# Practical-1

# AIM: Implement Caesar cipher encryption-decryption.

## 1. encryption

### Description:

- The Caesar Cipher technique is one of the earliest and simplest method of encryption technique.
- It's simply a type of substitution cipher, i.e., each letter of a given text is replaced by a letter some fixed number of positions down the alphabet.
- For example with a shift of 1, A would be replaced by B, B would become C, and so on. The method is apparently named after Julius Caesar, who apparently used it to communicate with his officials.
- The encryption can be represented using modular arithmetic by first transforming the letters into numbers, according to the scheme, A = 0, B = 1,…, Z = 25. Encryption of a letter by a shift n can be described mathematically as.
- En(x) = (x+n) mod 26
  (Encryption Phase with shift n)

### Code:

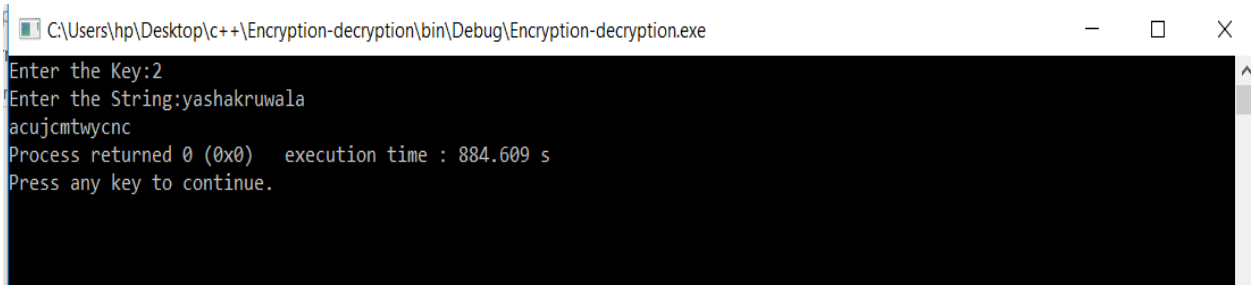
```
#include<iostream>
#include<string>
using namespace std;
int main()
{
        string a;
        int k;
        cout<<"Enter the Key:";
        cin>>k;
        cout<<"Enter the String:";
```

```
        cin>>a;


        for(int i=0;i<a.length();i++)
        {
                a[i]=a[i]+k;
                if(a[i]>'z')
                        a[i]=a[i]-26;
        }
        cout<<a;
        return 0;

}
```

## OUTPUT:



# 2. decryption:

## Description:

- We can either write another function decrypt similar to encrypt, that'll apply the given shift in the opposite direction to decrypt the original text.
- However we can use the cyclic property of the cipher under modulo , hence we can simply observe the logic is given below.
- Dn(x) = (x-n) mod 26

## Code:

```
#include<iostream>
#include<string>
using namespace std;
int main()
{
	string a;
	int k;
	cout<<"Enter the Key:";
	cin>>k;
	cout<<"Enter the String:";
	cin>>a;

	for(int i=0;i<a.length();i++)
	{
		a[i]=a[i]-k;
		if(a[i]<'a')
			a[i]=a[i]+26;
	}
	cout<<a;
```

```
    return 0;

}
```

## OUTPUT: