PolyHash in C++

```
#include <iostream>
#include <string>
using namespace std;

long long poly_hash(const string& s) {
    long long hash = 0;
    long long p = 31;
    const long long mod = 1000000007;
    long long p_power = 1;

    for (int i = 0; i < s.length(); i++) {
        hash = (hash + (s[i] - 'a' + 1) * p_power) %
mod;
        p_power = (p_power * p) % mod;
    }

    return hash;
}

int main() {
    string s = "abaasdasdasfasasfaba";
    cout << "Hash value: " << poly_hash(s) << endl;
    return 0;
}
```

String Details

Length: 20
Characters: a b a a s d a s d a s f a s a s f a b a

We'll use:

- p = 31
- mod = 1000000007

Hash formula:

hash = (hash + (s[i] - 'a' + 1) * p_power) % mod;
p_power = (p_power * p) % mod;

Dry Run Table

i	s[i]	Val (s[i]-'a'+1)	p_power	Contribution (mod 1e9+7)	Hash So Far
0	a	1	1	1	1
1	b	2	31	62	63
2	a	1	961	961	1024
3	a	1	29791	29791	30815
4	s	19	923521	17546899	17577714
5	d	4	28629151	114516604	132094318
6	a	1	887503681	887503681	196981992
7	s	19	512613868	842901208	103882398
8	d	4	891031477	3564125908 → 564125894	668008292
9	a	1	62135468	62135468	730143760
10	s	19	256572640	4874880160 → 874880132	605023885
11	f	6	953752268	5722513608 → 722513601	327537479
12	a	1	566320160	566320160	893857639
13	s	19	566924949	10771573931 → 771573888	665431520
14	a	1	574673514	574673514	240105027
15	s	19	815124426	15487364094 → 487364703	727469730
16	f	6	269857340	1619144040 → 619144033	346613756
17	a	1	366577506	366577506	713191262
18	b	2	363902559	727805118	441996373
19	a	1	281979458	281979458	**649975831**

✅ Final Hash Value

Hash value: 649975831

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