4 LIVE EVENTS

Unique Gems

Attempted by: **170** / Accuracy: **76%** / ★★★★☆

Tag(s): Algorithms, Hard, Suffix Arrays

PROBLEM **EDITORIAL** MY SUBMISSIONS ANALYTICS

Setter's solution:

We need to count the number of substrings that occur exactly once.

This can be formulated as the number of substrings occuring >=1 times - number of substrings occuring >= 2 times.

The former is simply the number of distinct substrings.

The latter can be solved by observing the lcp array in detail.

IS THIS EDITORIAL HELPFUL?

Yes, it's helpful

No, it's not helpful

7 developer(s) found this editorial helpful.

Author Solution by Ankit Srivastava

```
t) {
```

```
| c == -1;
```

```
eamWriter(outputStream)));
```

```
At(o2));



 len characters
 first len characters





the end of the string
ollowed by 0-symbol
&& sa[i - 1] + len < n && r[sa[i - 1] + len / 2] == r[sa[i] + len / 2] ? rank[sa

s




characters
by second len characters

e already sorted
```

```
At(i + h) == s.charAt(j + h)) {
```

Tester Solution

```
#include <cstdio>
#include <cmath>
#include <iostream>
#include <set>
#include <algorithm>
#include <vector>
#include <map>
#include <cassert>
#include <string>
#include <cstring>
#include <queue>

using namespace std;

#define rep(i,a,b) for(int i = a; i < b; i++)
#define S2(x,y) scanf("%d%d",&x,&y)
#define P(x) printf("%d\n",x)
#define all(v) v.begin(),v.end()
#define sz size()
#define F first
#define S second

typedef long long int LL;
typedef pair<int, int > pii;
typedef vector<int > vi;

const int N = 100001;

```

```
string s;
vector<pii > ranks;

pair<int, pii > v[N];
int tag[N][22];
int mxPow;
int n;

void buildSA(string &s) {
        n = s.sz;
        rep(i,0,n) {
                v[i].F = s[i] - 'a' + 1;
                v[i].S.F = -1;
                v[i].S.S = i;
                tag[i][0] = v[i].F;
        }

        int len = 1;
        int j = 0;
        while(len < n) {
                len += len;
                j++;

                rep(i,0,n) {
                        v[i].F = tag[i][j-1];
                        if(i+len/2 < n) v[i].S.F = tag[i+len/2][j-1];
                        else v[i].S.F = -1;
                        v[i].S.S = i;
                }
                sort(v, v+n);

                int tagId = 1;
                tag[v[0].S.S][j] = 1;
                rep(i,1,n) {
                        if(v[i].F != v[i-1].F || v[i].S.F != v[i-1].S.F) {
                                tagId++;
                        }
                        tag[v[i].S.S][j] = tagId;
                }
        }
        mxPow = j;
}

int lcp(int x, int y) {

        int res = 0;
        for(int i = mxPow; i >= 0; i--) {
                if(tag[x][i] == tag[y][i]) {
                        res += 1 << i;
                        x += 1 << i;
                        y += 1 << i;
                }
                if(x >= n || y >= n) break;
        }
        return res;
}

int main() {
        int t;
        cin >> t;
        assert(t >= 1 && t <= 10);
        while(t--) {
                cin >> s;
                buildSA(s);
                int n = s.sz;
                assert(n > 0 && n <= 100000);

                ranks.clear();
                rep(i,0,n) {
                        ranks.push_back(make_pair(tag[i][mxPow], i));
                }
                // P(ranks.sz);
                sort(all(ranks));

                // cout << s << endl;
                // rep(i,0,n) printf("%d %d\n",ranks[i].F, ranks[i].S);
                // P(mxPow);

                LL ans = 0;
                rep(i,0,n) {
                        int mx = 0;
                        if(i-1 >= 0) mx = max(mx, lcp(ranks[i-1].S, ranks[i]
                        if(i+1 < n) mx = max(mx, lcp(ranks[i+1].S, ranks[i].
                        // P(mx);

                        ans += n - ranks[i].S - mx;
                }
                cout << ans << endl;
        }
        return 0;
}
```

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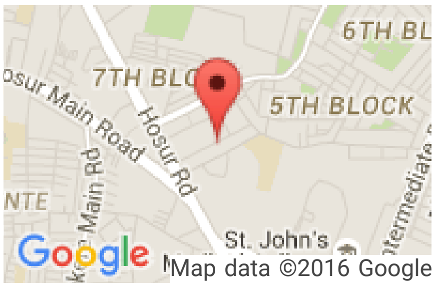

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