C&NS Lab Assignment 15

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Batch B2

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Prime Factorization

* Implement the Prime Factorization algorithm using any programming language.

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# 

# 

# Prime Factorization

Code

#include <bits/stdc++.h>

#define ll long long

#define ul unsigned long long

#define pb emplace\_back

#define po pop\_back

#define vi vector<ll>

#define vii vector<vector<ll>>

using namespace std;

void file(){

ios\_base::sync\_with\_stdio(false);

cin.tie(NULL);}

ll M = 1e9 + 7;

string rsanum;

int rem;

string longDivision(string number, int divisor)

{

string ans;

int idx = 0;

int temp = number[idx] - '0';

while (temp < divisor)

temp = temp \* 10 + (number[++idx] - '0');

while (number.size() > idx) {

rem = temp % divisor;

ans += (temp / divisor) + '0';

temp = (temp % divisor) \* 10 + number[++idx] - '0';

}

cout<<rem;

if (ans.length() == 0)

return "0";

if(rem==0)

return ans;

else return number;

}

int main(){

cout<<"Prime Factors:\n"

cout<<"Enter Number : "

string num;

rem=0;

cin>>num;

unordered\_map<int,int> mp;

rsanum = num;

int len = num.size();

string ans = longDivision(num,2);

while(rem == 0){

mp[2]++;

num = ans;

ans = longDivision(num,2);

cout<<rem<<" ";

}

for (int i = 3; i <= 1000000; i = i + 2)

{ string ans = longDivision(num,i);

while (ans!="0" && rem==0)

{ mp[i]++;

num = ans;

ans = longDivision(num,i);

}

}

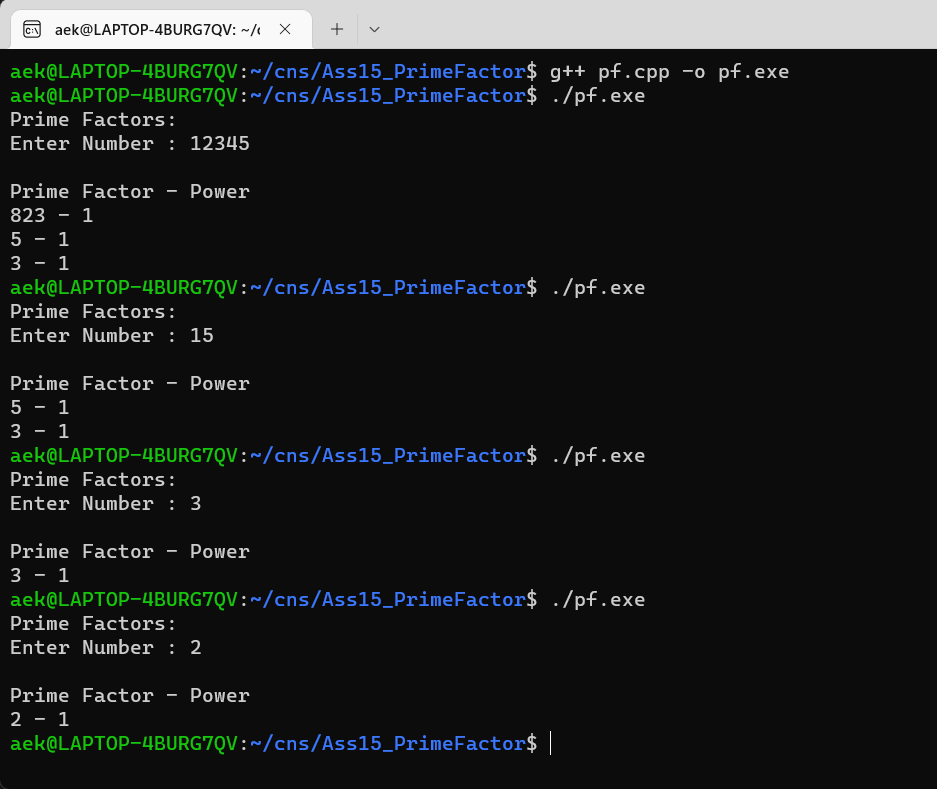
cout<<"\n";

cout<<"Prime Factor"<<" - "<<"Power"<<"\n";

for(auto x:mp) cout<<x.first<<" - "<<x.second<<"\n";

}

Output:



# 