);
                        }
                }
                p[i+m+1] = i+1;
                p[i+m+2] = n-1+i+2-(m+2);
                for(int k=2*m+3+i; k <= j-2; ++k) {
                        p[k] = j-k+1+i;
                }
                p[j-1] = i;
                p[j] = i+2;
        }
        solve(i+m+3, i+2*m+2);
    }
}

int abx(int x) {
    return x > 0 ? x : -x;
}

int main() {
    int n;
    cin >> n;
    if(n%4 > 1) {
        cout << "NO" << endl;
        return 0;
    }
    cout << "YES" << endl;
    p = vi(n);
    solve(0, n-1);


    for(int i=0; i < n; ++i) {
        cout << p[i];
        if(i < n-1) cout << " ";
    }
    cout << endl;
}
```

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