

```
1: #include "LFSR.hpp"
2:
3: LFSR::LFSR(std::string user_seed, int user_tap)
4: {
5:     tap = user_tap;
6:     seed = user_seed;
7: }
8:
9: LFSR::~LFSR()
10: {
11:
12: }
13:
14: int LFSR::step()
15: {
16:
17:     int bit;
18:     char c_bit;
19:
20:     if (seed.at(0) == seed.at((seed.size()-1) - tap))
21:     {
22:         bit = 0;
23:         c_bit = '0';
24:     }
25:     else
26:     {
27:         bit = 1;
28:         c_bit = '1';
29:     }
30:
31:     for(unsigned int i = 0; i < (seed.size()-1); i++)
32:     {
33:         seed.at(i) = seed.at(i+1);
34:     }
35:     seed.at(seed.size()-1) = c_bit;
36:
37:     return bit;
38: }
39:
40: int LFSR::generate(int k)
41: {
42:     int gen = 0;
43:
44:     for (int i =0; i < k; i++)
45:     {
46:         gen = gen*2 + LFSR::step();
47:     }
48:
49:     return gen;
50: }
51:
52: std::ostream& operator<<(std::ostream &out, LFSR &lfsr)
53: {
54:     out << lfsr.seed;
55:
56:     return out;
57: }
```