Factoring of number in O(log(x)):

```cpp
const int N = 1e7 + 7;
int firstFa[N] , lastFa[N];

vector<int> factorization(int x){
    vector<int> ret;
    while(x≠1){
        ret.push_back(firstFa[x]);
        x/=firstFa[x];
    }
    return ret;
}

// call this function in main then use factorization
void sieve(){
    for (int i = 0; i < N; i++)
        firstFa[i] = lastFa[i] = i;
    for (int i = 2; i < N; i++)
    {
        if(firstFa[i] == i){
            for (int j = i+i; j < N; j+=i)
            {
                if(firstFa[j]==j)
                    firstFa[j] = i;
                lastFa[j] = i;
            }
        }
    }
}
```