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## Hash fn for Rabin Karp

```
#include <iostream>
#include <string>
using namespace std;
const int p = 31; // prime no.
const int m = 1000000007 // large prime no.
int rabin-karp-hash( const string s)
{
    long long hash-value = 0;
    long long p-power = 1;
    for(char c : s) {
        hash-value = (hash-value + (c - 'a' + 1) * p-power) % m;
        p-power = (p-power * p) % m;
    }
    return hash-value;
}

int main() {
    string str = "hello";
    cout << "Hash of " << str << " : " << rabin-karp-hash(str) << endl;
    return 0;
}
```

eg,

Text = A B C C D D A E F G

pattern = C D D

let's assign a numerical value

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

$$\begin{aligned}h(n) = \text{Hash value of -text} &= C + D + D \\&= 3 + 4 + 4 \\&= 11\end{aligned}$$