

```

1 //
2 //   There are N stones, numbered 1,2, ... N. For each i ( $1 \leq i \leq N$ ), the height of Stone i is h[i].
3 //   Here  $h[1] < h[2] < h[3] \dots < h[N]$  holds.
4 //   There is a frog who is initially on Stone 1.
5 //   He will repeat the following action some number of times to reach Stone N:
6 //   - If the frog is currently on Stone i, jump to one of the following:
7 //     Stone i+1,i+2, ... N. Here, a cost of  $(h[i] - h[j])^2 + C$  is incurred, where j is the stone to land on.
8 //   Find the minimum possible total cost incurred before the frog reaches Stone N.
9 //
10 //   Time Complexity: O(N)
11 //
12
13 #include <bits/stdc++.h>
14 #define ll long long
15
16 using namespace std;
17
18 vector<ll> h, dp;
19 int n;
20 ll C;
21
22 struct Line {
23     ll k, m, p;
24     ll eval(ll x) const { return k * x + m; }
25 };
26
27 struct CHT {
28     deque<Line> hull;
29     static const ll inf = LLONG_MAX;
30
31     ll div(ll a, ll b) { // floored division
32         return a / b - ((a ^ b) < 0 && a % b); }
33
34     bool intersect(Line &x, const Line &y) {
35         if (x.k == y.k) x.p = x.m > y.m ? inf : -inf;
36         else x.p = div(y.m - x.m, x.k - y.k);
37         return x.p >= y.p;
38     }
39
40     // Add a line with a form of kx + m
41     void add(ll k, ll m) {
42         Line L = {k, m, 0};
43         while ((int) hull.size() >= 2 && (intersect(L, hull.back()),
44             intersect(hull.back(), hull[(int) hull.size() - 2]), L.p < hull.back().p))
45             hull.pop_back();
46         hull.push_back(L);
47     }
48
49     // query at point x equivalent to cht(x)
50     ll query(ll x) {
51         while ((int) hull.size() >= 2 && hull[0].eval(x) >= hull[1].eval(x))
52             hull.pop_front();
53         return hull[0].eval(x);
54     }
55 };
56
57 int main() {
58     cin >> n >> C;
59
60     h.resize(n);
61     dp.resize(n);
62     for (int i = 0; i < n; i++) cin >> h[i];
63
64     CHT cht;
65     auto insert = [&](int i) {
66         cht.add(-2LL * h[i], (dp[i] + (h[i] * h[i])));
67     };
68
69     dp[0] = 0; insert(0);
70     for (int i = 1; i < n; i++) {
71         ll x = cht.query(h[i]);
72         dp[i] = C + (h[i] * h[i]) + x;
73
74         insert(i);
75     }
76
77     cout << dp[n-1] << endl;
78     return 0;
79 }

```