

```
1 #include "../bits/stdc++.h"
2
3 // verified: http://judge.u-aizu.ac.jp/onlinejudge/review.jsp?rid=3381829
4 // moda, modb は桁数増やした方が良いかも.
5 class RollingHash
6 {
7     int n;
8     static const uint64_t moda = (uint64_t)1e9 + 7;
9     static const uint64_t modb = (uint64_t)1e9 + 9;
10    static const uint64_t b1 = (uint64_t)17, b2 = (uint64_t)19;
11    std::vector<uint64_t> a, b, p, q;
12
13 public:
14    RollingHash(const std::string &str) : n((int)str.size()), a(n + 1, 0), b(n + 1, 0), p(n + 1, 1), q(n + 1, 1)
15    {
16        for (int i = 0; i < n; i++)
17        {
18            a[i + 1] = (a[i] * b1 + uint64_t(str[i])) % moda;
19            b[i + 1] = (b[i] * b2 + uint64_t(str[i])) % modb;
20            p[i + 1] = p[i] * b1 % moda;
21            q[i + 1] = q[i] * b2 % modb;
22        }
23    }
24    // [l, r) のハッシュ値を取得
25    std::pair<uint64_t, uint64_t> query(int l, int r)
26    {
27        assert(0 <= l && l <= r && r <= n);
28        uint64_t h1 = (p[r - 1] * a[l] - a[r] + moda) % moda;
29        uint64_t h2 = (q[r - 1] * b[l] - b[r] + modb) % modb;
30        return std::make_pair(h1, h2);
31    }
32 };
33
```