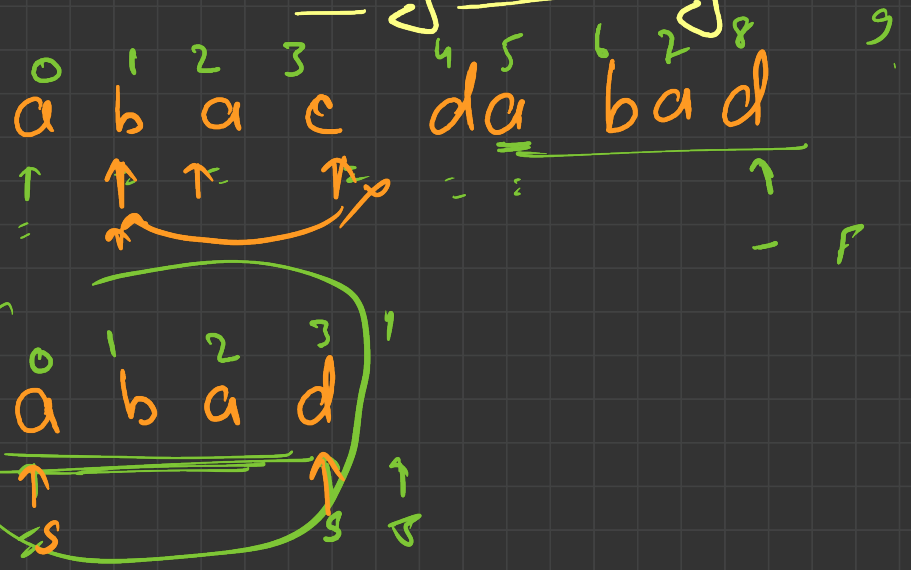
String Matching

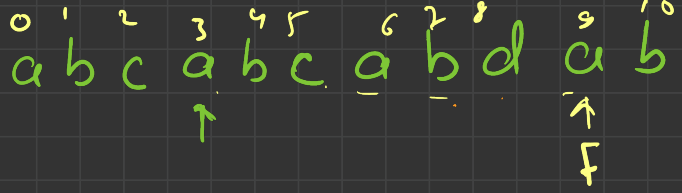


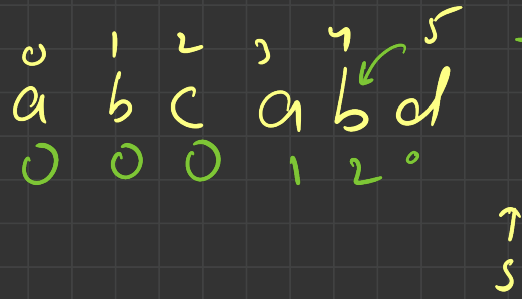
```
n = s1.size() , m = s2.size()
for(i=0; i < n-m ; i++) {
    first = i , second = 0;
    while (second < m) {
        if (s1[first] != s2[second]) {
            break;
        }
        else {
            first ++, second ++;
        }
    if (second == m) {
        return first - second;
    }
}
return -1;
```

O(nm)

O(1)

o i ∠





```
vector<int> lps ( needle.size(),0);
lpsFind ( lps, needle );
int first =0, second = 0;
while ( second < needle.size() &&
        first < hystrack.size())
{   if (needle[second] == hystrack[first])
    { second++, first++;
    } else {
                if (second == 0) {
                  first ++;
                } else {
                second = lps[second-1]
                } }
```

```
if ( second == needle.size() )
    return first - second

return -1
```