Daffodil International University

Assignment On: String/Function

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

```
#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
```

2) **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

3) 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

4) 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;
}
```

Section: A(O-1) ID: 193-15-13426

Input:

aa11appx45yz

Output:

a 3
1 2
p 2
x 1
4 1
5 1
y 1
z 1