

**Assignment On:** [String/Function](https://elearn.daffodilvarsity.edu.bd/mod/assign/view.php?id=442349)

**Course Code :** CSE 214/215

**Course Title :** Algorithms & Lab

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1. **Write a recursive function to find GCD of two integers a and b.**

**Solution:** Language C++14

[https://ideone.com/qUYU17](%09%09https:/ideone.com/qUYU17)

#include<bits/stdc++.h>

using namespace std;

int gcd(int m, int n){

if(n==0)

return m;

return gcd(n,m%n);

}

int main(){

int a,b,res;

scanf("%d %d",&a,&b);

res = gcd(a,b);

printf("%d\n",res);

return 0;

}

Input:

10 20

Output:

10

1. **Write a recursive function to print the Fibonacci series.**

**Solution:** Language C++14

<https://ideone.com/vjYIVh>

#include<bits/stdc++.h>

using namespace std;

int fibo(int n)

{

if(n<=1)

return n;

return fibo(n-1)+fibo(n-2);

}

int main()

{

int i,n;

scanf("%d",&n);

for(i=0;i<n;i++)

printf("%d ",fibo(i));

printf("\n");

return 0;

}

Input:

5

Output:

0 1 1 2 3

1. **Write a recursive function to calculate the sum of individual digits of a number.**

**Solution:** Language C++14

<https://ideone.com/RXVcjh>

#include<bits/stdc++.h>

using namespace std;

int sumOfDigits(int n){

if(n==0)

return n;

return ((n%10) + sumOfDigits(n/10));

}

int main(){

int n;

scanf("%d",&n);

printf("%d\n",sumOfDigits(n));

return 0;

}

Input:

12345

Output:

15

1. **Take a string input and find out the frequency of characters.**

**Solution:** Language C++14

<https://ideone.com/g4tpup>

#include<bits/stdc++.h>

using namespace std;

void solve()

{

char arr[10005];int freq[10005];

int sz, i, j, cnt;

scanf("%s",arr);

sz=strlen(arr);

for(i=0; i<sz; i++){

freq[i] = -1;

}

for(i=0; i<sz; i++)

{

cnt = 1;

for(j=i+1; j<sz; j++)

{

if(arr[i]==arr[j]){

cnt++;

freq[j] = 0;

}

}

if(freq[i] != 0){

freq[i] = cnt;

}

}

for(i=0; i<sz; i++)

{

if(freq[i] != 0){

printf("%c %d\n", arr[i], freq[i]);

}

}

}

int main(){

solve();

return 0;

}

Input:

aa11appx45yz

Output:

a 3

1 2

p 2

x 1

4 1

5 1

y 1

z 1